AutoMap User's Guide 2010

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Abstract

AutoMap is software for computer-assisted Network Text Analysis (NTA). NTA encodes the links among words in a text and constructs a network of the links words. AutoMap subsumes classical Content Analysis by analyzing the existence, frequencies, and covariance of terms and themes.

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AutoMap

AutoMap is a tool for extracting key concepts from large volumes of text. This help file contains the following sections:

Resources
Contains the Glossary of terms, the Quickstart Guides and a page on Non-English fonts.

The AutoMap GUI
And overview of the main GUI as well as pages explaining the functions of each of the menus. Each menu is contained in a separate page.

Content Overview
AutoMap refers to many concepts in Network Science. The Content Overview sections gives a brief explanation of each of these concepts.

Tools
These are the external tools callable through AutoMap. Each has a particular function to assist the user in processing text.

Script
Deals with the Script form. Gives a description of the config script as well as descriptions of what functions the various tags perform.

Lessons
The lessons are split into two sections. The Simple lessons deal with basic aspects of running AutoMap. The Advanced lessons combine what was learned from the basic lessons into more comprehensive lessons.

AutoMap 3 Overview

An Overview

AutoMap is text analysis software that implements the method of Network Text Analysis, specifically Semantic Network Analysis. Semantic analysis

extracts and analyzes links among words to model an author's **mental map** as a network of links. Automap also supports Content Analysis.

Coding in AutoMap is computer-assisted; the software applies a set of coding rules specified by the user in order to code the texts as networks of concepts. Coding texts as maps focuses the user on investigating meaning among texts by finding relationships among words and themes.

The coding rules in AutoMap involve text pre-processing and statement formation, which together form the coding scheme. Text pre-processing condenses data into concepts, which capture the features of the texts relevant to the user. Statement formation rules determine how to link concepts into statements.

Network Text Analysis (NTA)

Network Text Analysis theory is based on the assumption that language and knowledge can be modeled as networks of words and relations. NTA encodes links among words to construct a network of linkages. Specifically, this method analyzes the existence, frequencies, and covariance of terms and themes, thus subsuming classical Content Analysis.

Social Network Analysis (SNA)

Social Network Analysis (Wasserman & Faust, 1994) is a scientific area focused on the study of relations, often defined as social networks. In its basic form, a social network is a network where the nodes are people and the relations (also called links or ties) are a form of connection such as friendship. Social Network Analysis (Wasserman & Faust, 1994) takes graph theoretic ideas and applies them to the social world. The term "social network" was first coined in 1954 by J. A. Barnes (see: Class and Committees in a Norwegian Island Parish). Social network analysis (Wasserman & Faust, 1994) is also called network analysis, structural analysis, and the study of human relations. SNA is often referred to as the science of **connecting the dots**.

Today, the term Social Network Analysis (Wasserman & Faust, 1994) is used to refer to the analysis of any network such that all the nodes are of one type (e.g., all people, or all roles, or all organizations), or at most two types (e.g., people and the groups they belong to). The metrics and tools in this area, since they are based on the mathematics of graph theory, are applicable regardless of the type of nodes in the network or the reason for the connections.

For most researchers, the nodes are actors. As such, a network can be a cell of terrorists, employees of global company or simply a group of friends. However, nodes are not limited to actors. A series of computers that interact with each other or a group of interconnected libraries can also comprise a network.

Semantic Network Analysis

In map analysis, a concept is a single idea, or ideational kernel, represented by one or more words. Concepts are equivalent to nodes in Social Network Analysis (SNA) (Wasserman & Faust, 1994). The link between two concepts is referred to as a statement, which corresponds with an edge in SNA. The relation between two concepts can differ in strength, directionality, and type. The union of all statements per texts forms a semantic map. Maps are equivalent to networks.

Dynamic Network Analysis

Dynamic Network Analysis (DNA) is an emergent scientific field that brings together traditional social network analysis (SNA) (Wasserman & Faust, 1994), link analysis (LA) and multi-agent systems (MAS). There are two aspects of this field. The first is the statistical analysis of DNA data. The second is the utilization of simulation to address issues of network dynamics. DNA networks vary from traditional social networks in that there are larger dynamic multi-mode, multi-plex networks, and may contain varying levels of uncertainty.

DNA statistical tools are generally optimized for large-scale networks and simultaneously admit the analysis of multiple networks in which there are multiple types of entities (multi-entities) and multiple types of links (multi-plex). In contrast, SNA statistical tools focus on single or at most two mode data and facilitate the analysis of only one type of link at a time.

Because they have measures that use data drawn from multiple networks simultaneously, DNA statistical tools tend to provide more measures to the user. From a computer simulation perspective, entities in DNA are like atoms in quantum theory: they can be, though need not be, treated as probabilistic. Whereas entities in a traditional SNA model are static, entities in a DNA model have the ability to learn. Properties change over time; entities can adapt. For example, a company's employees can learn new skills and increase their value to the network, or one terrorist's death forces three more to improvise. Change propagates from one entity to the next and so

on. DNA adds the critical element of a network's evolution to textual analysis and considers the circumstances under which change is likely to occur.

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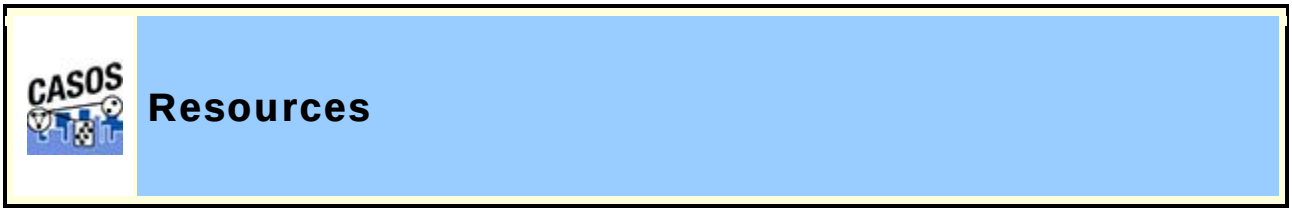

Description

Contained within these pages are resources useful in using AutoMap.

Glossary of terms used in describing AutoMap.

GUI Quickstart guide.

Script Quickstart guide.

Non-English Font web sites.

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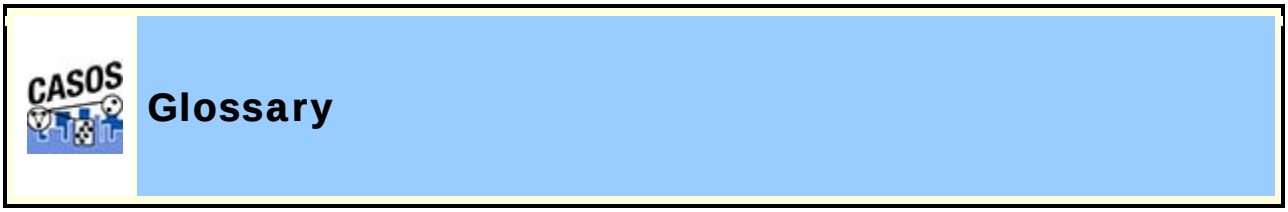

Adjacency Network : A Network that is a square actor-by-actor (i=j) network where the presence of pairwise links are recorded as elements. The main diagonal, or self-tie of an adjacency network is often ignored in network analysis.

Aggregation : Combining statistics from different nodes to higher nodes.

Algorithm : A finite list of well-defined instructions for accomplishing some task that, given an initial state, will terminate in a defined end-state.

Attribute : Indicates the presence, absence, or strength of a particular connection between nodes in a Network.

Betweenness : Degree an individual lies between other individuals in the network; the extent to which an node is directly connected only to those other nodes that are not directly connected to each other; an intermediary; liaisons; bridges. It is the number of nodes a given node is indirectly connected to via its direct links.

Betweenness Centrality : High in betweenness but not degree centrality. This node connects disconnected groups, like a Go-between.

Bigrams : Bigrams are groups of two written letters, two syllables, or two words, and are very commonly used as the basis for simple statistical analysis of text.

Bimodal Network : A network most commonly arising as a mixture of two different unimodal networks.

Binarize : Divides your data into two sets; zero or one.

Bipartite Graph : Also called a bigraph. It's a set of nodes decomposed into two disjoint sets such that no two nodes within the same set are adjacent.

BOM : A byte order mark (BOM) consists of the character code U+FEFF at the beginning of a data stream, where it can be used as a signature defining the byte order and encoding form, primarily of unmarked plaintext files. Under some higher level protocols, use of a BOM may be mandatory (or prohibited) in the Unicode data stream defined in that protocol.

Centrality : The nearness of an node to all other nodes in a network. It displays the ability to access information through links connecting other nodes. The closeness is the inverse of the sum of the shortest distances between each node and every other node in the network.

Centralization : Indicates the distribution of connections in the employee communication network as the degree to which communication and/or information flow is centralized around a single agent or small group.

Classic SNA density : The number of links divided by the number of possible links not including self-reference. For a square network, this algorithm* first converts the diagonal to 0, thereby ignoring self-reference (a node connecting to itself) and then calculates the density. When there are N nodes, the denominator is (N*(N-1)). To consider the self-referential information, use general density.

Clique : A sub-structure that is defined as a set of nodes where every node is connected to every other node.

Clique Count : The number of distinct cliques to which each node belongs.

Closeness : Node that is closest to all other Nodes and has rapid access to all information.

Clustering coefficient : Used to determine whether or not a graph is a small-world network.

Cognitive Demand : Measures the total amount of effort expended by each agent to do its tasks.

Collocation : A sequence of words or terms which co-occur more often than would be expected by chance.

Column Degree : see Out Degree*.

Complexity : Complexity reflects cohesiveness in the organization by comparing existing links to all possible links in all four networks (employee, task, knowledge and resource).

Concor Grouping : Concor recursively splits partitions and the user selects n splits. (n splits -> 2n groups). At each split it divides the nodes based on maximum correlation in outgoing connections. Helps find groups with similar roles in networks, even if dispersed.

Congruence : The match between a particular organizational design and the organization's ability to carry out a task.

Count : The total of any part of a Meta-Network row, column, node, link, isolate, etc.

CSV : "Comma Separated Value". A common file structure used in database programs for formatting output data.

Degree : The total number of links to other nodes in the network.

Degree Centrality : Node with the most connections. (e.g. In the know). Identifying the sources for intel helps in reducing information flow.

Density :

- **Binary Network :** The proportion of all possible links actually present in the Network.

- **Value Network :** The sum of the links divided by the number of possible links. (e.g. the ratio of the total link strength that is actually present to the total number of possible links).

Dyad : Two nodes and the connection between them.

Dyadic Analysis : Statistical analysis where the data is in the form of ordered pairs or dyads. The dyads in such an analysis may or may not be for a network.

Dynamic Network Analysis : Dynamic Network Analysis (DNA) is an emergent scientific field that brings together traditional Social Network Analysis* (SNA), Link Analysis* (LA) and multi-agent systems (MAS).

DyNetML : DynetML is an xml based interchange language for relational data including nodes, ties, and the attributes of nodes and ties. DyNetML is a universal data interchange format to enable exchange of rich social network data and improve compatibility of analysis and visualization tools.

Endain : Data types longer than a byte can be stored in computer memory with the most significant byte (MSB) first or last. The former is called big-endian, the latter little-endian. When data are exchange in the same byte order as they were in the memory of the originating system, they may appear to be in the wrong byte order on the receiving system. In that situation, a BOM would look like 0xFFFE which is a non-character, allowing the receiving system to apply byte reversal before processing the data. UTF-8 is byte oriented and therefore does not have that issue. Nevertheless, an initial BOM might be useful to identify the data stream as UTF-8.

Entropy : The formalization of redundancy and diversity. Thus we say that Information Entropy (H) of a text document (X) where probability p of a word x = ratio of total frequency of x to length (total number of words) of a text document.

General density : The number of links divided by the number of possible links including self-reference. For a square network, this algorithm* includes self-reference (an node connecting to itself) when it calculates the density. When there are N nodes, the denominator is (N*N). To ignore self-referential information use classic SNA* density.

Hidden Markov Model : A statistical model in which the system being modeled is assumed to be a Markov process with unknown parameters, and the challenge is to determine the hidden parameters from the observable parameters.

Homophily : (e.g., love of the same) is the tendency of individuals to associate and bond with similar others.

- **Status homophily** means that individuals with similar social status characteristics are more likely to associate with each other than by chance.
- **Value homophily** refers to a tendency to associate with others who think in similar ways, regardless of differences in status.

In-Degree : The sum of the connections leading to an node from other nodes. Sometimes referred to row degree.

Influence network : A network of hypotheses regarding task performance, event happening and related efforts.

Isolate : Any node which has no connections to any other node.

Link : A specific relation among two nodes. Other terms also used are tie and link.

Link Analysis : A scientific area focused on the study of patterns emerging from dyadic observations. The relationships are typically a form of co-presence between two nodes. Also multiple dyads that may or may not form a network.

Main Diagonal : in a square network this is the conjunction of the rows and cells for the same node.

Network Algebra : The part of algebra that deals with the theory of networks.

Meta-Network : A statistical graph of correlating factors of personnel, knowledge, resources and tasks. These measures are based on work in social networks, operations research, organization theory, knowledge management, and task management.

Morpheme : A morpheme is the smallest meaningful unit in the grammar of a language.

Multi-node : More than one type of node (people, events, locations, etc.).

Multi-plex : Network where the links are from two or more relation classes.

Multimode Network : Where the nodes are in two or more node classes.

Named-Node Recognition : An Automap feature that allows you to retrieve proper names (e.g. names of people, organizations, places), numerals, and abbreviations from texts.

Neighbors : Nodes that share an immediate link to the node selected.

Network : Set of links among nodes. Nodes may be drawn from one or more node classes and links may be of one or more relation classes.

Newman Grouping : Finds unusually dense clusters, even in large networks.

Nodes : General things within an node class (e.g. a set of actors such as employees).

Node Class : The type of items we care about (knowledge, tasks, resources, agents).

Node Level Metric : is one that is defined for, and gives a value for, each node in a network. If there are x nodes in a network, then the metric is calculated x times, once each for each node. Examples are Degree Centrality*, Betweenness*, and Cognitive Demand*.

Node Set : A collection of nodes that group together for some reason.

ODBC : (O)pen (D)ata (B)ase (C)onnectivity is an access method developed by the SQL Access group in 1992 whose goal was to make it possible to access any data from any application, regardless of which database management system (DBMS) is handling the data.

Ontology : "The Specifics of a Concept". The group of nodes, resources, knowledge, and tasks that exist in the same domain and are connected to one another. It's a simplified way of viewing the information.

Organization : A collection of networks.

Out-Degree : The sum of the connections leading out from an node to other nodes. This is a measure of how influential the node may be. Sometimes referred to as column degree.

Pendant : Any node which is only connected by one link. They appear to dangle off the main group.

Random Graph : One tries to prove the existence of graphs with certain properties by assigning random links to various nodes. The existence of a property on a random graph can be translated to the existence of the property on almost all graphs using the famous Szemerédi regularity lemma*.

Reciprocity : The percentage of nodes in a graph that are bi-directional.

Redundancy : Number of nodes that access to the same resources, are assigned the same task, or know the same knowledge. Redundancy occurs only when more than one agent fits the condition.

Relation : The way in which nodes in one class relate to nodes in another class.

Row Degree : see In Degree*.

Semantic Network : Often used as a form of knowledge representation. It is a directed graph consisting of vertices, which represent concepts, and links, which represent semantic relations between concepts.

Social Network Analysis : The term Social Network Analysis (or SNA) is used to refer to the analysis of any network such that all the nodes are of one type (e.g., all people, or all roles, or all organizations), or at most two types (e.g., people and the groups they belong to).

Stemming : Stemming detects inflections and derivations of concepts in order to convert each concept into the related morpheme.

tfidf : Term Frequency/Inverse Document Frequency helps determine a word's importance in the corpus. **tf (Term Frequency)** is the importance of a term within a document. **idf (Inverse Document Frequency** is the importance of a term within the corpus.

$$tf = \frac{\textit{cumulative occurance of term x in document y}}{\textit{total number of terms in documet y}}$$

$$idf = \frac{log\,(total\ number\ of\ documents\ in\ corpus)}{total\ number\ of\ documents\ containing\ term\ x}$$

tfidf = tf * idf

Useful when creating a General Thesaurus.

Thesaurus : A list which associates multiple abstract concepts with more common concepts.

- **Generalization Thesaurus :** Typically a two-columned collection that associates text-level concepts with higher-level concepts. The text-level concepts represent the content of a data set, and the higher-level concepts represent the text-level concepts in a generalized way.
- **Meta-Network Thesaurus :** Associates text-level concepts with Meta-Network categories.

Sub-Matrix Selection : The Sub-Matrix Selection denotes which Meta-Network Categories should be retranslated into concepts used as input for the Meta-Network thesaurus.

Topology : The study of the arrangement or mapping of the elements (links, nodes, etc.) of a network, especially the physical (real) and logical (virtual) interconnections between nodes.

Unimodal networks : These are also called square networks because their adjacency network* is square; the diagonal is zero diagonal because there are no self-loops*.

Windowing : A method that codes the text as a map by placing relationships between pairs of Concepts that occur within a window. The size of the window can be set by the user.

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GUI Quickstart

AutoMap is a natural language processing system. It is used as a means to understand text, or to process text to be used in conjunction with other tools

such as the CASOS *ORA program. Some of the ways in which AutoMap is used:

1. To extract a Meta-Network representation of a dynamic/social network as expressed in text.
2. To extract a semantic network to understand the relationships between concepts in texts.
3. To clean and process text files for example by removing symbols and numbers, deleting unnecessary words, and stemming.
4. To identify concepts and the frequency of concepts appearing in texts.

Description

The AutoMap GUI (Graphical User Interface) contains access to AutoMap's features via the menu items and shortcut buttons. The purpose of the GUI is to aid in the exploration of processing steps. Users will be able to understand the impact of processing parameters and processing order.

The processing of an extensive collection of texts is best done using the script version of AutoMap. The same processing steps available in the AutoMap GUI are available in the AutoMap Script.

Guide Roadmap

A. Interface Overview

B. Tutorial 1: Creating Concept and Union Concept List

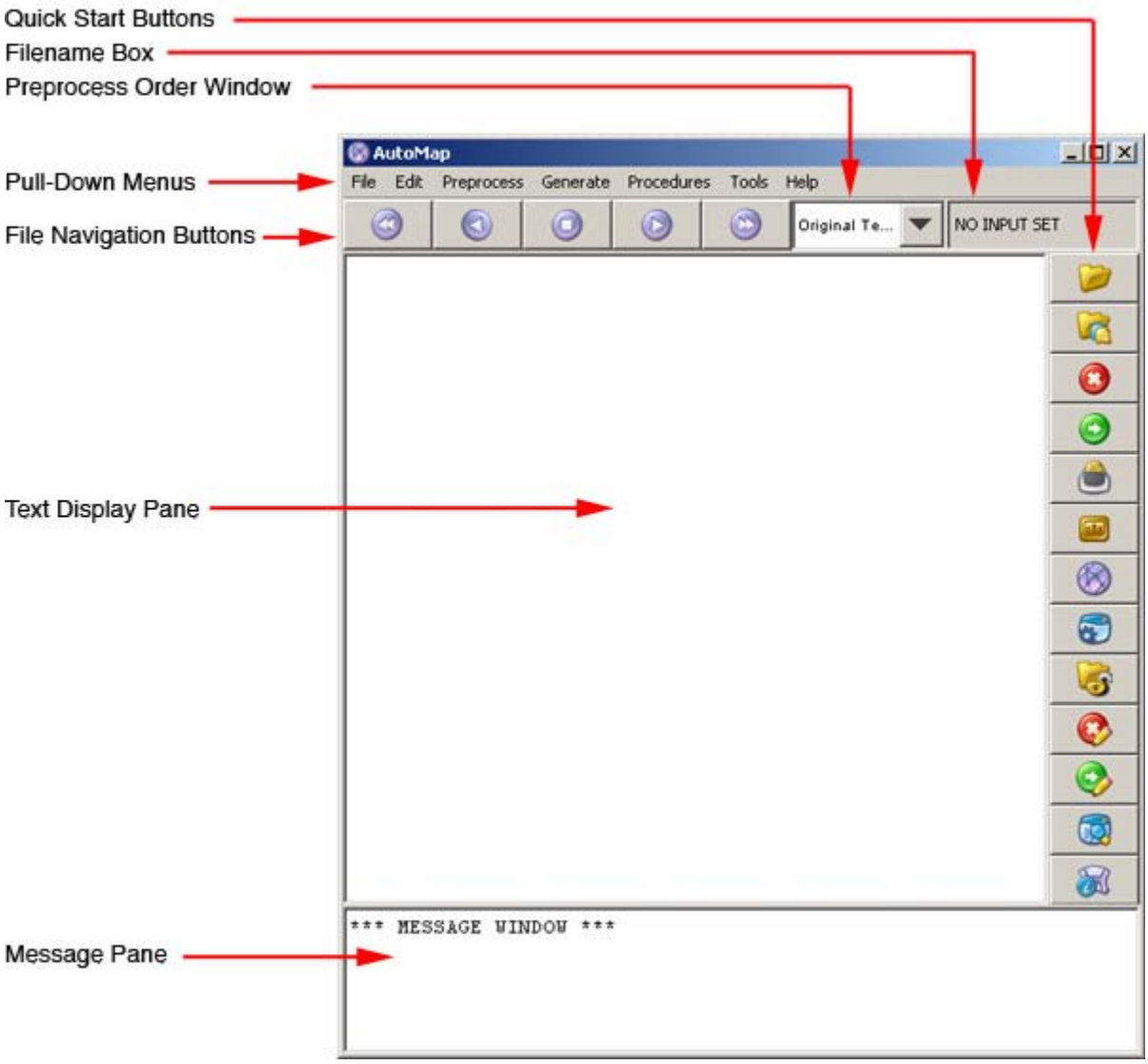
C. Tutorial 2: Using Delete Lists

D. Tutorial 3: Content Analysis to Semantic Network

E. Interface Details

The User Interface Overview

The Pull Down Menus



The **Text Display Window** displays the text file as it appears based on the preprocessing that has been applied to it. The **File Navigation Buttons** allow you to move between individual text files. The **Filename Box** will identify the name of the currently displayed text file.

The **Message Window** will provide feedback. The **Quick Launch Buttons** are the most commonly used menu commands, placed in the main window for quick access.

The **File Menu** contains loading and saving commands, and exit, to quit the AutoMap program.

The **Edit Menu** contains configuration options.

The **Preprocess Menu** contains commands that will modify the text file. These commands may be applied in any order. The result of the preprocessing is displayed in the Text Display Window, with the name of the preprocessing step displayed in the Preprocess /Order Window.

The **Generate Menu** contains commands for generating end results. The output of these commands may be created to be used as input to other programs. For instance, a generated Meta-Network DyNetML file can be used as input to *ORA for analysis.

The **Tools Menu** contains launchable external tools. These tools are provided to aid in the editing of supplemental files or the viewing of end results. AutoMap uses standard file formats such as text (.txt), comma separated value (.csv) or XML (.xml) in order to provide maximum interaction with other tools.

The Help Menu contains the AutoMap help system.

Before You Begin

AutoMap is a system that starts with text files. Before being able to use the features of AutoMap, it is necessary to have text to process. This text can be obtained from email, news articles, publications, web pages, or text typed in using a text editor.

AutoMap will process all text (.txt) files in a directory. It is not necessary to combine text into a single file. Some larger text files can be split into smaller text files to do analysis of sections individually.

You will be prompted for the location of where to store the files that are the results of your processing. Many people will create a folder to keep the text files and all of the results. In this work folder, create a subfolder to store the original texts and additional subfolders to store the results you will generate.

For example, if we are interested in only creating concept lists from our texts, we can create the following file structure:

C:\Mike\working

C:\Mike\working\texts

C:\Mike\working\concepts

When generating a concept list, be sure to navigate to the appropriate folder, such as C:\Mike\working\concepts folder in our example, to store the results.

Creating Concept & Union Concept Lists

Description

Concept Lists & Union Concept Lists compile lists based on individual and multiple files giving their frequency. A Concept List collects concepts in one file only. Union Concept Lists collect concepts from all currently loaded files.

Step 1: Load Text Files

From the Pull Down Menu select ***File => Select Input Directory***. Navigate to a directory with your text files and click Select.

Step 2: Create a Concept List

From the Pull Down Menu select ***Generate => Concept List***. Navigate to a directory to save the list and click **Select**. If you have other files in that directory, you will be alerted that some files may be overwritten. As long as you did not add or remove input files from a previous run there is no problem as the previous concept list files will be overwritten with the new concept list files. The file name will be the same as the original text file, substituting the.txt for.csv. For instance mike.txt as an input text file will create a concept list file named mike.csv.

AutoMap will ask if you want to generate a **Union Concept List**. It is a good idea to create this list. All files in the directory you select to save your concept lists in will be used to create the union concept list. If you have old concept lists in there not from the current run, they will also be used.

Viewing a Concept List

From the Pull Down Menu select ***Tools => Concept List Viewer***. From the Viewer Pull Down Menu select ***File => Open File***. Navigate to the directory where your Concept Lists are stored and select one and click **Open**. If a **Concept List** is chosen only the concepts from

one file are displayed. If a **Union Concept List** is chosen it will display concepts from all files. As the concept lists are saved in a standard.csv format, you can also view them in a text editor or a spreadsheet program such as Microsoft Excel.

Creating a Delete List

From the viewer menu you can create a Delete List by placing a check mark in the **Selected** columns then from the Pull Down Menu select ***File => Save as Delete List***. Navigate to the directory, type in a new file name, and click **Open** to save your new Delete List.

Comparing Files

You can also compare the currently loaded file with another using ***File => Compare File***. Navigate to the file to compare the first file with and click **Open**.

AutoMap will color code the concepts: no color means the information is the same in both the original and compared files, **red** means the concept was in the original but not in the compared file, **green** means the concept was not in the original but is in the compared file, and **yellow** the concepts are the same but the data (such as frequency) has changed.

Using Delete Lists

Description

Delete Lists allow you to remove **non-content** bearing conjunctions, articles and other noise from texts. Delete List can be created internally in AutoMap or externally in a text editor. The list itself is a text file that contains a list (one concept per line) of the words to be deleted from the text.

NOTE : *Whether you apply the Delete List(s) before or after applying a Thesauri will depend on your exact circumstances.*

Step 1. Create a Delete List

There are two ways to create a new delete list:

Within AutoMap

Use the Concept List Viewer by select ***Tools => Concept List Viewer***. Place a check mark next to the concepts to include. Form the view menu select ***File => Save as Delete List***. The Delete List created can be viewed in the Delete List Editor by selecting ***Tools => Delete List Editor***.

Outside of AutoMap

Using a text editor or spreadsheet program capable of saving output as.txt files to manually create a Delete List. The main rule is one concept per line.

NOTE : *Delete Lists can be opened in Excel, worked with, and then re-saved as a.txt file.*

Step 2. Load Text Files

From the Pull Down Menu select ***File => Select Input Directory***. Navigate to a directory with your text files and click **Select**.

Step 3. Apply a Delete List

From the Pull Down menu select ***Preprocess => Apply Delete List***. Navigate to the file that contains your delete list and click **Select**.

Step 4. Select Type of Deletion

You will be prompted for the type of delete to perform. Direct will remove the concept entirely, whereas Rhetorical will replace the concept with xxx. Make your selection and click **OK**.

The Results

The results will appear in the Text Display Window.

Using a Generalization Thesaurus

Description

To use a unified key concept to represent many varieties of the same concept. For example to replace a contraction "don't" with its individual words "do not". This would be represented in the file as:

```
don't, do not
```

Be sure there are no extra spaces around the comma as they will be used in the translation. A spreadsheet program will not put in extra spaces.

Step 1. Review Your texts

Read through your texts to identify concepts to place into your thesaurus.

Step 2. Create a Thesaurus

You can create a thesaurus in either a text editor or a spreadsheet program that can save files as.csv files. The format of an entry is **concept,key_concept**. Concept can be single or multiple words and key_concept is one set of words usually separated by underscores.

```
US,United_States
United States,United_States
```

Step 3. Load Text Files

Place all your files in the same directory. Make sure that directory is empty before placing the files. From the Pull Down Menu select ***File => Select Input Directory***. Navigate to a directory with your thesaurus file and click **Select**.

Step 4. Apply Thesaurus

From the Pull Down Menu select ***Preprocess => Apply Generalization Thesauri***. Navigate to a directory with your thesauri and click **Select**. The results will be displayed in the Text Display Window.

Content Analysis to Semantic Network

Description

A semantic network will identify the relationships between concepts in the text.

Step 1. Load Text Files

Place all your files in the same directory. Make sure that directory is empty before placing the files. From the Pull Down Menu select ***File => Select Input Directory***. Navigate to a directory with your text files and click **Select**.

(Optional) Step 2. Create Concept Files

From the Pull Down Menu select ***Generate => Concept List***. Navigate to the directory to store these files (should be an empty directory) and click **Select**. AutoMap will ask if you want to create a Union Concept List. This will be useful for creating a Delete List on multiple files therefore click **Yes**.

(Optional) Step 3. Build a Generalization Thesauri

Review your texts for single concepts under multiple instances. (e.g., U.S. and United States can both be turned into United_States). In a text editor create an csv file with a list of entries consisting of a concept (one or more words in a file) and the new concept (all one string of words usually connected with an underscore) separated by a comma (e.g. U.S.,United_States and United States,United_States).

After constructing this file save it to a directory.

(Optional) Step 4. Apply a Generalization Thesauri

From the Pull Down Menu select ***Preprocess => Apply Generalization Thesauri***. Navigate to the directory containing your new thesaurus file, select a thesaurus, and click **Select**.

(Optional) Step 5. Build a Delete List

Open the Union Concept List with ***Tools => Concept List Viewer***. Place a check mark next to each concept you want placed in the Delete List. From the Pull Down Menu select ***File => Save Delete List*** and navigate to where you want to save it.

(Optional) Step 6. Apply a Delete List

From the Pull down Menu select ***Preprocess => Apply Delete List***. Navigate to the directory containing your delete List, highlight the file,

and click **Select**. The preprocessed files will display in the Text Display Window.

Adjacency

When applying a delete list AutoMap will inquire as to the type of adjacency to use. The **Adjacency option** determines whether AutoMap will replace deleted concepts with a placeholder or not.

- **Direct Adjacency :** Removes concepts in the text that match concepts specified in the delete list and causes the remaining concepts to become adjacent.
- **Rhetorical Adjacency :** Removes concepts in the text that match concepts specified in the delete list and replaces them with **(xxx)**. The placeholders retain the original distances of the deleted concepts. This is helpful for visual analysis.

The newly pre-processed texts can be viewed in the main window.

Step 7. Create a Semantic Network

From the Pull Down Menu select ***Generate => Semantic Network***. AutoMap will generate one XML file for each text loaded for use in ORA. Navigate to the directory to save these files and click Select.

AutoMap will output one XML file for each text file loaded. AutoMap will ask a couple of questions as to how you want to format the DyNetML file. You will be asked to select **Directionality** (Unidirectional or Bidirectional), **Window Size** (maximum distance between two concepts to be connected), **Stop Unit** (Clause, word, sentence, or paragraph), and **Number of [Stop Units]**.

Step 8. Load the DyNetML files in *ORA

Start *ORA and load the newly created **XML** files *ORA.

Multiple Delete Lists and Thesauri

Multiple delete lists and thesauri can be applied to the same text by loading, and applying the first delete list then loading, and applying a subsequent delete list. Any number can be applied in this manner. They can be viewed in order using the Pull Down Menu in the menu bar.

Un-apply a Delete List or a Thesaurus

Delete Lists and Thesauri can be **unapplied** but only in the same order that all preprocessing has been applied. If other preprocessing steps have been taken then you must Undo those steps also.

Modifying a Delete List

After a Delete list is created you can modify it using the **Delete List Editor**. From the Pull Down menu select ***Tools => Delete List Editor***. From the Viewer's Pull Down Menu select File => Open File and navigate to the directory containing your Delete Lists. Place a check mark in the **Select to Remove** column for concepts to remove from the Delete List. Typing concepts into the textbox and clicking **[Add Word]** will add concepts to the Delete List. When you are finished select ***File => Save as Delete List***.

Save text(s) after Delete List

You can save your texts after applying a delete list by selecting from the Pull Down Menu ***File => Save Preprocess Files***. This must be done before any other further preprocessing is performed as this option saves the texts at the highest level of preprocessing.

Interface Details

The Pull Down Menu

File

File => Select Input Directory loads all text files into AutoMap from the directory chosen. All.txt files in the directory will be loaded.

File => Import Text is similar to Select Input Directory as it loads all.txt files from one directory but provides additional support to load text files in other encodings. The default is **Let AutoMap Detect**.

File => Save Preprocessed Text Files saves all your files based on the highest level of preprocessing.

File => Exit will exit the AutoMap GUI program.

Edit

Edit => Set Font allows the user to change the font of the **Display Window**. The importance of changing the font is to display foreign character text. The font choices are based on the fonts available on the computer.

Preprocess

These options permit the cleaning and modification of the text in preparation of generating output. Contains the following preprocessing options: **Remove Extra Spaces, Remove Punctuation, Remove Symbols, Remove Numbers, Convert to Lowercase, Convert to Uppercase, Apply Stemming, Apply Delete List, & Apply Generalization Thesauri**.

These functions alter the text. They may be applied in any order as there should be no side effects.

Generate

Used for the generation of output from preprocessed files. The following output are available: **Concept List, Semantic List, Parts of Speech Tagging, Semantic Network, DyNetML MetaNetawork, Bigrams, Text Properties, Named entities, Feature Selection, Suggested Meta-Network Thesauri, Union Concept Lists**.

These functions output files and are based on the highest level of preprocessing done.

Tools

AutoMap contains a number of Editors and Viewers for the files. These include: **Delete List Editor, Thesauri Editor, Concept List Viewer, Semantic List Viewer, DyNetML Network Viewer**.

These allow the user to edit support files used in preprocessing, or to view the results that have been generated.

Help

The Help file and about AutoMap.

Quick Launch Buttons

These buttons correspond to the functions in the Preprocess Menu.

File Navigation Buttons

Used to display the files in the main window. The buttons contain from left to right: **First, Previous, Goto, Next, and Last**.

Preprocess Order Window

Contains a running list of the preprocesses performed on the files. This can be undone one process at a time with the Undo command. The Undo affects the latest preprocess only.

Filename Box

Displays the name of the currently active file. Using the File Navigation Buttons will change this and as well as the text displayed in the window.

Text Display Window

Display the text for the file currently listed in the Filename Box.

Message Window

Area where AutoMap display the actions taken as well errors encountered.

01 JUL 09

Script Quickstart

The AM3Script is a command line utility that processes large numbers of files using a set of processing instructions provided in the configuration file. Some of the ways in which AutoMap is used:

- To extract a Meta-Network representation of a dynamic/social network as expressed in text.

- To extract a semantic network to understand the relationships between concepts in texts.
- To clean and process text files for example by removing symbols and numbers, deleting unnecessary words, and stemming.
- To identify concepts and the frequency of concepts appearing in texts.

Description

AM3Script uses tags to tell AutoMap which functions to access. Functions are performed in the order they are listed in the config file. All preprocessing functions are followed by all processing functions and finally all post-processing functions are performed. Necessary output files are also written depending on the tags used in the config file.

If working with large numbers of texts it is best to use the script version as opposed to the GUI. The same processing steps available in the AutoMap GUI are available in the AutoMap Script.

Guide Roadmap

A. Script Overview

B. Tag List

C. Tutorial 1: Setting up a run in the Script

D. Tutorial 2: Using Delete Lists

E. Tutorial 3: Using a Thesauri

Before You Begin

AutoMap is a system that starts with text files. Before being able to use the features of AutoMap, it is necessary to have text to process. This text can be obtained from email, news articles, publications, web pages, or text typed in using a text editor.

AM3Script will process all text (.txt) files in a directory. It is not necessary to combine text into a single file. Some larger text files can be split into smaller text files to do analysis of sections individually.

It is suggested the user create sub-directories for input files, output, and support files all within an project directory. This assists in finding the correct files later and prevents AutoMap from overwriting previous files.

```
C:\My Documents\dave\project\input
C:\My Documents\dave\project\output
C:\My Documents\dave\project\support
```

Be sure to create the correct pathway in your config files to assure your files are written into the correct directory.

Running AutoMap Script

Once the configuration file has been created, the AM3Script is ready to use. The following is a brief on running the script.

1. Create a new .config file. Configure the AM3Script .config file as necessary by selecting the tags to use (Tag explanations in next section). Be sure to include pathways to input and output directories. Be sure to name the config file something unique.

   ```
   <Settings>
   <AutoMap
   textDirectory="C:\My Documents\dave\project\input"
   tempWorkspace="C:\My Documents\dave\project\output"
   textEncoding="unicode"/>
   </Settings>
   ```

2. Open a Command Prompt Window

3. Navigate to where the AutoMap3 program is installed. Mine is in Program Files. Yours could be in a different location.

   ```
   e.g. cd C:\Program Files\AM3
   ```

4. To run AM3Script type the following at the command prompt:

   ```
   am3script project.config
   ```

   NOTE : *project.config is the name of my config file. Substitute the name of your config file. Also make sure there is a space between am3script and the name of your file.*

5. AM3Script will execute using the .config file specified.

For Advanced Users

It is possible to set the your PATH environmental variable to include the location of the install directory so that AM3Script can be used in any directory from the command line. Please note this is not recommended for users that have no experience modifying the PATH environmental variable.

Script name

The script.config file can be named whatever you like but we do recommend keeping the **.config** suffix. This way you can do multiple runs to the files in a concise order: **step1.config, step2.config, step3.config.**

Pathways (relative and absolute)

AM3Script config files allow you to specify pathways as either relative or absolute. It's important to know the difference. For relative pathways AutoMap always starts at the location of the AM3Script file. You can go up a directory with (..\) or down into a directory (\aDirectory). The last parameter will be the filename to use.

AM3Script resides in the directory where AutoMap was installed.

The pathway **..\input\aTextFile.txt** tells AutoMap to **go up one directory** then down into the **input** directory and find the file **aTextFile.txt**.

The pathway **C:\My Documents\dave\input\aTextFile.txt** tells AutoMap to start at the root directory of the hard drive and follow the designated pathway to the file.

NOTE : If given a non-existent pathway you will receive an error message during the run.

Tag Syntax in AM3Script

There are two styles of tags in the AM3Script. The first one uses a set of two tags. The first tag starts a section and the second tag ends the section. The second tag will contain the exact same word as the first but will have, in addition, a "/" appended after the word and before the ending bracket. This designates it as an ending tag. All the

parameters/attributes pertaining to this tag will be set-up between these two tags. e.g. <aTag></aTag>.

The second style is the self-ending tag as it contains a "/" within the tag. Any attributes used with this tag are contained within the tag e.g. <aTag attribute="attributeName"/>.

Output Directory syntax (TempWorkspace)

Output directories created within functions under the <PreProcessing> tag will all be suffixed with a number designating the order they were performed in. If a function is performed twice, each will have a separate suffix e.g. Generalization_3 and Generalization_5 denotes a Generalization Thesauri was applied to the text in the 3rd and 5th steps. Using thesauriLocation different thesauri could be used in each instance. For all other functions outside PreProcessing there is no suffix attached.

NOTE : The output directories specified above are in a temporary workspace and the content will be deleted if AM3Script uses this directory again in processing. It is recommended that the directory specified in the temp workspace be an empty directory. Also, for output that user wishes to keep from processing it is recommended to use the outputDirectory parameter within the individual processing step.

Example

```
<AddAttributes3Col attributeFile="C:\My
Documents\dave\project\attributeFiles\attributes.txt" outputDirectory="C:\My
Documents\dave\project\3ColAttribute\" />
```

By using these tags the user can specify where they want the individual processing step output to go. It also makes finding the location of the output files much simpler instead of looking through the contents of the TempWorkspace.

AM3Script Tags Details

<Script></Script> (required)

This set of tags is used to enclose the entire script. Everything used by the script must fall between these two tags. The only line found outside these tags will be the declaration line for xml version and text-encoding information: <?xml version="1.0" encoding="UTF-8"?>

<Settings></Settings> (required)

Used for the setting for the default directories for text and workspace. For AM3Script the tag is <AutoMap/>

NOTE : Any of the parameters can use inputDirectory and outputDirectory to override the default file location. These pathways will be relative to the location of the AM3Script.

<AutoMap/> (Required)

The <AutoMap/> tag contains default pathways used by all functions and the type of text encoding to use. Any function can override these pathways by setting inputDirectory and outputDirectory within it's own tag. The location of text files to process is contained in textDirectory="C:\My Documents\dave\project\input". The location of the files that will be written to the output directory is in class="sometext">tempWorkspace="C:\My Documents\dave\project\output". To specify the encoding method to use set textEncoding="unicode" (currently UTF-8 is the default. AutoMap uses UTF-8 for processing. Please make sure to set text encoding to your correct specification of your text.). AutoDetect will attempt to detect and convert your text over to UTF-8.

<Utilities></Utilities> (required)

The <Utilities> tag contains the sections <PreProcessing>, <Processing>, and <PostProcessing>. All three sections need to be nested within the <Utilities> tag in that order.

AutoMap 3 Preprocessing Tags

<PreProcessing></PreProcessing> (required)

These are utilities that modify raw text. The order the steps are placed in the file is the order they are performed. You can also perform any of these utilities multiple times. e.g. perform a <Generalization/>, then a <DeleteList/>, then another <Generalization/>. Each step's results will be written to a separate output directory.

<RemoveNumbers/>

This parameter accepts either whiteOut="y" or whiteOut="n". A "y" replaces numbers with spaces i.e. C3PO => C PO. A "no" removes the numbers entirely and closes up the remaining text e.g. C3PO => CPO.

<Script>
<Settings>

<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<RemoveNumbers whiteOut="y"/>
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>

<RemoveSymbols/>

This parameter accepts either whiteOut="y" or whiteOut="n". A "y" replaces symbols with spaces. A "no" removes the symbols entirely and closes up the remaining text. The list of symbols that are removed: ~`@#$%^&*_+={}[]\|/<>.

<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<RemoveSymbols whiteOut="y"/>
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>

<RemovePunctuation/>

This parameter accepts either whiteOut="y" or whiteOut="n". A "y" replaces punctuation with spaces. A "no" removes the punctuation entirely and closes up the remaining text. The list of punctuation removed is: .,:;' "()!?-.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
RemovePunctuation whiteOut="y"/>
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>
```

<RemoveExtraWhiteSpace/>

Find instances of multiple spaces and replaces them a single space. Note, there are no extra parameters for this step. It's only function is to reduce multiple spaces to one space.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
RemoveExtraWhiteSpace />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
```

</PostProcessing>
</Utilities>
</Script>

<Generalization/>

The Generalization Thesaurus are used to replace possibly confusing concepts with a more standard form. e.g. a text contains both United States and U.S. The Generalization Thesaurus could have two entries which replace both the original entries with united_states.

If useThesauriContentOnly="n" AutoMap replaces concepts in the Generalization Thesaurus but leaves all other concepts intact. If useThesauriContentOnly="y" then AutoMap replaces concepts but removes all concepts not found in the thesaurus.

The other parameter is thesauriLocation. This allows you to specify the pathway to the thesaurus file to use.

The questions now is whether to use one big thesaurus or several smaller thesauri. When trying to replicate results over many runs using one file is easier to replicate.

The order of the thesauri entries will skew the results. (e.g. if you have both John & John Smith you need to put John Smith first. If John is listed first the end result will be John_Smith_Smith.

<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
Generalization thesauriLocation="C:\My
Documents\dave\project\support\thesauri.csv" useThesauriContentOnly="y" />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>

<DeleteList/>

The Delete List is a list of concepts (one concept per line) to remove from the text files before output file. Set adjacency="d", for direct (removes the space left by deleted words) and remaining concepts now become "adjacent" to each other. Set adjacency="r" for rhetorical (removes the concepts but inserts a spacer within the text to maintain the original distance between concepts).

The other parameter is deleteListLocation which specifies the pathway to the Delete List.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
DeleteList adjacency="r" deleteListLocation="C:\My
Documents\dave\project\support\deleteList.txt" saveTexts="y"/>
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>
```

<FormatCase/>

FormatCase changes the output text to either "lower" or "upper" case. If changeCase="l" then AutoMap will change all text to lowercase. changeCase="u" changes all text to uppercase.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
```

```
<PreProcessing>
<FormatCase changeCase="u"/>
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>
```

<Stemming/>

Stemming removes suffixes from words. This assists in counting similar concepts in the singular and plural forms (e.g. plane and planes). These concepts would normally be considered two terms. After stemming planes becomes plane and the two concepts are counted together.

There are two stemming options: type="k" uses the KSTEM or Krovetz stemmer and type="p" uses the Porter stemmer.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Stemming type="k" />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>
```

<Processing> (required)

These steps are performed after all "Pre-Processing" is finished. They are performed in the order they appear in the AM3Script.

<POSExtraction/>

posType="ptb" specifies a tag for each part of speech. posType="aggregate" groups many categories together using fewer Parts-of-Speech tags.

<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
<posType="ptb" />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>

<Anaphora />

An anaphoric expression is one represented by some kind of deictic, a process whereby words or expressions rely absolutely on context. Sometimes this context needs to be identified. These definitions need to be specified by the user. Used primarily for finding personal pronouns, determining who it refers to, and replacing the pronoun with the name.

<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
<posType="ptb" />
</PreProcessing>

<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>

NOTE : For Anaphora to work POS must be run first.

<ConceptList />

Creates a separate list of concepts for each loaded text file. A Delete List or Generalization Thesauri can be performed before creating these lists to reduce the number of concepts needed to be included in this file. These concept Lists can be loaded into a spreadsheet and sorted by any of the headers.

<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
<ConceptList />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>

<SemanticNetwork/>

A semantic network displays the connection between a text's concepts. These links are defined by four parameters. windowSize: the distance two concepts can be apart and have a relationship. textUnit defined as (S)entence, (W)ord, (C)lause, or (P)aragraph. resetNumber defines the number of textUnits to process before resetting the window. directional defined as Unidirectional (which looks forward only in the text file) or Bi-Directional (which finds relationships in either direction).

<Script>

```
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
<SemanticNetwork windowSize="2 textUnit="S" resetNumber="2" directional="U" />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>

<Meta-Network/>
```

This associates text-level concepts with Meta-Network categories (e.g. agent, resource, knowledge, location, event, group, task, organization, role, action, attributes, when). Concepts can be translated into multiple Meta-Network categories. thesauriLocation="C:\My Documents\dave\project\support" designates the location of the Meta-Network Thesauri, when used.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
Meta-Network thesauriLocation="C:\My
Documents\dave\project\support\thesauri.csv" />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
```

```
</Script>

<UnionConceptList />
```

Union Concept Lists is a list of concepts taken from all texts currently loaded, rather than only one text file. It reports total frequency, related frequency, and cumulative frequencies of concepts in all text sets. It's helpful in finding frequently occurring concepts over all loaded texts.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
<UnionConceptList />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>
```

NOTE : The number of unique concepts considers each concept only once, whereas the number of total concepts considers repetitions of concepts.

```
<NGramExtraction />
```

NGramExtraction creates a file listing all the NGrams, their frequency in the files, their relative frequency to each other, and the gram type.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
```

<Processing>
<NGramExtraction />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>

<SemanticNetworkList />

Creates a file consisting of pairs of concepts and their frequency within the text files. This takes four parameters: windowSize: the distance two concepts can be apart and have a relationship. textUnit defined as (S)entence, (W)ord, (C)lause, or (P)aragraph. resetNumber defines the number of textUnits to process before resetting the window. directional defined as Unidirectional (which looks forward only in the text file) or Bi-Directional (which finds relationships in either direction).

<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
<SemanticNetworkList directional="U" resetNumber="1" textUnit="S" windowsize="5"
/>
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>

<PostProcessing></PostProcessing> (required)

The PostProcessing section contains functions to perform after all Processing steps are complete.

<addAttributes>

Additional attributes can be added to the nodes within the generated DyNetML file. attributeFile="C:\My Documents\dave\project\support\attribute_file" is the pathway to the file which contains a header row with the attribute name.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
<addAttributes attributeFile="C:\My Documents\dave\project\support\attribute_file"
/>
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>
```

This is similar to <addAttributes> but uses name and value.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
<addAttributes3Col attributeFile="C:\My Documents\dave\project\support\3Col_file"
/>
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
```

```
</PostProcessing>
</Utilities>
</Script>

<UnionDynetml/>
```

UnionDynetml creates a union of all DyNetML in a specified directory. It requires a unionType which is s or m. "s" is for a union of semantic networks and "m" is for Meta-Networks.

```
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding="unicode"/>
</Settings>
<Utilities>
<PreProcessing>
<Processing>
<UnionDynetml unionType="s" />
</PreProcessing>
<Processing>
</Processing>
<PostProcessing>
</PostProcessing>
</Utilities>
</Script>
```

Simple Tutorials

Setting Up and Using Thesauri

Description

Thesauri are used to reduce the number of unique concepts in the texts by assigning a key concept to multiple versions of the same concept. This example uses the file structure below. Your file structure may differ

```
C:\My Documents\dave\project\input
C:\My Documents\dave\project\output
C:\My Documents\dave\project\support
```

Step 1: Examining the text

If you know the subject matter then many of the multiple versions of a concept will be known already. Other times it will be necessary to examine the text to determine what those concepts are.

> Ted is a U.S. citizen. He lives in the United States. Ted says, I love living in America.

There are three concepts that all mean the same thing: U.S., the United States, and America.

Step 2: Creating a Thesauri

Once the multiple word concepts are identified you can create a thesauri to combine them into key concepts. Remember:

1. One concept per line
2. Concept and key concept separated by a comma (no spaces before or after the comma)
3. Concept can be multiple words
4. Key concept can only be one word but may contain dividing punctuation (underscores are mainly used for this purpose.

U.S.,the_United_States_of_America
the United States,the_United_States_of_America
America,the_United_States_of_America

Save this file as a .csv file.

Step 3: Using in the .config file

Place the tag <Generalization thesauriLocation="C:\My Documents\dave\support\genThes.csv" useThesauriContentOnly="y"> in the <PreProcessing> section. Select whether to use thesauri content only: y (make thesaurus replacements but output only the concepts listed in the thesaurus) or n (no: make thesaurus replacements but output all concepts). Place the pathway to your newly created Thesaurus in the thesauriLocation parameter.

Step 4: Run the script

Open a Command Run window and navigate to the directory where AutoMap3 was installed. At the prompt type am3script project.config file. When finished navigate to the output directory denoted in the.config file to find your output files.

Step 5: View the Results

Open the newly created text files in a text editor to review.

>Setting Up and Using Delete Lists

Description

Delete Lists can be created using a text editor or spreadsheet program.

Step 1: Creating Delete Lists with a text editor

Open your text editor or spreadsheet and create a list of concepts to use as a Delete List. Place only one, single word concept per line. Save as a .txt file.

Step 2. Make a new .config file

Make a copy of the standard .config file and open it in a text editor. Specify where your input is and write the output files

textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"

Save this new .config file in the same directory as the AM3Script file. If the file is not in the same directory then AM3Script will fail.

Step 3: Using in the .config file

Place the tag <DeleteList adjacency="" deleteListLocation=""> in the <PreProcessing> section. For adjacency select d (direct: totally remove deleted concepts) or r (rhetorical: replace deleted concepts with a placeholder). Place the pathway to your newly created Delete List in the deleteListLocation parameter.

```
<DeleteList adjacency="r" deleteListLocation="C:\My
Documents\dave\project\support\deleteList.txt" />
```

Step 4: Run the script

Navigate to the directory containing AutoMap3. At the command prompt type am3script project.config. Check for your output files in the directory designated in the .config file

Setting up and Running a Script

Description

Running the script requires the use of the Command Line Prompt. This is found in the Start menu. It's exact location may be different depending on the setup of your particular computer. It is normally found in the "All Programs" option in the "Accessories" directory.

Step 1. Create WorkSpace for input & output files

Navigate to your workspace and create a project directory. Inside this directory create and input and output directory.

C:\My Documents\dave\project
C:\My Documents\dave\project\input
C:\My Documents\dave\project\output
C:\My Documents\dave\project\support

Step 2. Place your text files in the input directory

Copy all your text files into the C:\My Documents\dave\project\input directory.

Step 4. Place your work files in a directory

Place any Delete Lists and Thesauri in the C:\My Documents\dave\project\support directory.

Step 5. Make a new .config file

Make a copy of the standard .config file and open it in a text editor. Tell AutoMap where your input files are and where you want the output written. Under the <AutoMap> tag is textDirectory (where you placed your text files) and tempWorkSpace (where you want AutoMap to write your output files. This config file is setup to apply a thesaurus, apply a delete list, and produce concept lists.

Step 6. Determine the Preprocessing functions to use

Review the list of AutoMap tags to determine which script tags will be necessary. Insert those tags into your new .config file in the proper location. Set the parameters for each function you are using. Some functions do not require any additional parameters while others require to tell AutoMap the type of processing you want.

```
<?xml version="1.0" encoding="UTF-8"?>
<Script>
<Settings>
<AutoMap
textDirectory="C:\My Documents\dave\project\input"
tempWorkspace="C:\My Documents\dave\project\output"
textEncoding=""/>
</Settings>
<Utilities>

<PreProcessing>
<Generalization thesauriLocation="C:\My
Documents\dave\project\thesauri.csv" useThesauriContentOnly="y" />
<DeleteList adjacency="r" deleteListLocation="C:\My
Documents\dave\project\deleteList.txt" saveTexts="y"/>
</PreProcessing>

<Processing>
<ConceptList />
<UnionConceptList />
</Processing>

<PostProcessing>
</PostProcessing>

</Utilities>
</Script>
```

Save this new .config file in the same directory as the AM3Script file. If the file is not in the same directory then AM3 Script will fail.

Step 7. Open a Command Window

From the Start Menu open a Command Run Window. By default this is in the Accessories folder but may be in a different location on your machine. Navigate to the location which contains AM3Script.

Step 8. Run the Script file

Navigate to the directory containing AutoMap. At the prompt type am3script project.config

02 JUL 09

Non-English Fonts

Description

Many languages use non-Latin fonts with characters not found in the standard set. Latin text sets use a single byte character set. Asian sets (like Chinese) use a double-byte text set. Many fonts require a different method of installation. We suggest you refer to your manual for the proper way to install new fonts for your particular computer and/or operating system.

How can you tell if you need to download a font? Sometimes the fonts are already available on your computer and it's just a matter of changing the settings on your computer so that you can access them. Typically, the newer the operating system, the more languages it will support straight out of the box.

Font Web Sites

The following web sites contain fonts for various non-English languages.

Vistawide World Languages and Culture : A collection of free non-English fonts and information on activating them on your computer.

http://www.vistawide.com/languages/foreign_language_fonts.htm

TypeNow : A collection of free non-English fonts in zip format.

http://www.typenow.net/language.htm

kwintessential : A collection of free non-English fonts.

http://www.kwintessential.co.uk/fonts/foreign-language.html

freelang.net : A collection of free non-English fonts for Windows.

http://www.freelang.net/fonts/index.php

Installation

Guide to Installing East Asian Languages : This page outlines the steps for installing East Asian languages on a computer running Windows. There are pages for Windows 2000 Pro, XP.

http://newton.uor.edu/Departments&Programs/AsianStudiesDept/Language/index.html

Pinyin Joe's Chinese Computing Help Desk : contains information on activating Chinese fonts in XP.

http://www.pinyinjoe.com/pinyin/pinyin_XPfonts.htm

Resources

South Asia Language Resource : The South Asia Language Resource Center is a collaborative effort funded by a grant from the U.S. Department of Education's International Education and Graduate Programs Service. The Language Resource Center at the University of Chicago is one of fifteen nationwide that exist to improve the capacity to teach and learn foreign languages effectively. SALRC primarily focuses on the needs concerning South Asian language pedagogy in American universities.

http://salrc.uchicago.edu/resources/fonts/available/urdu/

23 OCT 09

Content Section

Content

This section contains general explanations of the functions of AutoMap. It details the "What it is" aspect.

Anaphora	Process Sequencing
BiGrams	Semantic Lists
Concept Lists	Semantic Networks
Data Selection	Stemming
Delete Lists	Text Properties
Encoding	Thesauri, General
File Formats	Thesauri, Meta-Network
Format Case	Thesaurus Content Only
Meta-Network	Thresholds
Named Entity	Unions
Networks	Union Concept List
Parts of Speech	Window Size

Anaphora

Description

An anaphoric expression is one represented by some kind of deictic, a process whereby words or expressions rely absolutely on context. Sometimes this context needs to be identified. These definitions need to be specified by the user. Used primarily for finding personal pronouns, determining who it refers to, and replacing the pronoun with the name.

NOTE : *Not all anaphora are pronouns and not all pronouns are anaphora.*

Definition of Anaphora

Repetition of the same word or phrase at the start of successive clauses.

milkAndCookies.txt

```
Dave wants milk and cookies. He drives to the store. He then
buys milk and cookies.
```

The **He** at the beginning of the last two sentences are anaphoric under the strict definition (he refers to Dave).

What is NOT an anaphora

Not all pronouns are anaphoras. If there is no reference to a particular person then it remains just a pronoun.

```
He who hesitates is lost.
```

The **He** at the beginning is NOT an anaphora as it does not refer to anyone in particular.

23 SEP 09

Bi-Grams

Description

BiGrams are two adjacent concepts in the same sentence. Two concepts are not considered a bigram if they are in separate sentences or paragraphs. If a Delete List is run previous to detecting bi-grams then the concepts in the Delete List are ignored. Multiple Delete Lists can be used with a set of files.

Definitions

Frequency:
the number of times that bi-gram occurs in a single text.

Relative Frequency:
The number of times a bi-gram occurs in a single text divided by the maximum occurrence of any bi-gram.

Maximum Occurrence:
The number of times that the bi-gram that occurred the most, occurred in a text.

Relative Percentage:

The percentage of all bi-grams accounted for by the occurrence of this bi-gram.

The Most Common BiGram

Not all bigrams are important. In fact, the most common bigram, **of the**, is usually very unimportant by itself.

For example, in the movie title **Lord of the Rings** the important words are **Lord** and **Rings**. But without the bigram **of the** the title would make no sense: **Lord Rings**. By itself **of the** has no meaning, but within another set of words helps create the proper context.

Changes in Meaning

When individual concepts are formed into bigrams their meanings can change.

Threshold in regards to BiGrams

Threshold is used to detect if there are specific number of occurrences of a Bi-Gram in the text(s). For **Global Threshold** a Bi-gram is detected if the total number of its occurrences in all texts is greater than or equal to the Global Threshold. For **Local Threshold** a Bi-gram is detected if the number of its occurrences in EACH text is greater than or equal to the Local Threshold.

Thresholds Example

GlobalThreshold=5 and LocalThreshold=2

```
text1: bi-gram X occurs 2 times
text2: bi-gram X occurs 3 times
text3: bi-gram X occurs 1 time
```

The bigram "x" qualifies for GlobalThreshold: 2+3+1 >= 5(GlobalThreshold), but it doesn't qualify for LocalThreshold, because for text3 it occurs 1<2 (LocalThreshold) times.

Bi-gram list

Here is an example.

fireman.txt

```
John is a fireman.
```

Bi-Grams:

```
John,is
is,a
a,fireman
```

Bi-grams List using Delete List and Generalization Thesaurus

This is an example of how a Delete List and Generalization Thesaurus can affect the final bi-gram list.

associations.txt

```
John Doe is actively involved in several industry and civic
associations.
```

associationsDeleteList.txt

```
is, in, and
```

associationsThesaurus.csv

```
John Doe,John_Doe
industry,business
civic associations,business
```

Using just the Delete List:

```
John Doe actively involved several industry civic
associations
```

The bi-grams list:

```
John,Doe
Doe,actively
actively,involved
involved,several
several,industry
industry,civic
civic,associations
```

Using just the Generalization Thesaurus:

```
John_Doe is actively involved in several business and
business
```

The bi-grams list:

```
John_Doe,is
```

```
is,actively
actively,involved
involved,in
in,several
several,business
business,and
and,business
```

Using both the Delete List and the Generalization Thesaurus:

```
John_Doe actively involved several business business
```

The bi-grams list:

```
john_Doe,actively
actively,involved
involved,several
several,business
business,business
```

Bi-Gram Chart

The sample text and following chart show the relationship of frequency and relative frequency of the concepts in the text.

businessLeader.txt

```
John Doe is a business leader. John Doe is a president of the
John Doe business.
```

Delete the noise from the text.

businessLeaderDeleteList.txt

```
is a of the
```

Both **John** and **Doe** have a frequency of **3**. The bigram **John Doe** also have a frequency of **3**. This shows these concepts are important as both individual words and the bigram they create.

Words	Frequency	Relative Frequency	Relative Percentage
John	3	1	.3
Doe	3	1	.3
Business	2	.67	.2
Leader	1	.33	.1

President	1	.33	.1
Total Words	10		
Bi-Grams	**Frequency**	**Relative Frequency**	**Relative Percentage**
John Doe	3	1	.37
Doe business	2	.67	.25
business leader	1	.33	.12
Doe president	1	.33	.12
president John	1	.33	.12
Total bi-grams	8		8

5 MAR 10

Concept Lists

Description

A Concept List is all the concepts of one individual file.

Using a Concept List a text can be refined using other functions such as a Delete List (to remove unnecessary concepts) and Generalization Thesaurus (to combine n-grams into single concepts).

Example:

johnDoeInc.txt

```
John Doe works at John Doe Inc.
```

Concept List:

```
John, Doe, works, at, John, Doe, Inc
```

johnDoeIncDeleteList.txt

```
at
```

Concept List after Delete List applied. The concept **at** is now missing.

```
John, Doe, works, John, Doe, Inc
```

johnDoeIncGenThes.csv

```
John Doe Inc,John_doe_inc
John Doe,john_doe
```

After applying Generalization Thesaurus the concept list has fewer concepts but they are more meaningful. **John** and **Doe** are combined into the person's name **John_Doe** as are the three individual concepts **John, Doe, & Inc.** into the name of the **John_Doe_Inc.**.

```
john_doe
works
john_doe_inc
```

NOTE : *The order of the concepts in the Generalization Thesaurus is important. See Order of thesauri entries under Thesauri, Generalization for more information.*

Information obtained from a Concept List

frequency
The number of times a concept was found in a file

relative_frequency
The frequency of any concept divided by the highest value obtained of any frequency.

gram_type

tf-idf
term frequency–inverse document frequency - a statistical measure used to evaluate how important a word is to a document

23 SEP 09

Data Selection

Description

The Feature Selection creates a list of concepts as a TF*IDF (Term Frequency by Inverse Document Frequency) in descending order. This list can be used to determine the most important concepts in a file.

Date Styles

AutoMap understands certain styles of dates as shown below.

With the **month day, year** AutoMap detects the full date unless the day contains the numerical suffix.

```
January 1, 2009 => January 1, 2009, date
January 2nd, 2009 => January 2, date (the year was dropped)
```

The older military style date (with the abbreviated month) of **day month year** were all detected as currency. The modern **day month year** (with fully spelled out month) is detected as a date but drops the day.

```
1 FEB 09 => 1 FEB, currency
2 FEB 2009 => 2 FEB, currency
03 FEB 09 => 03 FEB, currency
04 FEB 2009 => 04 FEB, currency
5 February 2009 => February 2009,date dropped the day
```

The completely numerical style of date is detected as a number.

```
090301 => no entry
20090302 => no entry
```

the first one went undetected but the last three were correctly spotted as dates.

```
2009/4/1 => no entry
2009/04/2 => 2009/04, date (the day was dropped)
2009/4/03 => 2009/4/03, date
2009/04/04 => 2009/04/04, date
```

All detected as dates though some dropped off the year.

```
1/5/2009 => 1/5/2009, date
02/5/2009 => 02/5/2009, date
3/05/2009 => 3/05, date (the year was dropped)
04/05/2009 => 04/05/2009,date
```

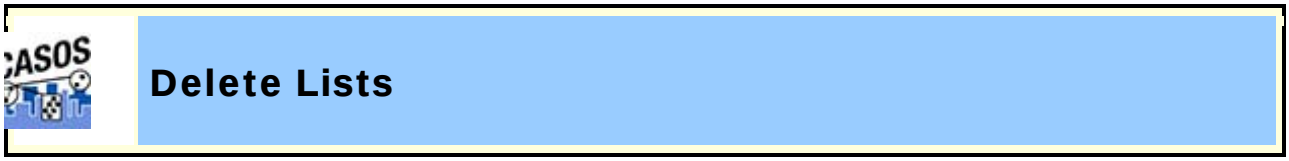
All three detected as dates though some dropped the year.

```
June 1d, 2009 => June 1, date (the year was dropped)
June 2nd, 2009 => June 2, date (the year was dropped)
```

Both detected as dates but both dropped the day.

1 July 2009 => July 2009, date (the day was dropped)
02 July 2009 => July 2009, date (the day was dropped)

17 MAY 10



Description

A Delete List is a list of concepts to be removed from a repository of text files. It is primarily used to reduce the number unnecessary concepts. By reducing the number of concepts being processed, run times are decreased and semantic networks (Kaufer & Carley. 1993) are easier to understand. This also helps in the creation of a semantic network in reducing the number of superficial nodes in ORA.

You can create Delete Lists for each set of files. This allows you to better refine the final output.

There are two types of adjacency: direct and rhetorical. The use of either one will be dictated by your need to maintain the original distance between concepts.

Points to Remember

The Delete List is **NOT** case sensitive. **He** and **he** are considered the same concept. Placing either one in the Delete List will move all instances.

You can create Delete Lists from a text editor or use the tools in AutoMap to assist in creating a specially-tailored Delete List.

All Delete Lists can be edited.

Multiple Delete Lists can be used on the same set of files.

Any Delete List can be saved and used for any other text files.

Adjacency

Direct Adjacency

This removes the concepts from the list totally. The concepts on either side then become adjacent to each other. This **does** affect the spacing between concepts.

tedDeleteList.txt

```
in, the, of, he, on, a, it
```

ted.txt

```
Ted lives in the United States of America. He lives on a
dairy farm. He considers it a good life. Would he ever
consider leaving?
```

Direct Adjacency

```
Ted lives United States America. He lives dairy farm. He
considers good life. Would he ever consider leaving?
```

In the original text is the sentence: **He lives on a dairy farm.** After the deletion the concepts on a are removed and the concepts **lives dairy** are now adjacent.

Rhetorical Adjacency

This removes the concepts but inserts a spacer **xxx** within the text to maintain the original distance between all concepts of the input file. This **does not** affect the spacing between concepts.

tedDeleteList.txt

```
in, the, of, he, on, a, it
```

ted.txt

```
Ted lives in the United States of America. He lives on a
dairy farm. He considers it a good life. Would he ever
consider leaving?
```

Rhetorical Adjacency

```
Ted lives xxx xxx United States xxx America. He lives xxx xxx
dairy farm. He considers xxx xxx good life. Would he ever
consider leaving?
```

NOTE : *xxx means that the concept is temporarily deleted and so is not in the current analytical focus.*

In this example the same two words, **on a**, are removed from the original text. But with rhetorical adjacency spacers are inserted into the text. These two spacers maintain the exact distance between concepts as the original text. The results shows that there are two concepts between **Lives** and **dairy** but the substitution removes the actual concept from the result.

Reasons NOT to use a Delete List

For the most part using a Delete List on a file is a good idea. It removes many concepts that are unnecessary as they do not affect the meaning of the major concepts. But in some style of documents the meaning of two bi-grams could be drastically affected by two seemingly useless words. Most Delete Lists contain the concepts the and a. These two definite articles usually do not change the meaning of the text. But in some instances the meaning could be very substantial.

In a Field Operations manual there is a definite difference between the terms **a response** and **the response**. It is subtle, but very important.

Before using a Delete List, make sure that the words included do not change the meaning of the concepts surrounding them.

14 JAN 10

Text Encoding

Description

A character encoding system consists of a code that pairs a sequence of characters from a given character set (sometimes incorrectly referred to as code page) with something else, such as a sequence of natural numbers, octets or electrical pulses, in order to facilitate the transmission of data (generally numbers and/or text) through telecommunication networks and/or storage of text in computers.

UTF-8 : It is able to represent any character in the Unicode standard, yet is backwards compatible with ASCII. UTF-8 encodes each character (code point) in 1 to 4 octets (8-bit bytes), with the single octet encoding used only for the 128 US-ASCII characters. See the Description section below for details.

NOTE : *If empty boxes appear in the text this is an indication the text is using the Microsoft version of UTF-8 instead of the standard encoding.*

Western : A standard character encoding of the Latin alphabet. It is less formally referred to as Latin-1. It was originally developed by the ISO, but later jointly maintained by the ISO and the IEC. The standard, when supplemented with additional character assignments (in the C0 and C1 ranges: 0x00 to 0x1F and 0x7F, and 0x80 to 0x9F), is the basis of two widely-used character maps known as ISO-8859-1 (note the extra hyphen) and Windows-1252.

UTF-16 : (Unicode Transformation Format) is a variable-length character encoding for Unicode, capable of encoding the entire Unicode repertoire. The encoding form maps each character to a sequence of 16-bit words. Characters are known as code points and the 16-bit words are known as code units. For characters in the Basic Multilingual Plane (BMP) the resulting encoding is a single 16-bit word. For characters in the other planes, the encoding will result in a pair of 16-bit words, together called a surrogate pair. All possible code points from U+0000 through U+10FFFF, except for the surrogate code points U+D800-U+DFFF (which are not characters), are uniquely mapped by UTF-16 regardless of the code point's current or future character assignment or use.

GB2312 : The registered internet name for a key official character set of the People's Republic of China, used for simplified Chinese characters. GB abbreviates Guojia Biaozhun, which means national standard in Chinese.

Big5 : The original Big5 character set is sorted first by usage frequency, second by stroke count, lastly by Kangxi radical. The original Big5 character set lacked many commonly used characters. To solve this problem, each vendor developed its own extension. The ETen extension became part of the current Big5 standard through popularity.

NOTE : *AutoMap uses the* ***Hard Return*** *to designate paragraph breaks.*

Text Direction

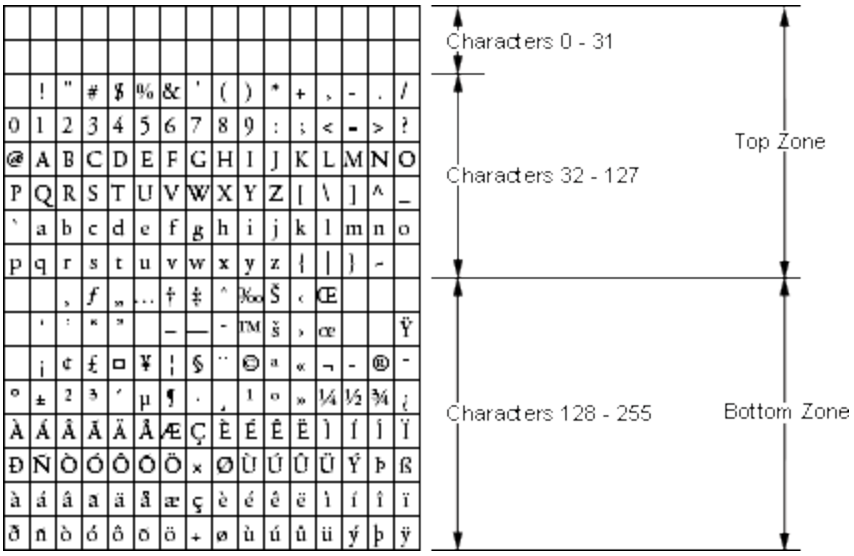
Languages can be written either left-to-right (LTR) or right-to-left (RTL). The majority of languages use a LTR syntax. The most notable RTL languages are Arabic and Hebrew.

Single-Byte Fonts

Each character in a font uses a keystroke or combination of keystrokes to produce the character. Fonts based on most Western languages will have 256 possible characters. Each character in these fonts is one-byte in length. A one-byte character can have one of 256 possible values.

In a font, each character is arranged in a specific order. This is called a font's **encoding**, which is explained in more detail below. The computer uses this information to tell which character to display or print when a key is pressed. The spaces occupied by characters are called **slots**. Each slot represents a different keypress. For example, if you were working on a word-processing document and you were to hold the Shift key while pressing the letter "A" on the keyboard, you would see the letter **A** appear on the screen.

If you will notice, in the character map below, there are 2 **zones** - the top zone and the bottom zone. The top zone has characters 0 through 127 and the bottom zone has characters 128 through 255. The point to this is that characters occupying slots 32 through 127 in the top zone are identical in both Macintosh and Windows operating systems. Characters 0 through 31 (the "lower 32") are usually reserved for the operating system. The slots in the bottom zone (the **extended characters**) are different. These are the ones that will usually cause the problems.



NOTE : *A font's encoding is simply a lookup table (an index) which is used to translate computer codes into the characters in the font.*

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Text Encoding Table

These tables include the text encodings that AutoMap is capable of importing.

Basic Encoding Set (contained in lib/rt.jar)

ISO-8859-1	ISO-8859-2	ISO-8859-4	ISO-8859-5
ISO-8859-7	**ISO-8859-9**	**ISO-8859-13**	**ISO-8859-15**
KOI8-R	US-ASCII	UTF-8	UTF-16
UTF-16BE	**UTF-16LE**	**windows-1250**	**windows-1251**
windows-1252	windows-1253	windows-1254	windows-1257

Extended Encoding Set (contained in lib/charsets.jar)

Big5	Big5-HKSCS	EUC-JP	EUC-KR

GB18030	GB2312	GBK	IBM-Thai
IBM00858	IBM01140	IBM01141	IBM01142
IBM01143	**IBM01144**	**IBM01145**	**IBM01146**
IBM01147	IBM01148	IBM01149	IBM037
IBM1026	**IBM1047**	**IBM273**	**IBM277**
IBM278	IBM280	IBM284	IBM285
IBM297	**IBM420**	**IBM424**	**IBM437**
IBM500	IBM775	IBM850	IBM852
IBM855	**IBM857**	**IBM860**	**IBM861**
IBM862	IBM863	IBM864	IBM865
IBM866	**IBM868**	**IBM869**	**IBM870**
IBM871	IBM918	ISO-2022-CN	ISO-2022-JP
ISO-2022-KR	**ISO-8859-3**	**ISO-8859-6**	**ISO-8859-8**
Shift_JIS	TIS-620	windows-1255	windows-1256
windows-1258	**windows-31j**	**x-Big5_Solaris**	**x-euc-jp-linux**
x-EUC-TW	x-eucJP-Open	x-IBM1006	x-IBM1025
x-IBM1046	**x-IBM1097**	**x-IBM1098**	**x-IBM1112**
x-IBM1122	x-IBM1123	x-IBM1124	x-IBM1381
x-IBM1383	**x-IBM33722**	**x-IBM737**	**x-IBM856**
x-IBM874	x-IBM875	x-IBM921	x-IBM922
x-IBM930	**x-IBM933**	**x-IBM935**	**x-IBM937**
x-IBM939	x-IBM942	x-IBM942C	x-IBM943
x-IBM943C	**x-IBM948**	**x-IBM949**	**x-IBM949C**
x-IBM950	x-IBM964	x-IBM970	x-ISCII91
x-ISO2022-	**x-ISO2022-**	**x-iso-8859-11**	**x-**

CN-CNS	CN-GB		JISAutoDetect
x-Johab	x-MacArabic	x-MacCentralEurope	x-MacCroatian
x-MacCyrillic	**x-MacDingbat**	**x-MacGreek**	**x-MacHebrew**
x-MacIceland	x-MacRoman	x-MacRomania	x-MacSymbol
x-MacThai	**x-MacTurkish**	**x-MacUkraine**	**x-MS950-HKSCS**
x-mswin-936	x-PCK	x-windows-874	x-windows-949
x-windows-950			

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File Formats

Description

There are many types of text formats available. Only the text format with the .txt extension works correctly in AutoMap. If your data is in any other format it must be converted before using it in AutoMap.

Text Formats The only format AutoMap can read. Uses the .txt file extension.

Other text formats

- **ASCII :** (American Standard Code for Information Interchange) is the lowest common denominator. There are actually two ASCII codes. The original 128 character, 7-bit code and the expanded 256 character, 8-bit code.
- **CSV :**(Comma Separated Value) A file type that stores tabular data. The format dates back to the early days of business computing. For this reason, CSV files are common on all computer platforms.

- **EBCDIC :**(Extended Binary Coded Decimal Interchange Code) is an 8-bit character encoding used on IBM mainframe operating systems such as z/OS, OS/390, VM and VSE, as well as IBM minicomputer operating systems such as OS/400 and i5/OS.

- **HTML :**(Hypertext Markup Language) The predominant markup language used for web pages. It is a text format but uses a tagging system which would be interrupted as concepts by AutoMap.

- **ISO/IEC 8859 :** Standard for 8-bit character encodings for use by computers.

- **RTF :**(Rich Text Format) A proprietary document file format developed by DEC in 1987 for cross-platform document interchange. Most word processors are able to read and write RTF documents.

- **UTF-8 :**(Uniform Transformation Format) It is able to represent any character in the Unicode standard, yet the initial encoding of byte codes and character assignments for UTF-8 is backward compatible with ASCII. For these reasons, it is steadily becoming the preferred encoding for e-mail, web pages, and other places where characters are stored or streamed.

- **XML :**(Extensible Markup Language) A general purpose markup language that allows users to define their own tags.

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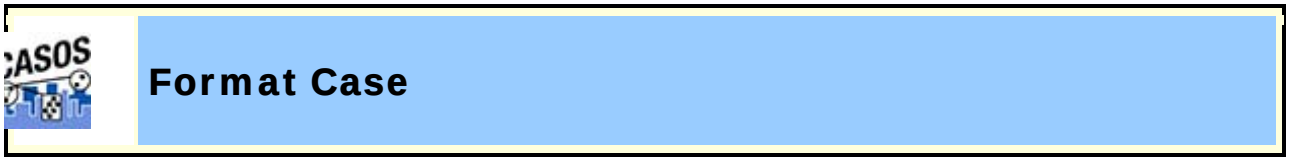


Description

Format Case changes the output text to either all lower or upper case.

Example

Sentence case

Only the first word of the sentence and proper nouns are capitalized.

My name is John Smith and I live in the USA.

Lower case

All letters are lowercase, even proper nouns.

my name is john smith and i live in the usa.

Upper case

All letters are uppercase, even proper nouns.

MY NAME IS JOHN SMITH AND I LIVE IN THE USA.

Title case

The first letter of every word is capitalized.

My Name Is John Smith And I Live In The USA.

NOTE : *The problem with converting text is it disables the ability of Parts of Speech to correctly identify certain parts - such as Proper Nouns.*

13 MAY 09

Meta-Network Thesaurus

Description

The Meta-Network (Carley, 2002) Thesaurus maps key words in a text file with the categories to create a Meta-Network. This can be done at any step of the process but it is suggested that a Delete List and/or General Thesaurus is run previously. This makes sure that unnecessary terms aren't mapped into the network.

It is primarily used for preparing a file for importing into ORA and the creation of a semantic network to analyze. ORA looks for Nodes and NodeClasses. This process groups those concepts into the NodeClasses used by ORA.

A Meta-Network Thesaurus associates concepts with the following Meta-Network categories: Agent, Knowledge, Resource, Task/Event, Organization, Location, Action, Role, Attribute, Any user-defined category (as many as the user defines).

Named Entities

Description

Named-Entity Recognition allows you to retrieve proper names numerals, and abbreviations from texts.

Items it Detects:

- Single words that are capitalized (e.g. Copenhagen).
- Adjacent words that are capitalized (e.g. The New York City Police Department).
- A string of adjacent words that are capitalized, but can be intervened by one non-capitalized word. The first and the last word in this string are capitalized (e.g. Canadian Department of National Defense).

13 MAY 09

Networks

Description

AutoMap is concerned with a variety of different types of networks. Below is a chart showing the various types of networks and how they interact with each other.

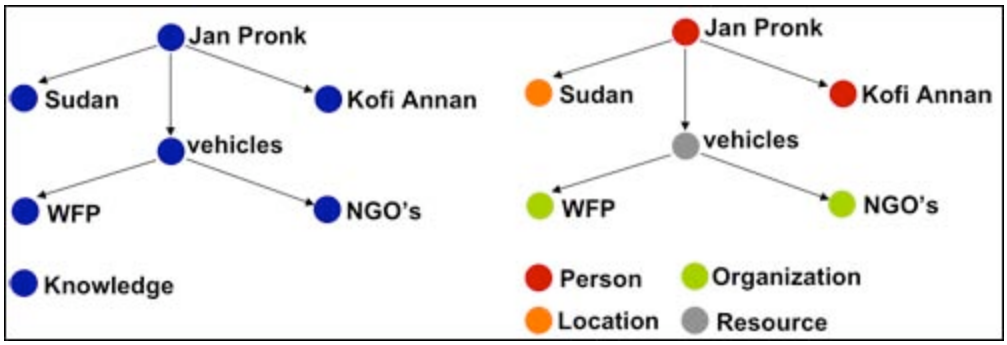
Items it Detects:

Agent	**Interaction Network** **Who knows who Structure**	**Knowledge Network** **Who knows what-Culture**	**Assignment Network** **Who is assigned to what-Jobs**	**Employment Network** **Who works where-Demography**
Knowledge		**Information Network** **What informs what-Data**	**Requirements Network** **What is needed to do what-Needs**	**Competency Network** **What knowledge is where-Culture**
Tasks			**Precedence Network** **What needs to be done before**	**Industrial Network** **What tasks are done**

			what-Operations	where-Niche
Organizations				Inter-organizational Network Which organizations work with which-Alliances

MetaMatrix	Agent	Knowledge	Resource	Task/Event	Organization	Location
agent	Social nw	Knowledge nw	capabilities nw	assignment nw	membership nw	agent location nw
Knowledge		Information nw	Training nw	Knowledge requirement nw	Organizational knowledge nw	Knowledge location nw
Resource			Resource nw	Resource requirement nw	Org. Capabilities nw	Resource location nw
Task/Event				Precedence nw	Org. Assignment nw	Task/Event nw
Organization					Interorg. nw	Org. location nw
Location						Proximity nw

Network Types



One Mode Network

Represent reality that people have in their minds and use to make sense of their surroundings.

Semantic Networks as Mental Models: Single Mode Networks are usually Semantic Networks. Nodes are not distinguished in any way. In the example all nodes are classed as knowledge. Represent reality that people have in their minds and use to make sense of their surroundings. Cognitive constructs that reflect the subjects' knowledge and information about a certain topic.

Multi-Mode Network

Identification and classification of all relevant instances of node and edge classes from texts as efficiently and accurately as possible.

Which agent or group is located where, has access to what resources, possesses what knowledge, is involved in what tasks, has what personal characteristics, ... ?

Nodes are classified by category and ORA can use these classifications for analysis. On the right nodes are classed as person, location, organization or resource.

Multi-Mode networks are **Ontologically coded** socio-technical networks which classify relevant nodes according to some ontology or taxonomy.

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Ontology

Description

AutoMap gives the user the ability to **define their own ontology**.

Instead of just referring to the people involved as **agents** you could differiante them as **good_guys** and **bad_guys**.

Using a new ontology with ORA

Although you can define any node to be defined by specialty tags ORA will not understand these new definitions. When producing a report, such as Emergent Leader, ORA will look at nodes tagged by **agent** only.

Standard Meta-Network categories

Below are the standard tags used in ORA for it's reporting.

- **agent :** A person, group, organization, or artificial actor that has information processing capabilities. All whose are agents whether they be a person in a group, a group within an organization, or the organization itself (e.g. President Barack Obama, the shadowy figure seen outside the building, or the Census bureau). It is up to the user's discretion what sub-category to place these agents in.

  knowledge : Information learned such as a school lecture or knowledge learned from experience (e.g. Excellent knowledge of the periodic table or "I know what you did last summer").

- **resource :** Can be either a physical or intangible object. Anything that can be used for the completion of a job. (e.g. Use a car to drive from point A to point B or use money from a bank account to fund something).

- **task :** A task is part of a set of actions which accomplish a job, problem or assignment. Task is a synonym for activity although the latter carries a connotation of being possibly longer duration (e.g.)

- **event :** Something that happens, especially something of importance. Events are usually thought of as a public occasions but they can also be clandestine meetings. The number of agents can range in the thousands or as few as two agents (e.g. Christmas in Times Square or dinner with friends).

- **organization :** A group of agents working together for a common cause (e.g. The Red Cross or the local chess club).
- **location :** An actual physical place. This could be a room in a building, a city, or a country (e.g. Pittsburgh, PA or my living room).
- **role :** An agents role can be defined as their job for their employer or the part they serve during an event.
- **action :** driving to the mall, eating lunch. Used as a verb.
- **attribute :** Information about the specifics of the agents. These are usually traits that agents have in common, each can be slightly different (e.g. visible traits like hair colour or intangible traits like religious beliefs).
- **when :** Referring to time or circumstances. Can be as broad as a year or as pinpoint as the exact time of a particular day (e.g. Last year or 2:33 PM on March 1st, 2009).

26 OCT 09

Parts of Speech

Description

Parts of Speech assigns a single best **Part of Speech**, such as noun, verb, or preposition, to every word in a text.

While many words can be unambiguously associated with one tag, (e.g. computer with noun), other words match multiple tags, depending on the context that they appear in.

Example : *Wind, for example, can be a noun in the context of weather, and can be a verb that refers to coiling something.) DeRose (DeRose, 1988) reports that over 40% of the words are syntactically ambiguous.*

Parts of Speech is often necessary before other functions are performed specifically when creating a Meta-Network (Carley, 2002). This Parts of Speech tagger is based on the **Hidden Markov Model**.

The Hidden Markov Model

A Hidden Markov model (HMM) is a statistical model in which the system being modeled is assumed to be a Markov process with unknown parameters; the challenge is to determine the hidden parameters from the observable data. The extracted model parameters can then be used to perform further analysis, for example for pattern recognition applications. An HMM can be considered as the simplest dynamic Bayesian network.

Penn Tree Bank (PTB) Parts of Speech Table

CC	Coordinating conjunction	**PRP$**	Possessive pronoun
CD	Cardinal number	**RB**	Adverb
DT	Determiner	**RBR**	Adverb, comparative
EX	Existential there	**RBS**	Adverb, superlative
FW	Foreign word	**RP**	Particle
IN	Preposition or subordinating conjunction	**SYM**	Symbol
JJ	Adjective	**TO**	to
JJR	Adjective, comparative	**UH**	Interjection
JJS	Adjective, superlative	**VB**	Verb, base form
LS	List item marker	**VBD**	Verb, past tense
MD	Modal	**VBG**	Verb, gerund or present participle
NN	Noun, singular or mass	**VBN**	Verb, past participle
NNS	Noun, plural	**VBP**	Verb, non-3rd person singular present
NNP	Proper noun, singular	**VBZ**	Verb, 3rd person singular present
NNPS	Proper noun, plural	**WDT**	Wh-determiner
PDT	Predeterminer	**WP**	Wh-pronoun
POS	Possessive ending	**WP$**	Possessive wh-pronoun

PRP	Personal pronoun	**WRB**	Wh-adverb

Aggregate Parts of Speech

The PTB divides verbs into six subgroups (base form verbs, present participle or gerund verbs, present tense not 3rd person singular verbs, present tense 3rd person singular verbs, past participle verbs, past tense verbs). In some applications you might want to aggregate these into one verb group. Also, for certain purposes, the union of all prepositions, conjunctions, determiners, possessive pronouns, particles, adverbs, and interjections could be collected into one group that represents irrelevant terms.

Aggregation of PTB Categories

Aggregated Tag	Meaning	Number of Categories in PTB	Instances in PTB
IRR	Irrelevant term	16	409,103
NOUN	Noun	2	217,309
VERB	Verb	6	166,259
ADJ	Adjective	3	81,243
AGENTLOC	Agent	1	62,020
ANA	Anaphora	1	47,303
SYM	Noise	8	36,232
NUM	Number	1	15,178
MODAL	Modal verb	1	14,115
POS	Genitive marker	1	5,247
ORG	Organization	1	1,958
FW	Foreign Word	1	803

Noise

Typically, text data includes various types of noise in varying quantity. What precisely qualifies as noise and how much of it will be normalized or eliminated depends on the goal, resources, and researcher. A list can be created which dictates the parameters of what can be included as POS. All tokens that are or comprise any symbol not listed above can be considered as noise.

Why is determining what is noise important? People are typically not interested in predicting tags for symbols, but only for what is typically considered as content. Another point is processing noise takes time and resources. Removing noise first speeds up the process.

johnIsAFireman.txt

```
John is a Fireman in lower Manhattan in New York City. John
was there at the Twin Towers on that day in September.
```

This text can be tagged in two distinct ways: PTB and Aggregated. These POS lists are also done before any other pre-processing such as a Generalization Thesaurus so New, York, and City aren't all tagged individually.

PTB Tagging

```
John/NNP is/VBZ a/DT Fireman/NN in/IN lower/JJR manhattan/NN
in/IN New/NNP York/NNP City/NNP ./. John/NNP was/VBD there/RB
at/IN the/DT Twin/JJ Towers/NN on/IN that/DT day/NN in/IN
September/NNP ./.
```

The aggregated tagging combines many PTB tags into one. In PTB is/VBZ and was/VBD are combined and both are tagged as /VERB.

Aggregated Tagging

```
John/AGENTLOC is/VERB a/IRR Fireman/NOUN in/IRR lower/ADJ
manhattan/NOUN in/IRR New/AGENTLOC York/AGENTLOC
City/AGENTLOC ./. John/AGENTLOC was/VERB there/IRR at/IRR
the/IRR Twin/ADJ Towers/NOUN on/IRR that/IRR day/NOUN in/IRR
September/AGENTLOC ./.
```

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Process Sequencing

Description

When processing data it's important to consider the order which preprocessing functions are done. In some circumstances the output will not be what you expect.

Delete List and Generalization Thesaurus

In the example sentence the concept **the** is both as a stand alone concept and also as part of a title. The first instance is noise and can be eliminated but the second instance is part of the movie title.

rings.txt

```
Dave likes the movie The Lord of the Rings
```

So you create a Delete List and a Generalization Thesaurus to remove the unwanted concepts but conserve the movie title.

ringsDeleteList.txt

```
the
of
```

ringsGenThes.csv

```
The Lord of the Rings,The_Lord_of_the_Rings
```

Run the Delete List then Thesaurus

If the Delete List is applied first with a rhetorical adjacency the following is obtained. You can see that the title can no longer be replaced by the Generalization Thesaurus.

```
Dave likes xxx movie xxx Lord xxx xxx Rings.
```

The replacement in the Generalization Thesaurus is impossible to apply as the **of** and the **the** in the title have been deleted.

Run the Thesaurus then Delete List

But if the Generalization Thesaurus is applied first the title is replaced before the Delete List removes the noise.

```
Dave likes the movie The_Lord_of_the_Rings.
```

Then the Delete List can remove the other **unwanted** concepts.

```
Dave likes xxx movie The_Lord_of_the_Rings.
```

22 JUL 09

Description

Semantic Lists contain pairs of concepts and their frequency in the chosen text file(s).

Direction

Uni-directional : Will only look forward in the text file for a relationship. Any concept that came before will be ignored.

Bi-Directional : Will attempt to find a relationship in either direction of the concept. Both are constrained by windowSize and textUnit.

```
agent1 xxx agent2 xxx agent3.
```

Using **uni-directional and a window size of 3** agent2 would have a relationship to agent3 but not agent1. Relationships can only look forward in the text.

Using **bi-directional and a window size of 3** agent2 would have a relationship to both agent3 and agent1

NOTE : *Using bidirectional can substantially increase the size of the Semantic List. A file with 17 concepts and using a window of 2 produced a unidirectional Semantic List of 13 entries whereas the bidirectional Semantic List consisted of 26 entries.*

Window Size

The distant concepts can be and still have a relationship to one another. Only concepts in same window can form statements. The window is defined in **textUnit**.

Text Unit

The text unit can be comprised of one of the following:

Sentence : a sentence is a grammatical unit of one or more words.

Word : A word is a unit of language that represents a concept which can be expressively communicated with meaning

Clause : A clause consists of a subject and a verb. There are two types of clauses: independent and subordinate (dependent).

> An **independent clause** consists of a subject verb and also demonstrates a complete thought: for example, `"I am sad"`.
>
> A **subordinate clause** consists of a subject and a verb, but demonstrates an incomplete thought: for example, `"Because I had to move"`.

Paragraph : A paragraph is indicated by the start of a new line. It consists of a unifying main point, thought, or idea accompanied by supporting details.

All : The entire text

3 MAY 08

Description

Semantic networks are knowledge representation schemes involving nodes and links between nodes. It is a way of representing relationships between concepts. The nodes represent concepts and the links represent relations between nodes. The links are directed and labeled; thus, a semantic network is a directed graph.

Directional

Uni-directional : will only look forward in the text file for a relationship. Any concept that came before will be ignored.

Bi-Directional : will attempt to find a relationship in either direction of the concept. Both are constrained by windowSize and textUnit.

```
agent1 xxx xxx agent2 xxx xxx agent3.
```

Using **uni-directional** agent2 would have a relationship to agent3 but not agent1. Relationships can only look forward in the text.

Using **bi-directional** agent2 would have a relationship to both agent3 and agent1./p> Window Size

The distant concepts can be and still have a relationship to one another. Only concepts in same window can form statements. The window is defined in **textUnit**.

Text Unit

The text unit can be comprised of one of the following:

Sentence : a sentence is a grammatical unit of one or more words.

Word : A word is a unit of language that represents a concept which can be expressively communicated with meaning

Clause : A clause consists of a subject and a verb. There are two types of clauses: independent and subordinate (dependent). An independent clause consists of a subject verb and also demonstrates a complete thought: for example, "I am sad." A subordinate clause consists of a subject and a verb, but demonstrates an incomplete thought: for example, "Because I had to move."

Paragraph : A paragraph is indicated by the start of a new line. It consists of a unifying main point, thought, or idea accompanied by supporting details.

All : The entire text

Example

dairyFarm.txt

```
Ted runs a dairy farm. He milks the cows, runs the office,
and cleans the barn.
```

Semantic Network parameters:

windowSize="2" textUnit="S" directional="U" resetNumber="1"

Concept List:

concept, frequency, relative_frequency, gram_type
He,1,0.5,single
Ted,1,0.5,single
a,1,0.5,single
and,1,0.5,single
barn,1,0.5,single
cleans,1,0.5,single
cows,1,0.5,single
dairy,1,0.5,single
farm,1,0.5,single
milks,1,0.5,single
office,1,0.5,single
runs,2,1.0,single
the,3,1.5,single

Word List:

Ted, runs, a, dairy, farm, He, milks, the, cows, runs, the, office, and, cleans, the, barn

Property List:

Number of Characters,79
Number of Clauses,4
Number of Sentences,2
Number of Words,16

Semantic Network csv:

concept, concept, frequency
He,milks,1
Ted,runs,1
a,dairy,1
and,cleans,1
cleans,the,1
cows,runs,1
dairy,farm,1
farm,He,1
milks,the,1
office,and,1
runs,a,1
runs,the,1
the,barn,1
the,cows,1
the,office,1

Stemming

Description

Stemming is a process for removing the more common morphological and inflectional endings from words in English. It detects inflections and derivations of concepts in order to convert each concept into the related morpheme. This assists in counting similar concepts in the singular and plural forms (e.g. plane and planes would normally be considered two terms). After stemming, "planes" becomes "plane" and the two concepts are counted together.

This can be broken down into two subclasses, **Inflectional and Derivational**.

- **Inflectional** morphology describes predictable changes a word undergoes as a result of syntax (the plural and possessive form for nouns, and the past tense and progressive form for verbs are the most common in English). These changes have no effect on a word's **part-of-speech** (a noun still remains a noun after pluralizations).
- **Derivational** morphology may or may not affect a word's meaning (e.g.; '-ise', '-ship'). Although English is a relatively weak morphological language, languages such as Hungarian and Hebrew have stronger morphology where thousands of variants may exist for a given word. In such a case the retrieval performance of an IR system would be severely be impacted by a failure to deal with such variations.

K-STEM

KSTEM or Krovetz stemmer (Krovetz, 1995, a dictionary-based stemmer) : The Krovetz Stemmer effectively and accurately removes inflectional suffixes in three steps, the conversion of a plural to its single form (e.g. '-ies', '-es', '-s'), the conversion of past to present tense (e.g. '-ed'), and the removal of '-ing'. The conversion process firstly removes the suffix, and then though a process of checking in a dictionary for any recoding (also being aware of exceptions to the normal recoding rules), returns the stem to a word. This Stemmer is frequently used in conjunction with other Stemmers, making use of the advantage of the accuracy of removal of suffixes by this

Stemmer. For the Krovetz stemmer, several customization options are offered:

K-STEM Example

tedInUSA.txt

```
Ted lives in the United States of America. He lives on a
dairy farm. He considers it a good life. Would he ever
consider leaving?
```

Text after K-Stemming:

```
Ted live in the Unite State of America. He live on a dairy
farm. He consider it a good life. Would he ever consider
leave?
```

Porter Stemming

The **Porter stemmer** uses the Porter Stemming algorithm. Additionally, it converts irregular verbs into the verb's infinitive.

Porter Example

tedInUSA.txt

```
Ted lives in the United States of America. He lives on a
dairy farm. He considers it a good life. Would he ever
consider leaving?
```

Text after Porter Stemming:

```
Ted live in the Unite State of America. He live on a dairi
farm. He consid it a good life. Would he ever consid leav?
```

Languages for Porter Stemming

Each language's stems work differently. Failing to use the correct language files when stemming risks obtaining incorrect results.

Differences in Stemming

There is a difference in the way the Porter and K-Stem functions stem words: **consider(s) and dairy**.

Porter removes both the **er** and the **ers** from the words consider and considers. **K-Stem** removes the **s** from considers and both words end up as consider.

Porter changes the **y** in dairy to an **i** whereas **K-Stem** leaves the word untouched.

Stem Capitalized Concepts

Decide whether or not to stem capitalized words. This will include all proper nouns.

NOTE : *If capitalized words are not stemmed then remember that the first word of each sentence will likewise not be stemmed.*

Porter, M.F. 1980. *An algorithm for suffix stripping.* I 14 (3): 130-137.

Krovetz, Robert 1995. *Word Sense Disambiguation for Large Text Databases.* Unpublished PhD Thesis, University of Massachusetts.

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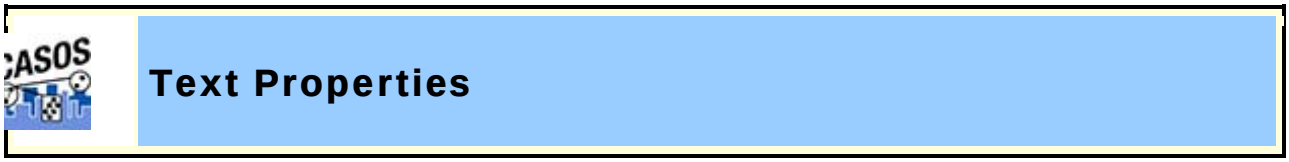

Description

Outputs information regarding the currently loaded files. AutoMap writes one file for each file currently loaded.

milkAndCookies.txt

```
Dave wants milk and cookies. He drives to the store. He then
buys milk and cookies.
```

milkAndCookies.csv

```
Number of Characters,83
Number of Clauses,3
Number of Sentences,3
```

Number of Words,16

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Thesauri, General

Description

The Generalization Thesauri are used to replace possibly confusing concepts with a more standard form (e.g. a text contains United States, USA and U.S. The Generalization Thesauri could have three entries which replace all the original entries with united_states). Creating a good thesaurus requires significant knowledge of the content.

Format of a Thesauri

1. Every line contains a concept found in the text followed by the concept to replace it with. The syntax is **some old concept,some_old_concept**
2. The **original** concept can be one or more words in a row.
3. A **Key** concept **must** be one word.
4. The **original** concept and the **key** concept are separated with a comma.
5. There should not be any space before or after the comma.
6. The Thesaurus is not case sensitive.

Uses for a Generalization Thesauri

Combining multi-word concepts

Peoples names usually consist of two or more individual names like John Smith or Jane Doe.

```
John Smith becomes John_Smith.
```

It is also useful if, after the initial presentation of the full name, a person is referred to by only part of that name. The thesauri would be able to create one concept out of either entry.

```
John Smith becomes John_Smith

John becomes John_Smith.
```

Normalizing abbreviations

Many large companies and organizations are recognized by the abbreviation of their name as well as the name itself.

```
The British Broadcasting Company is routinely known as the
BBC.

The Chief Executive Officer of a company is known as the CEO.
```

NOTE : *Be aware that some ordinary words can be misinterpreted as organizations. One notable example is* ***WHO - World Health Organization****.*

Normalizing contraction

Contractions are used to shorten two concepts into one smaller concept.

```
isn't => is not | I'd => I would | they'll => they will
```

Expanding these contractions out to their roots allows for creating better Delete Lists.

Correcting typos

When typing people routinely make small spelling errors. Many of these are done when people are not sure of the correct spelling.

```
absense,absence | centruy,century | manuever,maneuver
```

Or correcting common typing mistakes

```
hte instead of the | chaor instead of chair
```

Globalizing countries

For some countries there are multiple ways to refer to it's name. America, for example, has many ways to reference it's name.

```
US | U.S. | United States | United States of America | America

Germany | Deutschland (German) | Allemagne (French) | Niemcy (Polish)
```

Creating a thesauri entry for each of these will reduce the number of concepts in a file while grouping all the same concepts, with a variety of names, in the same frequency.

Each set can be contained in a separate thesauri and run on a set of texts individually.

Example:

johnInUSA.txt

```
My name is John Smith and I live in the USA.
```

johnInUSAGenThes.csv

```
John Smith,John_Smith
USA,United_States
```

Text after GenThes applied:

```
My name is John_Smith and I live in the United_States.
```

Thesauri Content Only

Thesauri Content Only creates an output using ONLY the entries found in the thesauri. All other concepts are discarded.

NOTE : *When using this option you need to be aware of what is, and is not, in the thesauri.*

Example with ThesauriContentOnly not activated

johnInUSA.txt

```
My name is John Smith and I live in the USA.
```

johnInUSAGenThes.csv

```
John Smith,John_Smith
USA,United_States
```

Text after Generalization Thesauri applied:

```
My name is John_Smith and I live in the United_States.
```

Example using ThesauriContentOnly

TextjohnInUSA.txt

```
My name is John Smith and I live in the USA.
```

johnInUSAGenThes.csv

```
John Smith,John_Smith
USA,United_States
```

Text after Generalization Thesauri applied with ThesauriContentOnly:

```
John_Smith United_States.
```

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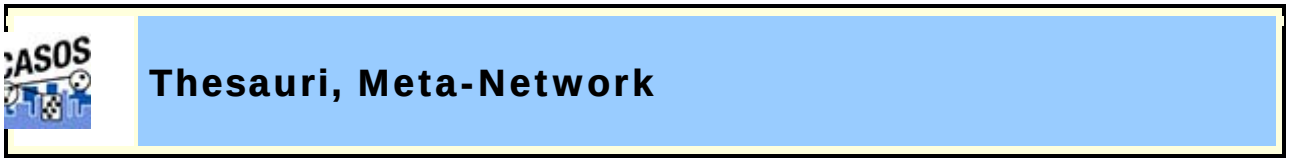

Description

Meta-Network (Carley, 2002) associates text-level concepts with Meta-Network categories {agent, resource, knowledge, location, event, group, task, organization, role, action, attributes, when}. One concept might need to be translated into several Meta-Network categories. For example, the concept commander corresponds with the categories agent and knowledge.

The top level of the Meta-Network ontology is who, what, how, where, why, when. All concepts can be fit to one of these categories.

Meta-Network categories

agent : A person, group, organization, or artificial actor that has information processing capabilities. All "whos are agents, be they a person in a group, a group within an organization, or the organization itself (e.g. President Barack Obama, the shadowy figure seen outside the building, or the Census bureau). Which sub-category the agents are placed in is left to the user.

knowledge : Information learned such as a school lecture or knowledge learned from experience (e.g. Excellent knowledge of the periodic table or "I know what you did last summer").

resource : Can be either a physical or intangible object. A resource is anything that can be used for the completion of a job. (e.g. One uses a car to drive from point A to point B and money to fund a terrorist organization).

task : A task is part of a set of actions which accomplish a job, problem or assignment. Task is a synonym for activity, although the latter carries a connotation of being possibly longer duration

event : Something that happens, especially something of importance. Events are usually thought of as a public occasions, but they can also be clandestine meetings. The number of agents can range in the thousands or as few as two agents (e.g. Christmas in Times Square or dinner with friends).

organization : A group of agents working together for a common cause (e.g. The Red Cross or the local chess club).

location : An actual physical place. This could be a room in a building, a city, or a country (e.g. Pittsburgh, PA or my living room).

role : An agent's role can be defined as their job for their employer or the part they serve during an event.

action : driving to the mall, eating lunch. Used as a verb.

attribute : Information about the specifics of the agents. These are usually traits that agents have in common, each can be slightly different (e.g. visible traits like hair colour or intangible traits like religious beliefs).

when : Referring to time or circumstances. Can be as broad as a year or as pinpoint as the exact time of a particular day (e.g. Last year or 2:33 PM on March 1st, 2009).

Example:

Let's take two short sentences as an example. It contains **people, places, and things**

dairyFarm.txt

```
Ted runs a dairy farm. He milks the cows, runs the office,
and cleans the barn.
```

dairyFarmDeleteList.txt

There are some unnecessary concepts in the text. Using a Delete List will extract the essence of the text. This Delete List is quite short.

```
a, and, in, on, the
```

After applying the delete list, the text appears in the display like this:

```
Ted runs xxx xxx dairy farm. He milks xxx cows, runs xxx
office, xxx cleans xxx barn.
```

Meta-Network Thesaurus:

Now we come to the Meta-Network thesaurus. This file will define the category for each of the **important** concepts we have in the file.

dairyFarmMeta.csv

```
Ted,agent
runs,task
dairy,resource
farm,location
He,agent
milks,task
cows,resource
office,location
cleans,task
barn,location
```

Examining the File

Generating a DyNetML file in AutoMap prepares it to be examined in ORA.

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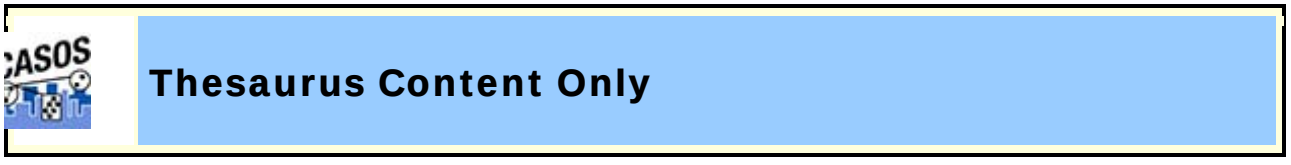

Description

Thesaurus Content Only is an option used with the **Generalization Thesaurus**. It allows you to select how your results will be display and output.

synopsis-2.txt

```
Synopsis: The Tok'ra plan to kill all the System Lords. The
plan is to infiltrate the summit and poison the System Lords.
But they need a "human" who speaks gou'ald and that human is
Daniel Jackson of the SGC. He speaks gou'ald. The Tok'ra
approach Daniel, the SGC, and the U.S. Military, with their
plan and he agrees. SG-1 and SG-17 travel with the Tok'ra to
Revenna. After outlining the plan to Daniel, he is taken by
Jacob Carter to the summit where he is posing as a low
ranking gou'ald. O'Neill stays on Revenna with SG-1 and SG-
17. The assassination plan is proceeding fine until a new
emissary, the gou'ald Osiris, appears. She recognizes Daniel
but stays silent. Daniel and Jacob both know the
assassination of the System Lords would now cause
complications. Meanwhile Revenna is attacked. O'Neill,
Carter, Teal'c, and Elliot help in the defense of the planet.
Daniel escapes the summit. He joins up with Jacob and they
make their escape back to Revenna intending to rescue O'Neill
and SG-1. Their craft is shot down. Elliot sacrifices his
life in order to allow SG-1 to escape.
```

synopsis-2GenThes.csv

```
assassination plan,assassination_plan
Carter,Maj_Samantha_Carter
Daniel,Daniel_Jackson
Daniel Jackson,Dr_Daniel_Jackson
Elliot,Lt_Elliot
gou'ald,gou_ald
Jacob,Jacob_Carter
Jacob Carter,Jacob_Carter
low ranking gou'ald,low_ranking_gou_ald
O'Neill,Col_Jack_O_Neill
SG-1,SG1
SG-17,SG17
speaks gou'ald,speak_gou_ald
summit meeting,summit
System Lord,System_Lords
System Lords,System_Lords
Teal'c,Teal_c
the SGC,Stargate_Command
Tok'ra,Tok_ra
U.S. Military,US_Military
```

Thesaurus Content Only - NO : Selecting **NO** will retain all concepts. Thesaurus concepts will be replaced and the entire text will be displayed in

the window. Below is an example with the replaced thesaurus entries in bold.

> Synopsis: The **Tok_ra** plan to kill all the **System_Lords**. The plan is to infiltrate the summit and poison the **System_Lords**. But they need a "human" who **speak_gou_ald** and that human is **Dr_Daniel_Jackson** of **Stargate_Command**. He **speak_gou_ald**. The **Tok_ra** approach **Daniel_Jackson**, **Stargate_Command**, and the **US_Military**, with their plan and he agrees. **SG1** and **SG17** travel with the **Tok_ra** to Revenna. After outlining the plan to **Daniel_Jackson**, he is taken by **Jacob_Carter** to the summit where he is posing as a **low_ranking_gou_ald**. **Col_Jack_O_Neill** stays on Revenna with **SG1** and **SG17**. The **assassination_plan** is proceeding fine until a new emissary, the **gou_ald** Osiris, appears. She recognizes **Daniel_Jackson** but stays silent. **Daniel_Jackson** and **Jacob_Carter** both know the assassination of the **System_Lords** would now cause complications. Meanwhile Revenna is attacked. **Col_Jack_O_Neil**l, **Maj_Samantha_Carter**, **Teal_c**, and **Lt_Elliot** help in the defense of the planet. **Daniel_Jackson** escapes the summit. He joins up with **Jacob_Carter** and they make their escape back to Revenna intending to rescue **Col_Jack_O_Neill** and **SG1**. Their craft is shot down. **Lt_Elliot** sacrifices his life in order to allow **SG1** to escape.

Thesaurus Content Only - YES : Selecting **YES** will eliminate all concepts that do not exist in the thesaurus. The results will depend on a second option chosen.

Thesaurus content only options:

Direct adjacency : All non-thesaurus concepts will be removed form the display and be replaced with a space.

> : Tok_ra System_Lords. summit System_Lords. "" speak_gou_ald Dr_Daniel_Jackson Stargate_Command. speak_gou_ald. Tok_ra Daniel_Jackson, Stargate_Command, US_Military, . SG1 SG17 Tok_ra . Daniel_Jackson, Jacob_Carter summit low_ranking_gou_ald. Col_Jack_O_Neill SG1 SG17. assassination_plan , gou_ald , . Daniel_Jackson . Daniel_Jackson Jacob_Carter System_Lords . . Col_Jack_O_Neill, Maj_Samantha_Carter, Teal_c, Lt_Elliot . Daniel_Jackson summit. Jacob_Carter Col_Jack_O_Neill SG1. . Lt_Elliot SG1 .

Rhetorical adjacency : Non-thesaurus concepts are removed from the display but are replaced with a **(xxx)** placeholder. This will show the distance between the thesaurus items.

xxx: xxx Tok_ra xxx xxx xxx xxx xxx System_Lords. xxx xxx xxx xxx xxx xxx summit xxx xxx xxx System_Lords. xxx xxx xxx xxx "xxx" xxx speak_gou_ald xxx xxx xxx xxx Dr_Daniel_Jackson xxx Stargate_Command. xxx speak_gou_ald. xxx Tok_ra xxx Daniel_Jackson, Stargate_Command, xxx xxx US_Military, xxx xxx xxx xxx xxx xxx. SG1 xxx SG17 xxx xxx xxx Tok_ra xxx xxx. xxx xxx xxx xxx xxx Daniel_Jackson, xxx xxx xxx xxx Jacob_Carter xxx xxx summit xxx xxx xxx xxx xxx xxx low_ranking_gou_ald. Col_Jack_O_Neill xxx xxx xxx xxx SG1 xxx SG17. xxx assassination_plan xxx xxx xxx xxx xxx xxx xxx, xxx gou_ald xxx, xxx. xxx xxx Daniel_Jackson xxx xxx xxx. Daniel_Jackson xxx Jacob_Carter xxx xxx xxx xxx xxx xxx System_Lords xxx xxx xxx xxx. xxx xxx xxx xxx. Col_Jack_O_Neill, Maj_Samantha_Carter, Teal_c, xxx Lt_Elliot xxx xxx xxx xxx xxx xxx xxx. Daniel_Jackson xxx xxx summit. xxx xxx xxx xxx Jacob_Carter xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx Col_Jack_O_Neill xxx SG1. xxx xxx xxx xxx xxx. Lt_Elliot xxx xxx xxx xxx xxx xxx xxx SG1 xxx xxx.

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Threshold, Global and Local

Description

Thresholds refine the number of concepts to be included when creating the Union Concept List and the individual Concept List files. As the Threshold number is increased, concepts with frequencies less than the threshold are removed from the file when it is written.

Example Texts

Below are three small text files. They are small for demonstration purposes. As will be seen, even small text repositories can create large Concept List files.

theboy-1.txt : See the boy named Dave. He has two toys. One toy is red and the other toy is blue.

theboy-2.txt : On Monday Dave plays with the blue toy. It's his favorite toy.

theboy-3.txt : On all other days Dave plays with the red toy.

Global Threshold

Using the Global Threshold you can control which concepts will not be included in the Union Concept List. Any concept appearing less than the threshold will not be included in the Union Concept List file that's output.

First create a **Union Concept List** using the unprocessed text files. In large text files this can result in an unwieldy list.

ucl.csv with no pre-processing

```
Words,Frequency,Relative Frequency,Relative Percentage
all,1,0.2,0.024390243902439025
and,1,0.2,0.024390243902439025
blue,2,0.4,0.04878048780487805
boy,1,0.2,0.024390243902439025
dave,3,0.6,0.07317073170731707
days,1,0.2,0.024390243902439025
favorite,1,0.2,0.024390243902439025
has,1,0.2,0.024390243902439025
he,1,0.2,0.024390243902439025
his,1,0.2,0.024390243902439025
is,2,0.4,0.04878048780487805
it's,1,0.2,0.024390243902439025
monday,1,0.2,0.024390243902439025
named,1,0.2,0.024390243902439025
on,2,0.4,0.04878048780487805
one,1,0.2,0.024390243902439025
other,2,0.4,0.04878048780487805
plays,2,0.4,0.04878048780487805
red,2,0.4,0.04878048780487805
see,1,0.2,0.024390243902439025
the,4,0.8,0.0975609756097561
toy,5,1.0,0.12195121951219512
toys,1,0.2,0.024390243902439025
two,1,0.2,0.024390243902439025
with,2,0.4,0.04878048780487805
Total,41
Mean,1.64
StDev,0.0
```

With these three short files the list is already unwieldy. To decrease the number of concepts, use pre-processing on the raw text using the Delete List, Stemming, and Thresholds

Removing contractions

Notice the text contains the contraction **it's**. In other texts there will probably be many more. Use a thesauri during pre-processing to expand all contractions. This will expand **it's** to **it is** as well any other contractions found in the thesauri file.

Removing plurals

Next we want to combine the concepts of **toy** and **toys**. They both reference the same item and should be counted as the same concept. Run **Stemming** using KSTEM.

Running a Delete List

Use the Concept List Viewer to create a Delete List of unneeded concepts. Then apply this Delete List.

The Revised Union Concept List

Now generate another concept list.

You will find a list of all the **non-deleted concepts**.

```
Words,Frequency,Relative Frequency,Relative Percentage
all,1,0.16666666666666666,0.030303030303030304
be,2,0.3333333333333333,0.06060606060606061
blue,2,0.3333333333333333,0.06060606060606061
boy,1,0.16666666666666666,0.030303030303030304
dave,3,0.5,0.09090909090909091
day,1,0.16666666666666666,0.030303030303030304
favorite,1,0.16666666666666666,0.030303030303030304
has,1,0.16666666666666666,0.030303030303030304
is,1,0.16666666666666666,0.030303030303030304
it,1,0.16666666666666666,0.030303030303030304
monday,1,0.16666666666666666,0.030303030303030304
name,1,0.16666666666666666,0.030303030303030304
one,1,0.16666666666666666,0.030303030303030304
other,2,0.3333333333333333,0.06060606060606061
play,2,0.3333333333333333,0.06060606060606061
red,2,0.3333333333333333,0.06060606060606061
see,1,0.16666666666666666,0.030303030303030304
toy,6,1.0,0.18181818181818182
two,1,0.16666666666666666,0.030303030303030304
with,2,0.3333333333333333,0.06060606060606061
Total,33
Mean,1.65
StDev,0.0
```

There's a definite difference between the two lists. Originally there were 25 individual concepts. Now there's a total of 20. Using thresholds will reduce them even further.

Thresholds: Local=1 and Global=2

Now the list can be further refined by setting the **Local and Global threshold** parameters.

First, leave **Local to 1** but change **Global to 2**. This tells AutoMap that a concept must appear a total of two or more times in **all** text files to be included in the Union Concept List.

Create a new concept List.

```
Words,Frequency,Relative Frequency,Relative Percentage
be,2,0.3333333333333333,0.09523809523809523
blue,2,0.3333333333333333,0.09523809523809523
dave,3,0.5,0.14285714285714285
other,2,0.3333333333333333,0.09523809523809523
play,2,0.3333333333333333,0.09523809523809523
red,2,0.3333333333333333,0.09523809523809523
toy,6,1.0,0.2857142857142857
with,2,0.3333333333333333,0.09523809523809523
Total,21
Mean,2.625
StDev,0.0
```

The origin list contained 25 concepts. After pre-processing it contained 20 concepts. After setting the Global Threshold to 2 it now contains 8 concepts.

Raising the Global threshold to 3 would remove `be, blue, other, play, red, and with` leaving only 2 concepts (dave and toy) in the file.

Local Threshold

The Local Threshold works on individual files. As the threshold is raised, more concepts are removed from the individual concept list files.

Setting the **Local Threshold=2** and the **Global Threshold=1** will remove any concept that appears only once in any of the loaded files.

The results of all three Runs

File	Total number of Concepts in Original File	Concepts written to files using Local Threshold=2
ucl-1.txt	12	2
ucl-2.txt	9	1

ucl-3.txt	8	0

Example of Concept List per Text for ucl-1.txt

```
Words,Frequency,Relative Frequency,Relative Percentage
be,2,0.6666666666666666,0.4
toy,3,1.0,0.6
Total,5
Mean,2.5
StDev,0.0
```

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Union

Description

Unioning files/networks is a way of combining two or more files/networks into a single unit. There are multiple ways to union a file or network and each will give differing results.

Union Examples

Let's say for example that the terms **John** and **Mary** both appear in two separate files. Now let's say that in file 1 they are connected three times (frequency=3). And in the second file they are connected nine times (frequency=9).

Minimum

The Minimum union of John and Mary will be the lowest number of connections in either file. In this example a frequency of 3 from file 1 becomes the result.

Maximum

The Maximum union of John and Mary will be the highest number of connections in either file. In this example a frequency of 9 from file 2 becomes the result.

Sum

The Sum union of John and Mary will be a total of all the frequencies added together. In this example file 1 frequency=3 and file 2 frequency=9. The sum of these two is 12.

Average

The Average union of John and Mary will be the sum of the two frequencies divided by the total number of files used. In this example file 1 frequency=3 and file 2 frequency=9. The sum of these two is 12. Next divide this sum (12) by the number of files (2) and the result is 6.

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Union Concept List

Description

The Union Concept List differs from the Concept List in that it considers concepts across all texts currently loaded, rather than only the currently selected text file. The Union Concept List is helpful in finding frequently occurring concepts, including those that, after review, can be added to a Delete List.

The Union Concept List includes:

- The concepts found in all files and the total frequency.
- Related, cumulative frequencies of concepts in all text sets.
- Cumulated unique concepts and total concepts contained in the data set.

NOTE : *The number of unique concepts considers each concept only once, whereas the number of total concepts considers repetitions of concepts.*

Definitions

Concept : The individual concepts in the file.

POS : Defines the Parts of Speech of each concept

Frequency : Number of times a concept appears in a file.

Relative Frequency : The frequency of any concept divided by the highest value of any frequency

Relative Percentage : The result of adding all of the relative frequency values then dividing a concept's relative frequency by that value.

Example

Start with two (or more) texts.

johnIsAFireman.txt

```
John is a Fireman in lower Manhattan in New York City. John
was there at the Twin Towers on that day in September.
```

nyc.txt

```
NYC is a city comprised of five boroughs: Manhattan, Queens,
the Bronx, Brooklyn, and Staten Island.
```

A Concept list for each input text:

fireman.csv

```
City,1,0.33333334,single
Fireman,1,0.33333334,single
John,2,0.6666667,single
Manhattan,1,0.33333334,single
New,1,0.33333334,single
September,1,0.33333334,single
Towers,1,0.33333334,single
Twin,1,0.33333334,single
York,1,0.33333334,single
a,1,0.33333334,single
at,1,0.33333334,single
day,1,0.33333334,single
in,3,1.0,single
is,1,0.33333334,single
lower,1,0.33333334,single
on,1,0.33333334,single
that,1,0.33333334,single
the,1,0.33333334,single
there,1,0.33333334,single
was,1,0.33333334,single
```

nyc.csv

```
Bronx,1,1.0,single
Brooklyn,1,1.0,single
Island,1,1.0,single
Manhattan,1,1.0,single
NYC,1,1.0,single
Queens,1,1.0,single
Staten,1,1.0,single
a,1,1.0,single
and,1,1.0,single
boroughs,1,1.0,single
city,1,1.0,single
comprised,1,1.0,single
five,1,1.0,single
is,1,1.0,single
of,1,1.0,single
the,1,1.0,single
```

A Word list for each input file:

fireman.csv

```
John, is, a, Fireman, in, lower, Manhattan, in, New, York,
City, John, was, there, at, the, Twin, Towers, on, that, day,
in, September
```

nyc.csv

```
NYC, is, a, city, comprised, of, five, boroughs, Manhattan,
Queens, the, Bronx, Brooklyn, and, Staten, Island
```

A unionConceptList.csv file using both files:

```
concept, frequency, relative_frequency, relative_percentage
Bronx,1,0.5,0.125
Brooklyn,1,0.5,0.125
Island,1,0.5,0.125
Manhattan,2,1.0,0.25
NYC,1,0.5,0.125
Queens,1,0.5,0.125
Staten,1,0.5,0.125
a,2,1.0,0.25
and,1,0.5,0.125
boroughs,1,0.5,0.125
city,1,0.5,0.125
comprised,1,0.5,0.125
five,1,0.5,0.125
is,2,1.0,0.25
of,1,0.5,0.125
the,2,1.0,0.25
City,1,0.5,0.125
```

```
Fireman,1,0.5,0.125
John,2,1.0,0.25
New,1,0.5,0.125
September,1,0.5,0.125
Towers,1,0.5,0.125
Twin,1,0.5,0.125
York,1,0.5,0.125
at,1,0.5,0.125
day,1,0.5,0.125
in,3,1.5,0.375
lower,1,0.5,0.125
on,1,0.5,0.125
that,1,0.5,0.125
there,1,0.5,0.125
was,1,0.5,0.125
```

This Union Concept List can be used as the basis for creating a Delete List or a Meta-Network Thesauri (Carley, 2002) for all texts loaded.

Using in Excel

A Union Concept List can be sorted in Excel. Open the file in Excel. All the data will appear in a single column. To separate it, first select the column with the data. Then select **Data => Text to Columns** from the menu. In the dialog box select **Delimited** and click Next. Select the check box for **Comma** and click Finish. The data is now in individual columns. To sort the list, highlight the data and select **Data => Sort...**. Select "frequency" under "Sort by" and make sure it is descending. Then select concept under "Then by". Your Union Concept List is sort by frequency.

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Description

The window size determines the span in which connections will be made. The larger the window size, the more connections within that window.

A connection is made between each concept within a window. The window will then shift one concept in the direction of the text (for instance, the window shifts right for most Latin-based languages) and create a new window to analyze. This will continue to the end of the text.

Example

cookiesAndMilk.txt

```
I have cookies and milk
```

Window of concepts 1-3 : I have cookies

```
I have, I cookies, have cookies
```

Window of concepts 2-4 : have cookies and

```
have cookies, have and, cookies and
```

Window of concepts 3-5 : cookies and milk

```
cookies and, cookies milk, and milk
```

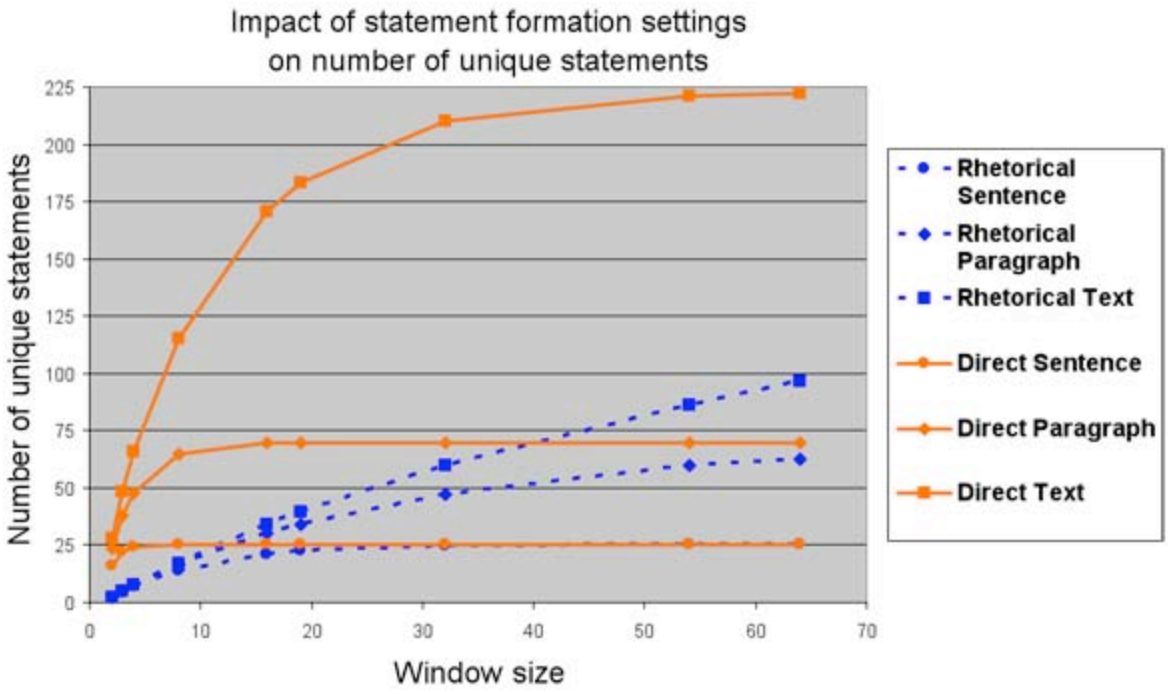
Correct Window Size

Determining a correct window size is important. Choosing too small a window size may result in important links being missed. Too large a window size connects too many concepts, overwhelming important links.

```
Dave likes milk and cookies but John likes cauliflower
```

The example sentence above contains nine concepts. Manually reviewing this sentence reveals that milk and cookies are associated with Dave and cauliflower is associated with John.

But using a direction of **unidirectional** and a window size of **9** results in cauliflower also being associated with Dave.



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GUI Section

GUI Overview

The AutoMap GUI is a graphic interface for quick visualizations of test files. The section contains pages on:

The GUI

The File Menu

The Edit Menu

The Preprocess Menu

The Generate Menu

The Procedures Menu

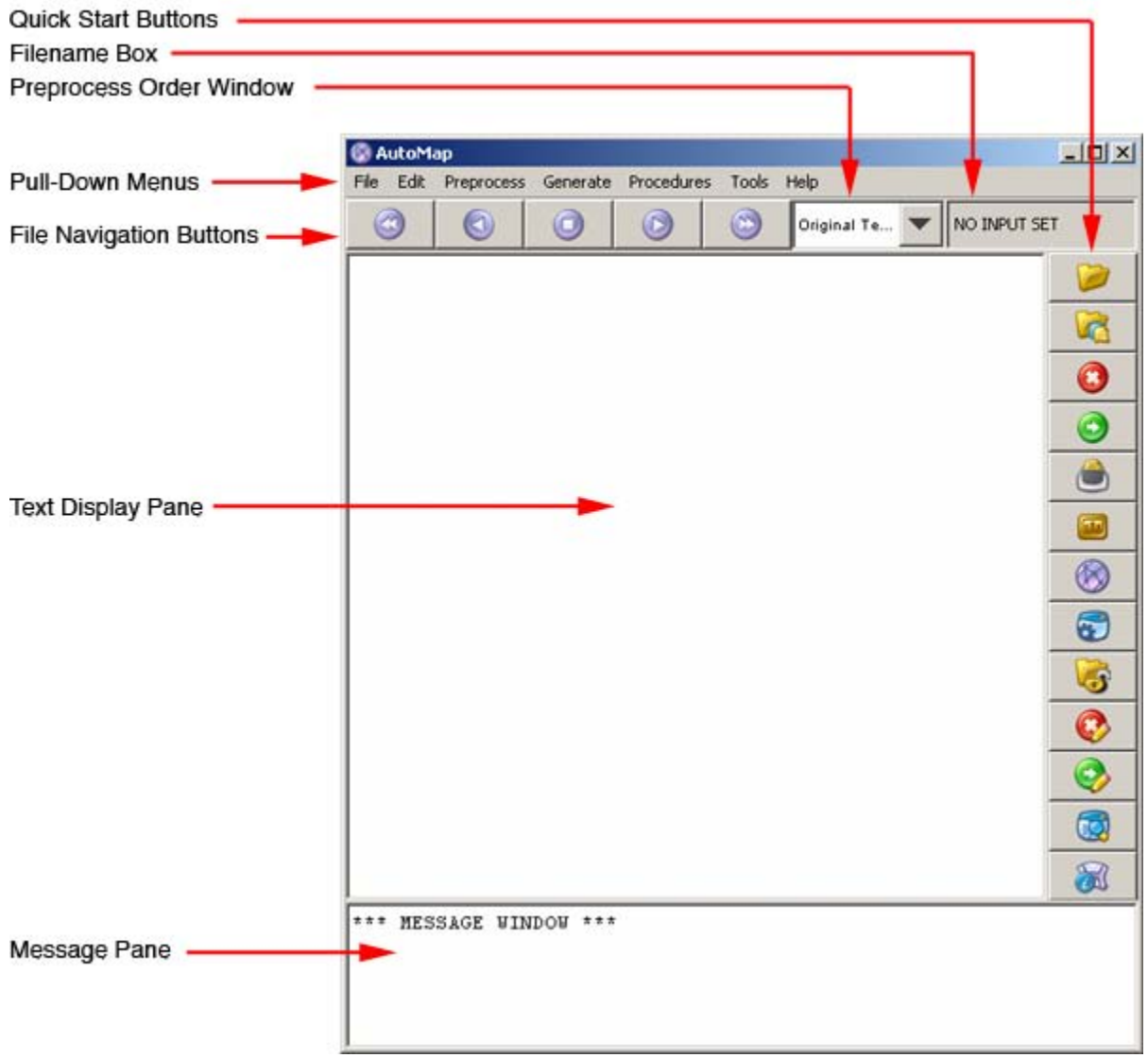
The Tools Menu

The GUI (Graphic User Interface)

Description

The GUI (Graphical User Interface) contains access to AutoMap's features via the menu items and shortcut buttons.

The GUI



The Pull Down Menu

File

Used for loading and saving text files. Can also extract text from other sources (PDFs and the Web).

Edit

Allows the user to change the font of the **Display Window**

Preprocess

Contains all the preprocessing functions used on your text before generating output. These functions work on original text files only.

Generate

Generates output from preprocessed files. The output is directly related to the work done with preprocessing tools.

Tools

External Tools used by AutoMap to View and Edit output. Tools include Concept List and Semantic List viewers and Delete List and Thesaurus editors.

Help

The Help file and about AutoMap.

File Navigation Buttons

Used to display the files in the main window. The buttons contain from left to right: **First** (lowest numbered file), **Previous** (previous file in sequence), **Goto** (Enter number of specific file), **Next** (next file in sequence), and **Last** (last numbered file)

Keyboard Shortcuts

You can navigate through your loaded files using the cursor keys.

Arrow-Left
Go to the Previous Text File.

Arrow-Right
Go to the Next Text File.

Arrow-Up
Go to the First Text File

Arrow-Down
Go to the Last Text File

Preprocess Order Window

Contains a running list of the preprocesses performed on the files in the order they were performed. These can be undone one process at a time with the Undo command starting with the last process done. They can not be undone out of order.

Filename Box

Displays the name of the currently active file along with it's ordinal number and the total number of files loaded. Using the File Navigation Buttons will change this and as well as the text displayed in the window. This also displays the total number of files loaded and the order number of the currently displayed text.

Text Display Window

Displays the text for the currently selected file. The name of this file can be found in the Filename Box.

Message Window

Area where AutoMap display the actions taken as well errors encountered. This area is also a place the user can insert notes about the current session. This can be helpful for later reference. You can copy text from the display window or type notes directly.

Quick Launch Buttons

The Quick Start Buttons contain the most frequently used tools.

NOTE : *More detailed information about the various functions can be found in the Content and Task sections.*

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File Menu

Description

The File Menu contains functions whose main purpose is working with the files themselves. These functions do not perform any processing or generate any output. hey work with raw files to help prepare them for use in AutoMap.

Import Text Files

Allows you to loads one or more files into AutoMap. You can either 1) select an entire directory or 2) select individual files to load. When selecting individual files you can select non-contiguous files by holding down the Control key while clicking the files to select. This is the only command which will actually bring text into AutoMap.

If your imported text is in the UTF-8 the first two lines in the Preprocessing Order Window will be identical. But when importing text in other formats.

Original Text

□□S□y□n□o□p□s□i□s□:□ □T□h□e□ □T□o□k□'□r□a□ □p□l□a□n□ □t□o□ □k□i□l□l□ □a□l□l□ □t□h□e□ □S□y□ s□t□e□m□ □L□o□r□d□s□.□ □T□h□e □ □p□l□a□n□ □i□s□ □t□o□ □i□n□f□ l□i□t□r□a□t□e□ □t□h□e□ □s□u□m□ m□i□t□ □a□n□d□ □p□o□i□s□o□n□ □t□h□e□ □S□y□s□t□e□m□ □L□o□r □d□s□.□ □B□u□t□ □t□h□e□y□ □n□ e□e□d□ □a□ □"□h□u□m□a□n□"□ □ w□h□o□ □s□p□e□a□k□s□ □g□o□u□ '□a□l□d□ □a□n□d□ □t□h□a□t□ □h□ u□m□a□n□ □i□s□ □D□a□n□i□e□l□ □J□a□c□k□s□o□n□ □o□f□ □t□h□e□ □S□G□C□.□ □H□e□ □s□p□e□a□k□s □ □g□o□u□'□a□l□d□.□ □T□h□e□ □T □o□k□'□r□a□ □a□p□p□r□o□a□c□h □ □D□a□n□i□e□l□,□ □t□h□e□ □S□G

Text Imported

□Synopsis: The Tok'ra plan to kill all the System Lords. The plan is to inflitrate the summit and poison the System Lords. But they need a "human" who speaks gou'ald and that human is Daniel Jackson of the SGC. He speaks gou'ald. The Tok'ra approach Daniel, the SGC, and the U.S. Military, with their plan and he agrees. SG-1 and SG-17 travel with the Tok'ra to Revenna. After outlining the plan to Daniel, he is taken by Jacob Carter to the summit where he is posing as a low ranking Gou'ald. O'Neill stays on Revenna with SG-1 and SG-17. The assassination plan is proceeding fine until a new emmissary, Osiris, appears. She recognizes Daniel but stays silent. Daniel and Jacob both know the assassination of the System Lords would now cause complications. Mean

NOTE : *This function only works with text files.*

NOTE : *When using the script you still have to specify an entire directory.*

Transform Documents into Text Files

The types of documents that can be transformed by AutoMap are: **Adobe PDF, Microsoft Word 2003 (.doc), Microsoft Excel 2003 (.xls), Microsoft PowerPoint (.ppt) and HTML files**. This function will extract text from these files **if it is available**.

It will only read one type at a time. You will be asked for the type from the dropdown menu. Then you will be asked to navigate to the directory where the files are located. If you want to convert multiple types of files you will need to perform this function multiple times, once for each type.

NOTE : *When attempting to convert PDF files be aware that some PDFs contain* ***images*** *of the text only. AutoMap can not read this text. Also be aware that some* ***non-Adobe*** *programs create PDFs which may create incompatible PDFs which AutoMap can't extract.*

Extract Web Pages to Text Files

To extract text from a web site you **point AutoMap** to the web site and it will extract everything that page touches **that is on the same site**. It won't go beyond that main site (e.g. no external links). AutoMap will then ask you for an output directory. Make sure the output directory is empty.

All files will be renamed taking a web sites hierarchal structure and creating a flat file (a list of files with no hierarchal structure of folders). The renaming occurs so as to not over-write different files with the same filename. Each file will receive a unique identifying name. It may not be logical to the person but it helps maintain order.

There will also be a file written to the directory called **Index**. This file will have **No extension**. It has no .txt extension so it will never **accidentally** be processed in AutoMap. Index (AutoMap's mapping file) takes the big long web filenames and shows what it has been transformed into. After extracting a web site it is often good to run Deduplicate Files. In many cases there might be files with duplicate content but different filenames.

NOTE : *AutoMap creates many small files from each section of the web page. An average web page could generate hundreds of text files.*

Copy Selected Files

Allows you to copy selected files to another directory. AutoMap will ask you to define a **filter** to detect which files to copy. You can use one of two wild card symbols. The **(*)** symbol takes the place of multiple characters in a filename. (e.g. file1.txt, file20,txt, and file315.txt would all be copied using the filter file*.txt). The **(>)** character is used to replace a single character (e.g. file1.txt and file2.txt would be found using file?.txt but file200.txt would not)>

NOTE : *You must specify an output directory* ***other than*** *your original input directory*

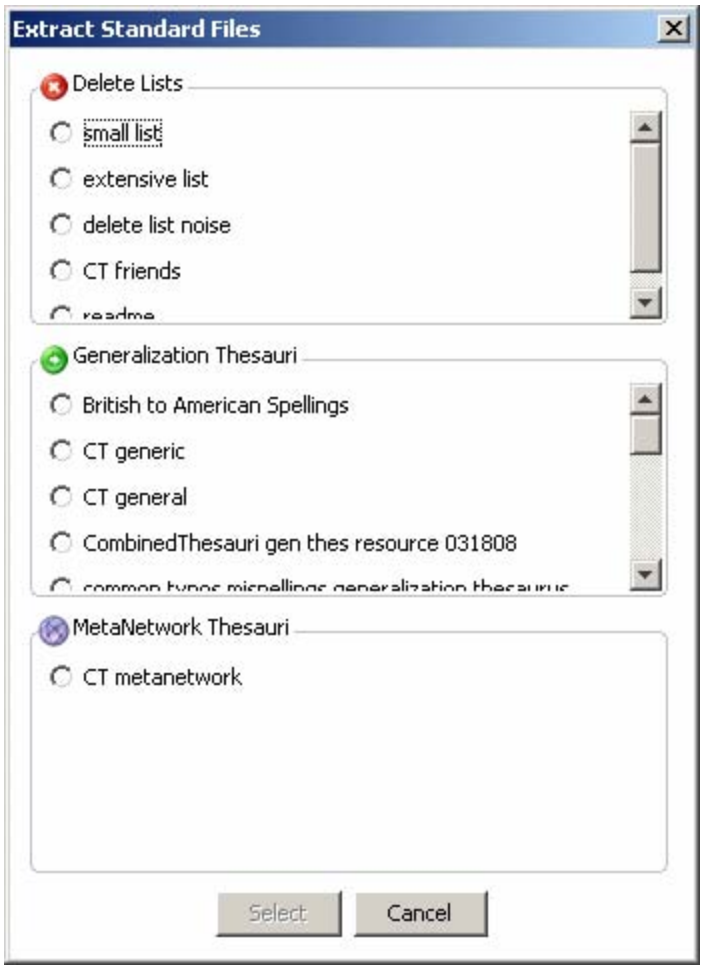
Create New Text File

Allows the user to create a new text file. A textbox will appear which you can either type in text or use the copy-and-paste functions. When you are done, click the **[Save As...]** button to save your new file.

NOTE : *Newly created text files need actual text. A file consisting of* ***white spaces only*** *can not be saved.*

Extract Standard Files

Allows the user t0 extract any standard **Delete List, GeneralizationThesaurus, or Meta-Network Thesaurus** located in the installation of AutoMap. These files are found in the **etc** directory with folder names of **delete, genthes, and metathes**.



NOTE : *You can only extract one file at a time.*

Deduplicate Text Files

Locates duplicate files in a directory. It works on the principle of the file's content, not the filename.

AutoMap will ask you for the directory to check then ask for a directory to write it's output. Two directories will be created: log (containing a text file of it's actions) and removed texts (the text files which are duplicates).

NOTE : *The original files in the original directory remain unaffected.*

Check File Encoding

AutoMap will ask you to navigate to a file. The encoding of the selected file will be displayed in the message window.

Convert File to UTF-8

AutoMap will ask you to select a file. This file will be converted it to the UTF-8 format. AutoMap will only correctly convert text tiles. If you try to convert non-text files and it will convert them **incorrectly**.

This function works a single file at a time.

Save Preprocessed Text Files

By default this saves all text files at the highest level of preprocessing (e.g. the last process shown in the Preprocess Order Window. This procedure can be done any number of times during processing.

NOTE : *If you need to keep a copy of a previously saved set of processed text files you need to either move the first set of files to a new directory or rename the files before you save a new set of files.*

You can also save a set of processed text files from any executed set is shown in the Preprocess Order Window. Highlight the step at which to save the text (see below) and then select this function.

Save Intermediary Text File

Works almost identically to **Save Preprocessed Text Files** except it inserts the **Bell** character at the end of each sentence. This assists in allowing AutoMap in finding the end of sentences.

Save Script File

After performing all your preprocessing steps on your test file you can save the entire procedure as a script file **(e.g. a file ending in .config)**. AutoMap will write out the tags based on the list of preprocesses and with the parameters you set.

See Tools => Script Runner for more information.

Save Message Log Window

During an AutoMap session all of your requests will be reflected in the message window.

***NOTE :** This window is also **user alterable** meaning you can insert notes regarding this session. After completing your work you can save this file for future reference.*

Exit AutoMap

When you exit, AutoMap will ask if you want to save your preferences. Remember, there are two sets of preferences: **User and System**. This includes the directory you visited last, the options you used when you created a Meta-Network (directionally, window, etc.), your font choices, and others. These will be restored the next time you start AutoMap.

***NOTE :** It will not save the state of loaded files after exiting.*

After saving the preferences it will close all files and exit.

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Edit Menu

Description

The following are short descriptions of the functions from Generate Pull Down menu. These functions generate output from preprocessed files.

Set Font

Allows the user to change the font used in the display window. This is important because if you view a file in the wrong font it will **NOT** display properly. Some characters will be displayed improperly while others may be displayed as empty boxes.

NOTE : *It is important to note that* ***Font*** *and* ***Encoding*** *are not the same thing.*

See ***Content => Encoding*** *for more information.*

Set Font Size

Allows the user to change the default font size used in the display window. Choose a size between 8 and 48 points.

Set User Preferences

Show User Preferences

Displays your current settings in a dialog box. These are either the last saved settings (If you used the Save User Preferences) or the setting for the current session (If you have never saved preferences or reset them).

> These preferences include: **Current Font and Size, Current Working Directory, Window Size, Direction Preference, Stop Type Preference, Stop Value Preference, Viewer Preference, Thesaurus Sort Preference, File Union Preference, and Pop-Up Preference.**

Save User Preferences

Saves the preferences listed above. The next time work is begun AutoMap will used the preferences in saved file.

Reset User Preferences

Resets all previously saved user settings.

```
font=Ariel
cwd=whatever your computer is set for
Viewers=Ask Each Time
```

The following preferences give you three choices on how each functions when they are launched.

- **Ask Each Time :** This is the default. Select this option when you are unsure what you will need during a work session.

- **Always Do It :** If you are sure you will need this function you can tell AutoMap to perform it without being bothered to respond to the constant dialog box asking about it.

- **Never Do It :** Similar to the above only setting it to never open up the viewer after working on a file. There are things you only want to do when you need to. You don't want AutoMap asking you **or** automatically doing it. (e.g. you've got some really big sets that you don't want to automatically get launched in a viewer or editor).

Viewer Launch Preference

After certain processes are run on text files you may, or may not, want to view them. You can choose from the options above how you want AutoMap to handle this situation.

Thesaurus Sort Preference

The Sort Thesaurus sorts by the number of words in a key_concept. You can select how you want AutoMap to handle the sorting of your thesaurus before processing.

Union Preference

Some AutoMap functions have an option to create a union file after individual files are processed. You can choose how you want AutoMap to handle creating, or not creating, a union file.

Pop-up Preference

The Pop-Up preference differs from the previous controls as it has only two choices : **Always Do It** and **Never Do It**

Heap Size Preference

Allocates amount of memory for program use.

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Preprocessing Menu

Description

Following is a short description of the preprocessing functions in AutoMap3. These functions serve to prepare files to deliver output by reducing unneeded and unwanted concepts.

More detailed information can be found in the Content section as well as the individual tutorials and lessons.

Undo Last Step

Undo removes the **last** Preprocessing done to the text. This is done one step at a time. To remove multiple preprocessing steps you must perform multiple undos.

Redo All Steps

Reprocesses all Preprocessing steps. Useful if new text files are added or a support file has been altered.

Remove Extra White Space

Removes all cases of multiple white spaces and replaces them with a single space. Regardless of the initial number of spaces, the end result will be one white space.

See Content>Remove White Space for more information

Remove Punctuation

The Remove Punctuation function removes the following punctuation from the text: **.,:;' "()!?-**. You will have the option to remove them completely or replace them with a white space.

See Content>Remove Punctuation for more information

Remove Symbols

The list of symbols that are removed: **~ ` @ # $ % ^ & * _ + = { } [ ] \ | / < >**. You will have the option to remove them completely or replace them with a white space.

Remove User Symbols

If you only want to remove a subset set of the symbols you can create a txt file with only those symbols. The **Remove User Symbols** function will ask for the location of that file and AutoMap leave the remaining symbols in your files.

Remove Single Symbol

Automap asks for **one symbol** to remove from the text file(s).

See Content>Remove Symbols for more information

Remove Numbers

Removing numbers will remove not only numbers as individual concepts but also removes numbers embedded within concepts. The option is to remove completely or replace with a white space.

See Content>Remove Numbers for more information

Convert to Lowercase

Convert to Lowercase changes all text to **lowercase**.

Convert to Uppercase

Convert to Uppercase changes all text to **UPPERCASE**.

See Content>Format Case for more information

Apply Stemming

Stemming removes suffixes from words. This assists in counting similar concepts in the singular and plural forms (e.g. plane and planes would normally be considered two terms). After stemming planes becomes plane

and the two concepts are counted together. Two Stemmers are available, **K-Stem and Porter**.

See Content>Stemming for more information

Apply Delete List

A Delete List is a list of concepts to be removed from a text files. It is primarily used to reduce the number unnecessary concepts. By reducing the number of concepts being processed run times are decreased and semantic networks are easier to understand. This also helps in the creation of a semantic network in reducing the number of superficial nodes in ORA.

See Content>Delete List for more information

Apply Generalization Thesauri

The Generalization Thesauri are used to replace possibly confusing concepts with a more standard form (e.g. a text contains United States, USA and U.S. The Generalization Thesauri could have three entries which replace all the original entries with united_states). Creating a good thesaurus requires significant knowledge of the content.

See Content>Thesauri, General for more information

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Generate Menu

Description

The following are short descriptions of the functions from Generate Pull Down menu. These functions generate output from preprocessed files.

When you run any of the generate functions AutoMap will create a new folder for the results. The folder will begin with the preprocess function end with a number (e.g. Meta-Network1, Meta-Network2...). AutoMap will find the last number in the series and increment the number by one. If no folder exists then AutoMap will create a new folder starting with 1.

Text Properties

Outputs information regarding the currently loaded files. AutoMap writes one file for each file currently loaded containing.

```
Number of Characters,14369
Number of Clauses,325
Number of Sentences,167
Number of Words,2451
```

See Content => Text Properties for more information.

Parts of Speech Tagging

Parts of Speech assigns a single best **Part of Speech**, such as noun, verb, or preposition, to **every word in a text**. While many words can be unambiguously associated with one tag, (e.g. computer with noun), other words can match multiple tags, depending on the context that they appear in.

AutoMap will ask you how you want to save your files. First Automap will ask if you want **Standard** (the entire list of tags) or **Aggregation** (a consolidated list) Parts of Speech tagging. Second you will be asked to save them in the **CSV** or **TXT** format.

```
...
Roman,JJ
citizens,NNS
wandering,VBG
the,DT
...
```

See Content => Parts of Speech for more information.

POS Attribute File

Similar to the above function but if there are multiple occurrences of the same concept it will assign **the best possible Part of Speech** to a concept.

```
...
battlefield,NN
volumnius,PRP
benefit,NN
angrily,CD
...
```

Named Entities

Named-Entity Recognition allows you to retrieve proper names numerals, and abbreviations from texts.

See Content => Named Entity for more information.

Data Extraction

The Feature Selection creates a list of concepts of money and dates.

See Content => Feature Extraction for more information.

Keywords in Context

A list will be created so every concept in a file along with the concepts which both precede it and following it.

```
concept,left,right
Two,,tribunes
tribunes,Two,Flavius
Flavius,tribunes,and
and,Flavius,Murellus
...
```

NOTE : *The first entry* ***Two,,tribunes*** *contains a blank entry for* ***left*** *as it's the first word in the text and has nothing to the left. A similar entry will be found at the end with a blank in the column* ***right****.*

Concept Lists

Concept List (Per Text)

Generates a Concept List for all loaded files. The list contains a concept's frequency (number of times it occurred in a file), relative frequency (a concept's frequency in relationship to the total number of concepts). A Concept List can be refined using other functions such as a Delete List (to remove unnecessary concepts) and Generalization Thesaurus (to combine n-grams into single concepts).

See Content => Concept List for more information.

Concept List (Union Only)

The Union Concept List differs from the Concept List in that it considers concepts across all texts currently loaded, rather than only the currently selected text file. The Union Concept List is helpful in finding frequently occurring concepts, and after review, can be determined as concepts that can be added to the Delete List.

See Content => Union Concept List for more information.

Concept List with Meta-Network (Carley, 2002) Tags

Creates a Concept List which lists a Meta-Network category if applicable.

Concept Network (Per Text)

Creates a separate DyNetML file of concepts for each text file loaded. These files are directly usable in ORA.

Concept Network (Union Only)

Creates one DyNetML file of the concepts in all text files loaded. This is a union file of all concepts. This file is directly usable in ORA.

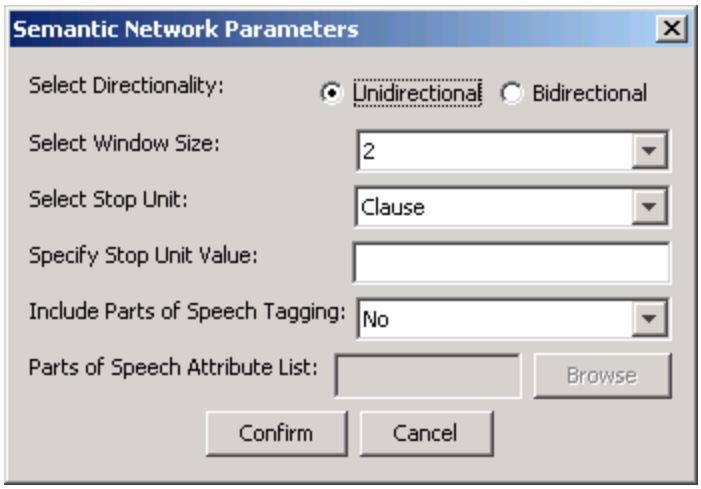
NOTE : *Both Concept Network functions create DyNetML files with one NodeClass and no Networks. Making the connections is up to you after importing the file into ORA.*

NOTE : *Leading and trailing hyphens are removed before generating Concept Lists and Semantic Lists but hyphens in the middle of two words are not (e.g.* ***because-- something*** *removes the double hyphens but in the concept* ***t-shirt*** *the hyphen would not be removed).*

Semantic Networks

Semantic Network DyNetML (Per Text)

Semantic networks are knowledge representation schemes involving nodes and links between nodes. It is a way of representing relationships between concepts. The nodes represent concepts and the links represent relations between nodes. The links are directed and labeled; thus, a semantic network is a directed graph. Semantic Networks created can be displayed in ORA.



Semantic List DyNetML (Union Only)

Creates union file of all DyNetML files in one directory. Before running this make sure that only the DyNetML files you want to union reside in the directory chosen.

<p

See >Content => Semantic Network for more information.

Semantic List

Semantic Lists contain pairs of concepts found in an individual file and their frequency in the chosen text file(s).

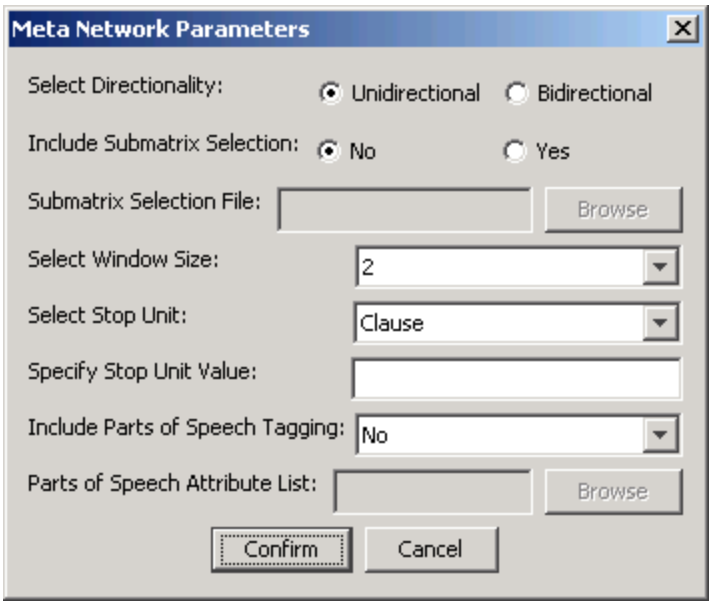
See Content => Semantic List for more information.

***NOTE :** Leading and trailing hyphens are removed before generating Concept Lists and Semantic Lists but hyphens in the middle of two words are not (e.g. **because-- something** removes the double hyphens but in the concept **t-shirt** the hyphen would not be removed).*

Meta-Networks

Meta-Network DyNetML (Per Text)

Assigns Meta-Network (Carley, 2002) categories to the concepts in a file. This is used to create a DyNetML file used in ORA.



The panel contains defaults for all parameters except the **Stop Value for the Stop Unit**. Stop Units are: **Word, Clause, Sentence, Paragraph, or All**.

Meta-Network DyNetML (Union Only)

Creates union file of all Meta-Network (Carley, 2002) DyNetML files in one directory. Before running this make sure that only the Meta-Network (Carley, 2002) files you want to union reside in the directory chosen.

NOTE : *The Union type is a sum type.*

Meta-Network Text Tagging

Creates a Meta-Network (Carley, 2002) List for each loaded file based on a selected Meta-Network Thesaurus. AutoMap will ask you to specify a target directory for the lists it creates. Will tag any concept found in the Meta-Network Thesaurus. All others are tagged as **UNKNOWN**.

Suggested Meta-Network Thesauri

Automatically estimates mapping from text words from the highest level of pre-processing to the categories contained in the Meta-Network. The technology used is a probabilistic model based on a conditional random fields estimation. Suggested thesaurus is a starting point.

A Meta-Network (Carley, 2002) Thesaurus associates concepts with the following Meta-Network (Carley, 2002) categories: **Agent, Knowledge, Resource, Task, Event, Organization, Location, Action, Role, Attribute, and a user-defined categories**.

NOTE : *The more the text is modified the less accurate the CRF generator will be.*

See ***Content => Meta-Network*** *for more information.*

Generalization Thesaurus

BiGrams

BiGrams are two adjacent concepts in the same sentence. If a Delete List is run previous to detecting bi-grams then the concepts in the Delete List are ignored. Multiple Delete Lists can be used with a set of files.

NOTE : *The two concepts of a bigram can not cross a sentence or paragraph boundary*

See ***Content => BiGrams*** *for more information.*

Positive Thesaurus

A Positive Thesaurus takes every concept in the text and defines it as itself. This can be used as the start in building a Generalization Thesaurus.

NOTE : *This function is* ***case specific*** *meaning if the concepts* ***He*** *and* ***he*** *both appear in the text they will both appear in the newly created thesaurus.*

fido.txt

```
John has a dog named Fido
```

Positive Thesaurus

```
John,John
has,has
a,a
dog,dog
named,named
Fido,Fido
```

Procedures

Description

This group of functions work on files other than the currently loaded text files.


Union Concept List Together

With this function you can join **any** concept lists into a Union Concept List file, even if they are from different text sets. Place all the concept lists you want to union into an empty directory. Then navigate this function to that directory. It will create a union of all the files in a newly created sub-directory called **union**.


Networks From Piles


Validate Script

Determines whether a script is valid to run in AutoMap.


Strip File Headers

Removes the **x** number of lines from a file.

NOTE : *This is determined by the user. If given an incorrect number, AutoMap may strip out data.*

Thesaurus Procedures


Apply Stemming to Thesauri File

Takes a thesaurus file and creates new entries if a concept requires stemming. If multiple entries are stemmed to the same root and they have different key_concepts then new entries will be added for each one.

drive.csv
```
drove,alpha
driven,bravo
```

Thesaurus after Stemming

```
drove,alpha
driven,bravo
drive,alpha
drive,bravo
```

Merge Generalization Thesaurus

Combine multiple Generalization Thesauri into one file. AutoMap allows you to select individual files from a directory.

NOTE : *When giving the new file a name remember to also add the .csv extension.*

NOTE : *If a concept exists in two thesauri but have different key_concept values then both will be included in the merge.*

Sort Thesaurus

In certain situations it is important to have your thesaurus sorted from longest to shortest before using it in the preprocess section. Entries with the most number of words are floated to the top of the list

johnSmithDairyFarm.csv - Unsorted

```
John Smith,John_Smith
cow,animal
dairy farm,dairy_farm
pig,animal
The United States of America,the_USA
chicken,animal
Jane Doe,Jane_Doe
```

johnSmithDairyFarm.csv - Sorted

```
The United States of America,the_USA
John Smith,John_Smith
dairy farm,dairy_farm
Jane Doe,Jane_Doe
cow,animal
pig,animal
chicken,animal
```

The United States of America with five words floats to the top. This is followed by the three entries **John Smith, dairy farm, and Jane Doe** each with two words. It finishes with three entries **cow, pig, and chicken** each with one word.

NOTE : *If your thesaurus has duplicate entries (e.g. "John,John_Doe" and "John,John_Smith") a warning will appear in the message window.*
Warning: Duplicate entries found in thesaurus for "John"*.*

Check Thesaurus for Missing Entries

Either entry in a Thesaurus line is blank.

Check Thesaurus for Duplicate Entries

Checks if there are two entries referencing the same item. This is determined by the original concept.

Check Thesaurus for Circular Logic

Sometimes, when creating a generalization thesauri, a concept is accidentally listed as both something to be replaced and something to replace another concept. For example:

```
United States,US
cow,animal
US,United_States_of_America
```

In this case, all instances of "United States" will first be changed to "US" and then to "United_States_of_America". The Circular Logic Test alerts the user of this inefficiency.

Check Thesaurus for Conflicting Entries

Will alert you if two or more Thesaurus entries are directed to replace the same concept.

Apply a Delete List to a Thesaurus

You can use a Delete List to trim a Thesaurus.

Delete List Procedures

Apply Stemming to DeleteList File

Either the **K-Stem** or the **Porter** stemmer can be applied to a delete list, each with slightly different results.

deleteListToStem.txt

original list	K-Stem	Porter
drives	drives	drives
	drive	drive
wanted	wanted	wanted
	want	want
financial	financial	financial
		financi
motivation	motivation	motivation
		motiv

Merge Delete Lists

Combine multiple Delete Lists into one file. AutoMap allows you to select individual files from a directory.

NOTE : *When giving the new file a name remember to also add the .txt extension.*

DyNetML Procedures

Add Attributes (single types)

Used to add a single attribute to a DyNetML file before importing into ORA. The format of the attribute file is:

header row : `headername,title for new attribute`
data row : `node_id, value for new attribute`

Additional rows or data

This will create an attribute column in the DyNetML under which all the values for identified nodes will be displayed.

NOTE : *If the DyNetML file does not contain a particular node_ID then no information for that node_ID will be added to the file.*

Add Attributes (multiple types)

Add Attributes (multiple types) is an extension of the single types function. This is accomplished with the use of a three-column file in the following format.

header row : node_ID,attribute name,attribute value
data row : node_id, which attribute to use, value for new attribute
Additional rows or data

This function allows you to assign attributes in different manners:

One node; different attributes

```
node_ID,type,sub-type
alpha,color,red
alpha,shape,round
alpha,size,medium
```

Different nodes; one attribute

```
node_ID,type,sub-type
alpha,color,red
beta,color,green
charlie,color,blue
```

Different nodes; different attributes

```
node_ID,type,sub-type
alpha,color,red
beta,color,green
beta,shape,square
alpha,shape,round
charlie,color,blue
```

Belief Enhancement

Relocate Source Location in DyNetML

Changes the source reference in a DyNetML file.

Add Icon Reference to DyNetML

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Tools Menu

Description

This section contains external tools for working with files outside what is loaded into the GUI. Any work done here is independent of the files that are loaded.

Delete List Editor

Used to modify existing Delete Lists and create new lists. It can compare two Delete Lists and display the difference between them.

See Tools => Delete List Editor for more information.

Thesauri Editor

Used to modify existing thesauri files by adding or subtracting pairs of concepts. You can also compare two thesauri files and display the difference between them.

See Tools => Thesauri Editor for more information.

Concept List Viewer

Used to view concept lists or compare two concept lists then display the differences. You can also create Delete Lists from any list currently displayed.

See Tools => Concept List Viewer for more information.

Table Viewer

Used to open up any **.csv** file. The major difference between this and the other tools it can compare tables with different amounts of columns.

See Tools => Table Viewer for more information.

XML Viewer

The XML viewer can examine any XML file which includes both Semantic Network files and your DyNetML files. Each file will display it's structure and the individual properties of the nodes and networks.

See Tools => XML Viewer for more information.

Tagged Text Viewer

A viewer that can be used to view text files which have been tagged with **Parts-of-Speech** or **Meta-Network** tags.

See Tools => Tagged Text Viewer for more information.

Script Runner

Script Runner allows you to run an AutoMap script without opening a Command Window.

See Tools => Script Runner for more information.

Network Visualizer

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Tools

Description

This section contains descriptions of the tools contained in AutoMap. The Tools include:

Delete List Editor

Thesaurus Editor

Concept List Viewer

Table Viewer

XML Network Viewer

Tagged Text Viewer

Script Runner

General Notes about Tools

- When running comparisons AutoMap will display details about the comparison in the Message Log Window. This can include some or all of the following: **Lines added, Lines deleted, Lines modified**. More information can be had on the Compare Colors Page
- When saving files in any tool the location where the file is saved will be displayed in the Message Pane.

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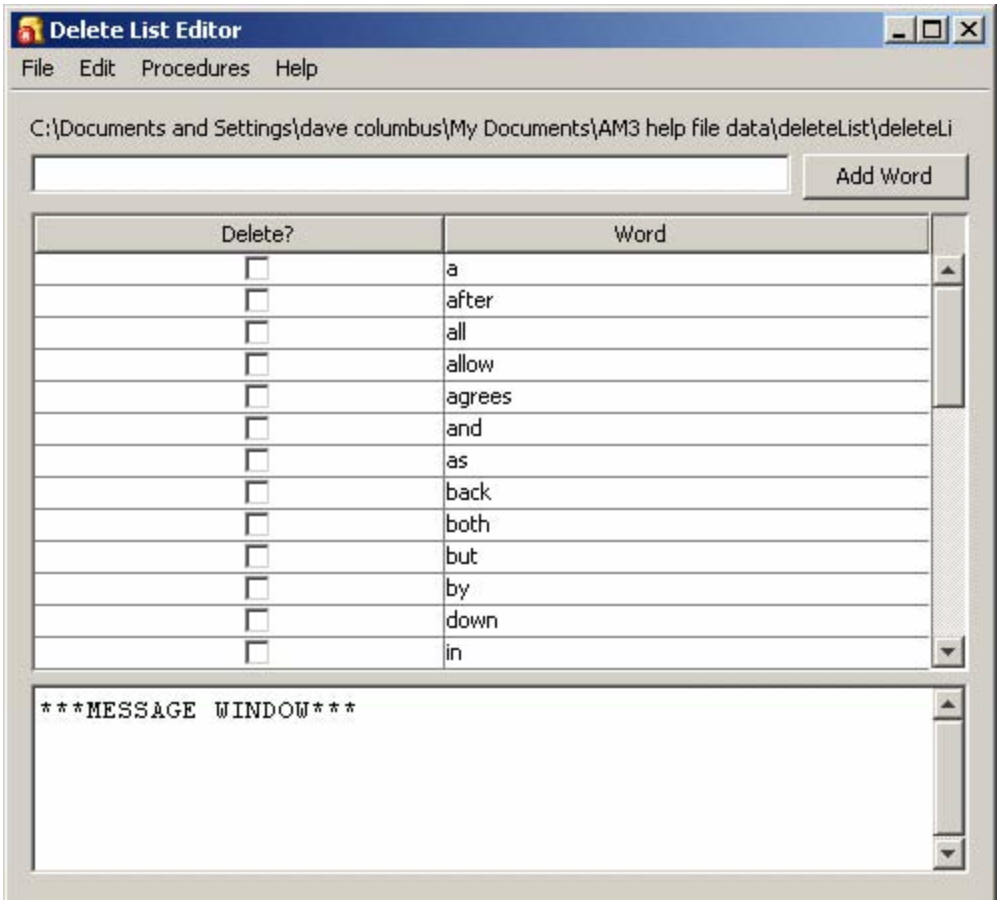
Delete List Editor

Description

The **Delete List Editor** can modify existing Delete Lists or create new Delete Lists.



GUI

- **Adding New Words:** You type a word to add in the textbox then click the **[Add Word]** button. The new word will be added to the list.
- **The Message Window :** Displays message from AutoMap and records all your actions while in the editor.

NOTE : *No concepts are added or deleted until you actually save the file.*

Sorting

To sort the list click on any of the headers. AutoMap will sort the entire list by the clicked header in an **ascending order**. Clicking that same header again will sort the list in a **descending order**. Clicking a different header will once again sort in an **ascending order**.

NOTE : *The small triangle to the right of the header will tell you which header is used for sorting and whether it's in ascending* ***upward facing arrow*** *or descending* ***downward facing arrow*** *order.*

Pull-Down Menus

The File Menu

 **Open File :** Allows the user to select a Delete List to load into Editor. The file should be in the format of **one concept per line**.

NOTE : *If you load a regular text file then each paragraph will be displayed as a single concept in the viewer.*

 **Save :** Saves the Delete List the same location it was imported from. The location of the saved file is displayed in the message window.

 **Save as... :** Saves a Delete List but allows the user to give the file a **new name and save it to a different new directory** than the original.

 **Save Message Log :** Saves the message log from the Delete List window.

 **Convert File to UTF-8 :** Attempts to convert an input file into the UTF-8 format.

 **Exit :** Exits the Delete List Editor and returns to the Main GUI.

The Edit Menu

 **Compare :** Compares a second Delete List to the currently loaded Delete List.

 **Add Terms from Concept List :** Asks user to select a Concept List which will be added to the currently loaded Thesaurus.

 **Add Terms from NGram :** Asks user to select an NGram List which will be added to the currently loaded Delete List.

 **Add Stemmed Terms :** Adds stemmed words to the currently open Delete List. The User will be asked whether to use the Porter Stemmer or the K-Stemmer.

 **Select All :** Selects every concept by placing a check mark in every box in the **Delete?** column.

 **Select None :** Unselects every concept by removing the check marks from every box in the **Delete?** column.

 **Remove Selected :** Removes the concepts which contained a check mark in the Delete? column. The original file remains unaffected.

 **Identify Possible Misspelling :** Highlights in yellow concepts AutoMap may consider misspelled. Hovering over these concepts will give a list of alternatives.

 **Find :** You can search for an exact word or use the **(*)** as a wildcard which substitutes for one or more characters.

NOTE : *Searching for* ***t*e*** *would find* ***the, there, and theatre*** *(if all three were in your list.*

 **Reset Colors :** Clears the color backgrounds from all cells.

NOTE : *The colors are cleared but any extra cells from the compared file remain on screen. To do a new comparison open a new file.*

The Procedures Menu

The functions in this pull-down menu do not affect the currently loaded Thesaurus. They are identical to the functions that can be found in the Main GUI.

 ***Apply Stemming to Delete List :*** *You are asked to select a stemmer to apply (Porter Stemmer or K-Stem). All newly stemmed words will be added to the Delete List on screen. You need to use one of the* ***Save options*** *to keep this new list.*

Merge Delete Lists : *Allows you to select two or more Delete Lists and combine them into one. AutoMap will then prompt you to save the new Delete List with a new name and location.*

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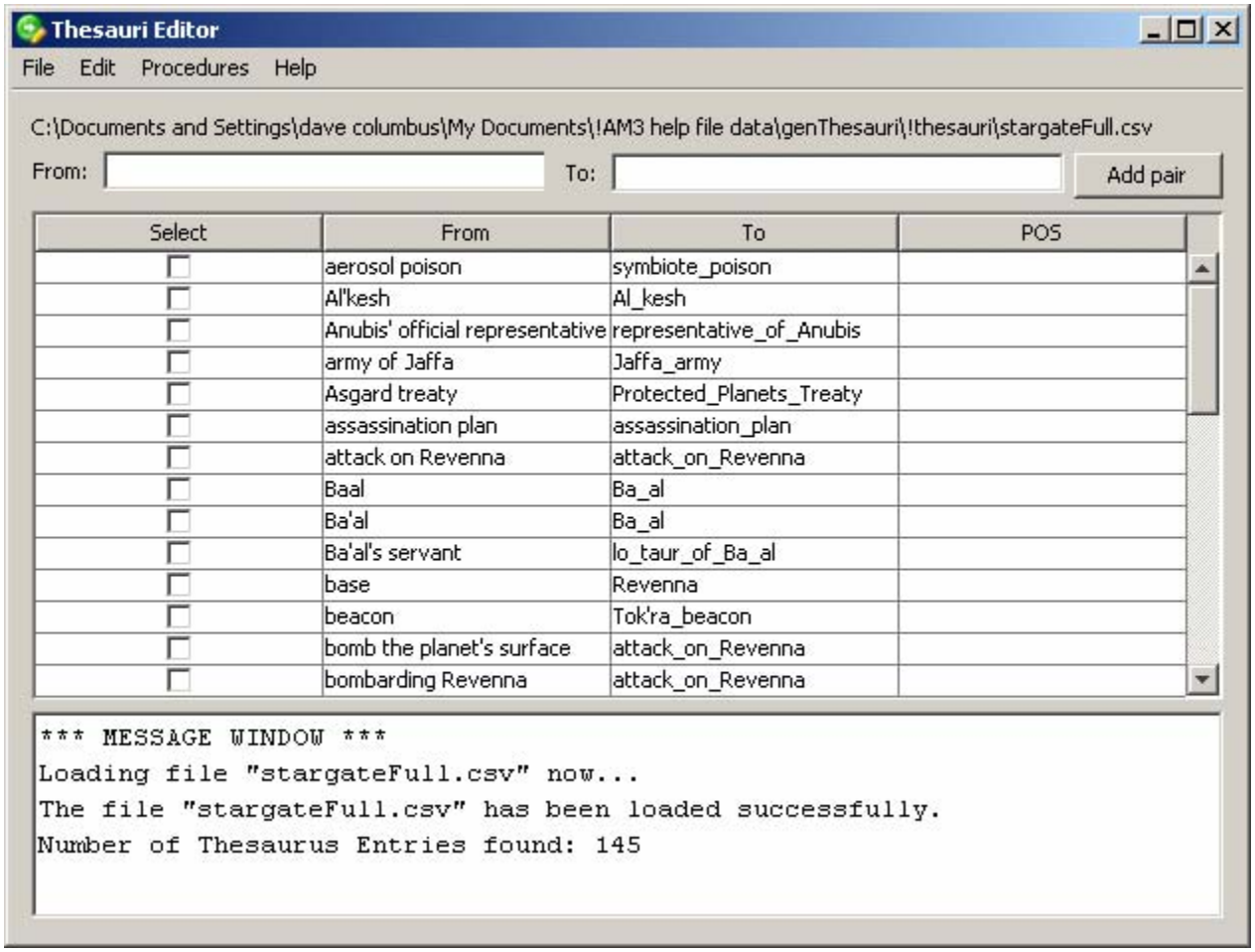
Thesauri Editor

Description

The Thesauri Editor can load and modify existing thesaurus files. Pairs of concepts can be added or subtracted. It can be compared to another thesaurus. Finally it can be saved under a new name.



GUI

If you find a pair that does not exist in your thesaurus it can be added by placing the raw text in the To: textbox and the key_concept in the From: textbox. Then click the **Add pair** button to add it to the list.

Sorting

To sort the list click on any of the headers. AutoMap will sort the entire list by the clicked header in an **ascending order**. Clicking that same header again will sort the list in a **descending order**. Clicking a different header will once again sort in an **ascending order**.

NOTE : *The small triangle to the right of the header will tell you which header is used for sorting and whether it's in ascending* ***upward facing arrow*** *or descending* ***downward facing arrow*** *order.*

Pull-Down Menus

The File Menu

 **Open File :** Select a Thesaurus to load into Editor.

See Compare Thesauri Files Lesson for more information

 **Save as... :** Saves the Thesaurus.

 **Save as... :** Saves a Thesaurus with a new name and/or to a new directory.

 **Save message Log :** Saves message log form the Thesaurus window.

 **Convert File to UTF-8 :** Attempts to convert an input file into the UTF-8 format.

 **Exit :** Exits the Thesauri Editor and returns to the Main GUI.

The Edit Menu

 **Compare :** Compares a second Thesaurus to the currently loaded Thesaurus.

 **Add Terms from Concept List :** Asks user to select a Concept List which will be added to the currently loaded Thesaurus.

 **Add Terms from NGram :** Asks user to select an NGram List which will be added to the currently loaded Thesaurus.

 **Add Stemmed Terms :** Adds stemmed words to the currently open Thesaurus. The User will be asked whether to use the Porter Stemmer or the K-Stemmer.

 **Select All :** Places a check mark in every box in the **Select** column.

 **Select None :** Removes the check marks from every box in the **Select** column.

 **Remove Selected :** Removes the concepts which contained a check mark in the Select column. The original file remains unaffected.

 **Identify Possible Misspelling :** Highlights in yellow concepts AutoMap may consider misspelled. Hovering over these concepts will give a list of alternatives.

 **Find :** AutoMap asks for term to locate. If there are any matches the background of the found item will be colored blue.

NOTE : *In a large thesaurus manually looking through it is usually not an option. Use the* ***Find*** *option and type in your search parameters in the textbox. The found item will be displayed with a blue background.*

NOTE : *Searching for* ***t*e*** *would find* ***the, there, and theatre*** *(if all three were in your list.*

 **Reset Colors :** To end the comparison use **Reset** and all the color bands will be removed.

NOTE : *The colors are cleared but any extra cells from the compared file remain on screen. To do a new comparison open a new file.*

The Procedures Menu

The functions in this pull-down menu do not affect the currently loaded Delete List. They are identical to the functions that can be found in the Main GUI.

Apply Stemming to Thesauri : You are asked to select a stemmer to apply (Porter Stemmer or K-Stem). All newly stemmed words will be added to the Thesaurus on screen. You need to use one of the **Save options** to keep this new list.

Merge Thesauri : Allows you to select two or more Thesauri and combine them into one. AutoMap will then prompt you to save the new Thesaurus with a new name and location.

Sort Thesaurus : Choose a thesaurus to sort. AutoMap sorts the thesaurus by **number of words** (e.g. the more words in a concept then higher in the list it rises).

Check Thesaurus for Missing Entries : Verifies that each entry in a thesaurus contains no blanks before or after the comma. The line(s) containing the errors will be displayed in the message pane.

Check Thesaurus for Duplicate Entries : Will give the user a notice if there are duplicate entries in a thesaurus.

Check Thesaurus for Circular Logic: Will find each instance of Circular Login in a thesaurus and report the line(2) with the problem)s_. Then it will report the total number of instances found.

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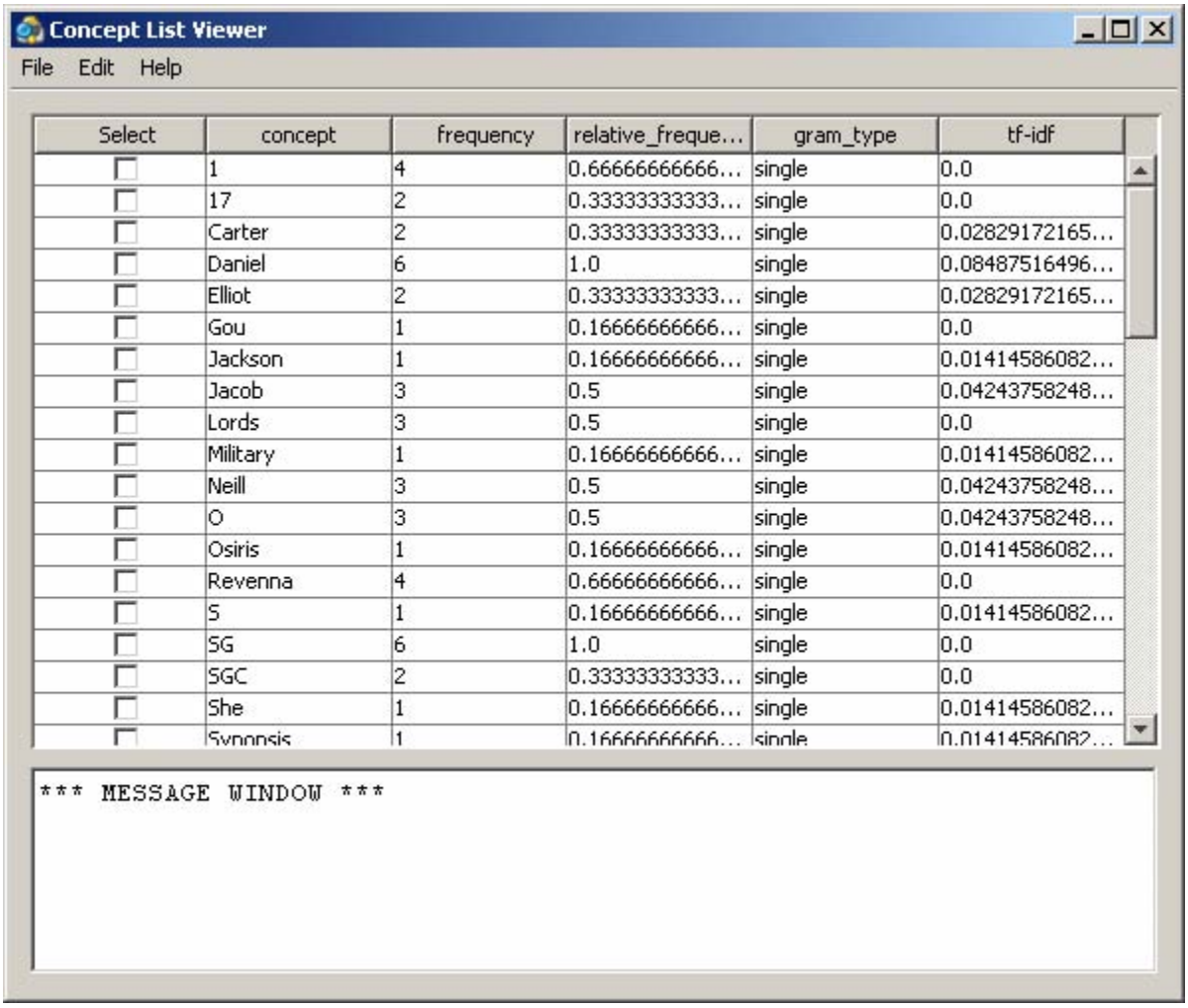
Concept List Viewer

Description

The **Concept List Viewer** is used to view and edit concept lists created from AutoMap. With the viewer you can sort the list by any of the headers. With the **Selected** column you can create a **Delete List**.



GUI

Sorting

To sort the list click on any of the headers. AutoMap will sort the entire list by the clicked header in an **ascending order**. Clicking that same header again will sort the list in a **descending order**. Clicking a different header will once again sort in an **ascending order**.

NOTE : *The small triangle to the right of the header will tell you which header is used for sorting and whether it's in ascending* ***upward facing arrow*** *or descending* ***downward facing arrow*** *order.*

Pull-Down Menus

The File Menu

 **Open File :** Select a Concept List to load into the Viewer.

See Compare Concept Lists lesson for more information.

 **Save Message Log :** Saves the message log in the Concept List window.

 **Save as Delete List :** Saves check items as a new Delete List.

 **Exit :** Exits the Concept List Viewer and returns to the Main GUI.

The Edit Menu

 **Compare File :** Compares a second Concept List to the currently loaded Concept List.

 **Properties :** Display the **Total Concepts** and the **Unique Concepts** in the loaded file.

 **Select All :** Places a check mark in every box in the **Select** column.

 **Select None :** Removes the check marks from every box in the **Select** column.

 **Select Minimum Threshold :** Selects all concepts with frequencies equal to or greater than the Minimum Threshold.

 **Select Maximum Threshold :** Selects all concepts with frequencies equal to or less than the Maximum Threshold.

 **Find :** AutoMap asks for term to locate. If there are any matches the background of the found item will be colored blue.

NOTE : *Searching for* ***t*e*** *would find* ***the, there, and theatre*** *(if all three were in your list.*

Reset Colors : To end the comparison use **Reset** and all the color bands will be removed.

NOTE : *The colors are cleared but any extra cells from the compared file remain on screen. To do a new comparison open a new file.*

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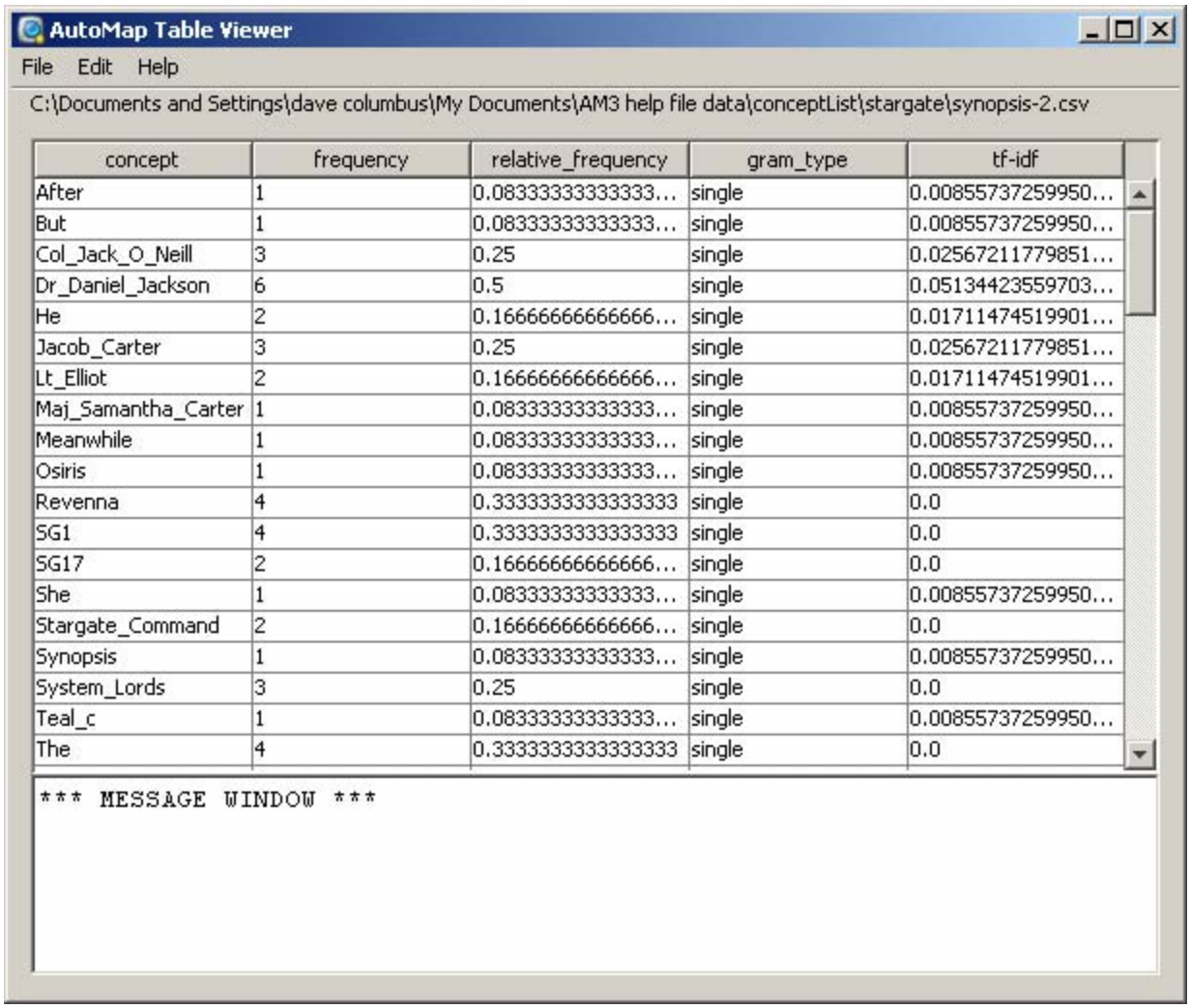
Table Viewer

Description

The Table Viewer is used to view any **.csv** file.



concept	frequency	relative_frequency	gram_type	tf-idf
After	1	0.08333333333333...	single	0.00855737259950...
But	1	0.08333333333333...	single	0.00855737259950...
Col_Jack_O_Neill	3	0.25	single	0.02567211779851...
Dr_Daniel_Jackson	6	0.5	single	0.05134423559703...
He	2	0.16666666666666...	single	0.01711474519901...
Jacob_Carter	3	0.25	single	0.02567211779851...
Lt_Elliot	2	0.16666666666666...	single	0.01711474519901...
Maj_Samantha_Carter	1	0.08333333333333...	single	0.00855737259950...
Meanwhile	1	0.08333333333333...	single	0.00855737259950...
Osiris	1	0.08333333333333...	single	0.00855737259950...
Revenna	4	0.3333333333333333	single	0.0
SG1	4	0.3333333333333333	single	0.0
SG17	2	0.16666666666666...	single	0.0
She	1	0.08333333333333...	single	0.00855737259950...
Stargate_Command	2	0.16666666666666...	single	0.0
Synopsis	1	0.08333333333333...	single	0.00855737259950...
System_Lords	3	0.25	single	0.0
Teal_c	1	0.08333333333333...	single	0.00855737259950...
The	4	0.3333333333333333	single	0.0

GUI

Sorting

To sort the list click on any of the headers. AutoMap will sort the entire list by the clicked header in an **ascending order**. Clicking that same header again will sort the list in a **descending order**. Clicking a different header will once again sort in an **ascending order**.

NOTE : *The small triangle to the right of the header will tell you which header is used for sorting and whether it's in ascending* ***upward facing arrow*** *or descending* ***downward facing arrow*** *order.*

Pull-Down Menus

File Menu

Open File : Navigate to a .csv file to view. If it's a compatible file he information will be displayed in the viewer.

Save Message Log Window : Saves the Message Log Window to the directory of your choice.

Compare File : After selecting your first table you can use this function compare another .csv file. This compare function works slightly different from other compare functions. Instead of examining an individual column to compare it does a one-to-one compare in list order. (e.g. item 1 of file 1 is compared to item 1 of file 2, and so on down the lists).

As in other compare functions a white background means the cell values are identical, a green background means the compare file is a new value, a red background means the compared cell doesn't exist in the loaded file, and a yellow background means the values are different.

Exit : Exits the Table Viewer and returns to the Main GUI.

Edit Menu

Compare File : Compares a second Table to the currently loaded Table.

Find : Highlights in the table the searched for word.

NOTE : *Searching for* ***t*e*** *would find* ***the, there, and theatre*** *(if all three were in your list.*

Reset Colors : Resets all colors to black text on white backgrounds.

NOTE : *The colors are cleared but any extra cells from the compared file remain on screen. To do a new comparison open a new file.*

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XML Viewer

Description

The **DyNetML Network Viewer** allows you to view a DyNetML files properties and relationships. From the pull-down menu select ***Tools => DyNetML Network Viewer***. From the viewer's pull-down menu select ***File => Open File***. Navigate to the xml file to view and click

NOTE : *This viewer will open any XML file. It will ignore attempts to open other types of files.*

The DyNetML viewer can examine both your semantic network files and your DyNetML files. Each file will display it's structure and the individual properties of the nodes and networks.

GUI

Each section will contain either a **+** or **-** button which will expand or contract that section.

Sorting

To sort the list click on any of the headers. AutoMap will sort the entire list by the clicked header in an **ascending order**. Clicking that same header again will sort the list in a **descending order**. Clicking a different header will once again sort in an **ascending order**.

NOTE : *The small triangle to the right of the header will tell you which header is used for sorting and whether it's in ascending* ***upward facing arrow*** *or descending* ***downward facing arrow*** *order.*

Pull-Down Menus

File Menu

 **Open File :** Opens either Semantic or Meta-Network files and display the file structure.

 **Save As :** You can save the current network to a new directory under a new name.

 **Exit :** Exits the DyNetML Viewer and returns to the Main GUI.

View Menu

Expand : Expands out the entire network.

Collapse : Collapses the entire network.

Procedures Menu

Add Attribute:

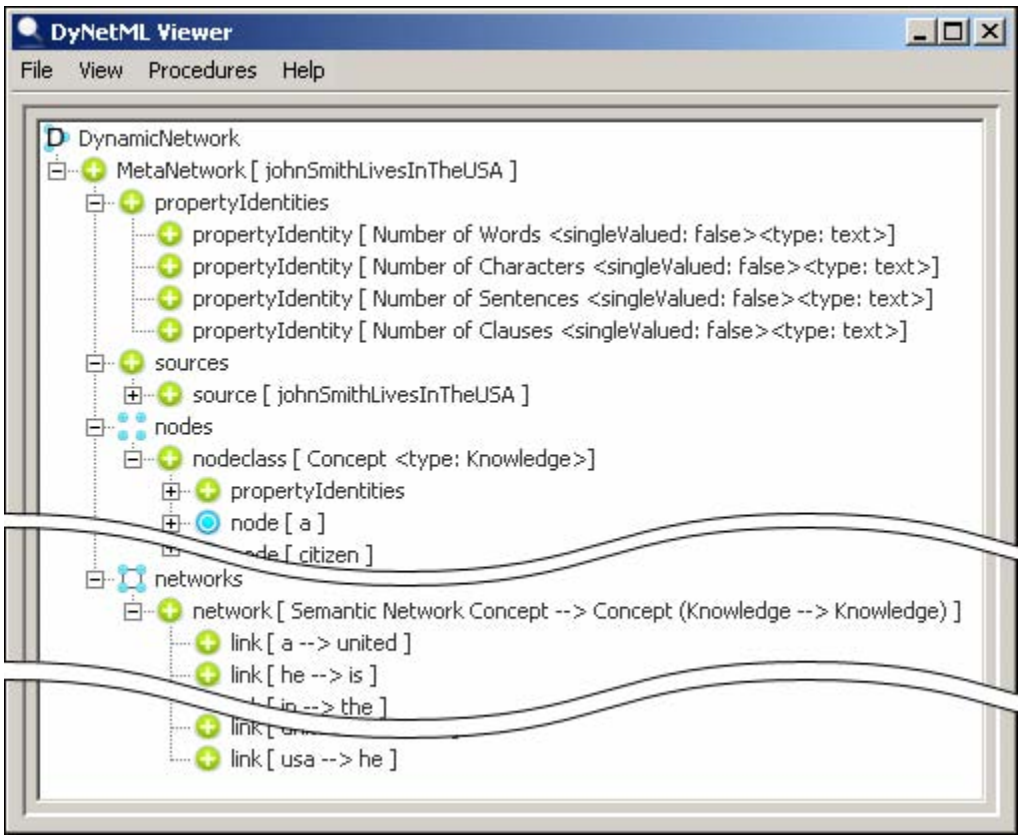
Add Attributes:

Relocate Source Location:

Add Icon Reference to DyNetML:

Network Displays

Displaying a Semantic Network



When viewing a Semantic Network the viewer will display four main areas:

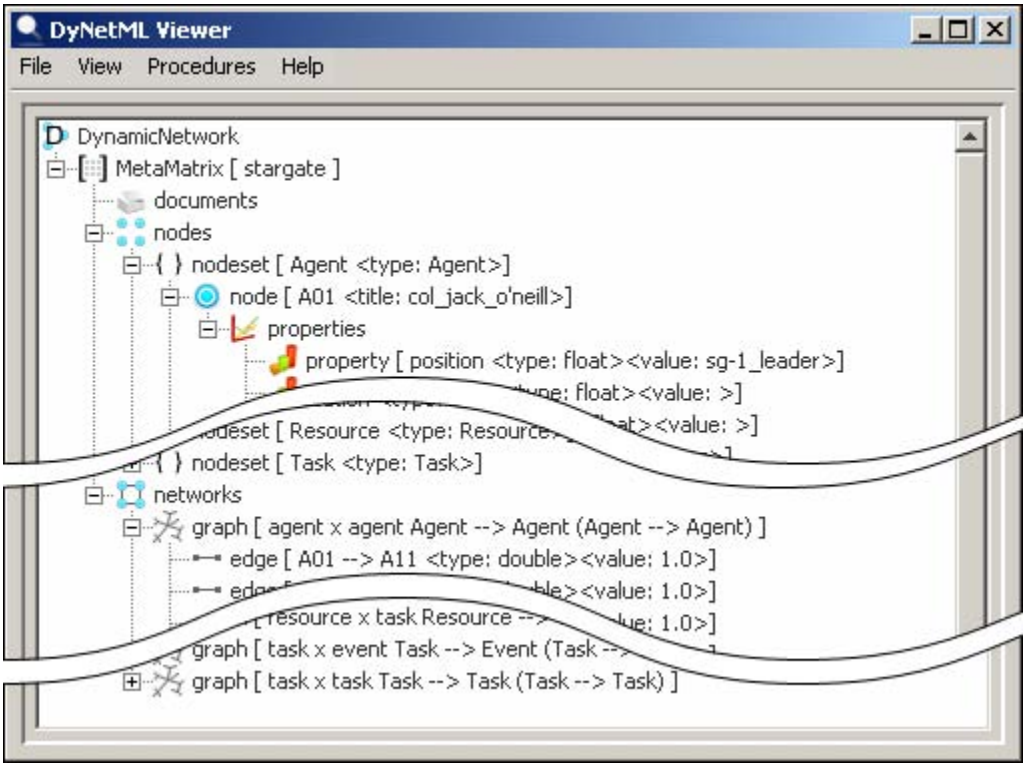
propertyIdentities
Information about the source file, number of words, characters, sentences, and clauses.

sources
The source files in the semantic network

nodes
The nodeclasses in the semantic network and information regarding each nodeclass and node.

networks
Information on each network and the links contained in each network.

Displaying a Meta-Network



When viewing a Meta-Network (Carley, 2002) the viewer will display two main areas: **nodes and networks**.

nodes
The nodeclasses and the nodes each contains and the properties of each node.

networks

The graphs which make up each network and all the links contained in each network.

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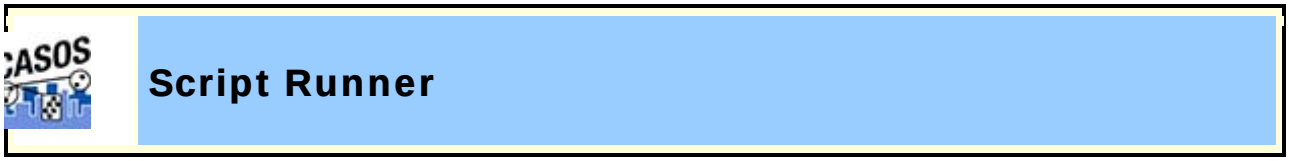
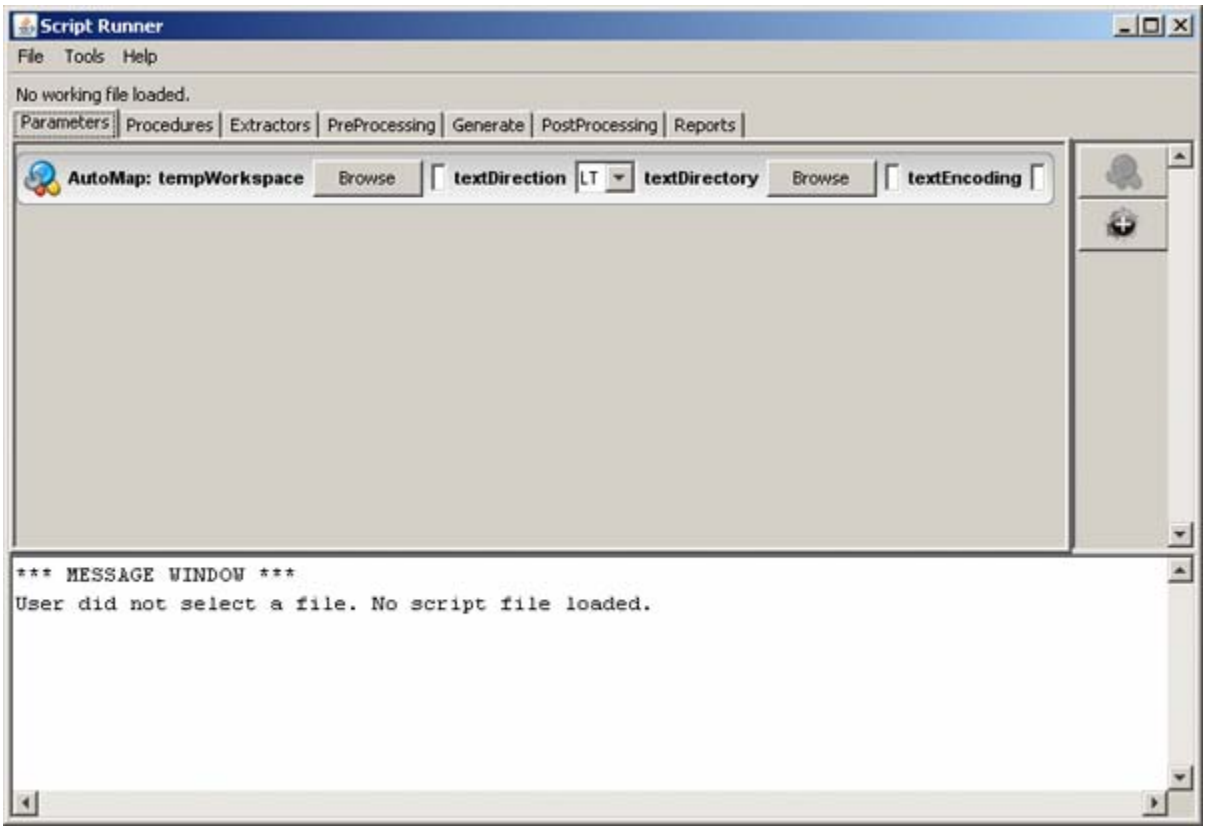


Script Runner

Script Runner allows you to run an AutoMap script without opening a Command Window.



GUI

The GUI consists of four parts. 1) The Pull-Down Menus; 2) The Tabs; 3) The Quick Launch buttons; and 4) The Message Window.

Pull-Down Menus

File Menu

 **Load Script File :** Loads a script file either created in an external program or created previously in Script Runner.

 **New Script File :** Create a New Script file from scratch

 **Save :** Saves currently loaded script file

 **Save As... :** Saves currently loaded script file that can be renamed as new file.

 **Run Script :** Navigate to the .config file to run. This can be a script you created in a text editor or a script created from AutoMap's main GUI pull-down menu ***File => Save Script File*** which will create a script of all current preprocessing steps.

 **Run Script as Superscript :** Allows user to run a script under multiple processors. User inputs the number of processors to use and AutoMap splits the input files into that many batches.

 **Preprocess Script File :**

 **Script 2 BPEL :**

 **Validate Script File :**

 **Save Message Window Log :** As AutoMap is running your script it will display details on the actions it has performed. You can save these messages to a text file.

 **Exit :** Exits Script Runner and returns to the Main GUI.

Tools

In addition to running scripts the Script Runner tool can call up other viewers. These can be used to verify the state of your files before or after running a script without leaving the viewer.

Delete List Editor : Calls the external Editor to work with a Delete List.

See Tools => Delete List Editor for more information.

Thesaurus Editor : Calls the external editor to work with a Thesaurus file.

See Tools => Thesaurus Editor for more information.

Concept List Viewer : Calls the external viewer to review a Concept List

See Tools => Concept List Viewer for more information.

Table Viewer : Allows the user to view table files other than Concept Lists and DyNetML files.

See Tools => Table Viewer for more information.

XML Network Viewer : Allows the user to view DyNetML and other XML.

See Tools => XML Viewer for more information.

Script Runner Tabs

Quick Launch Buttons

Message Window

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Compare Color Chart

During a **Compare File** function AutoMap will color the background of various concepts to visually mark the state of a concept. The following chart explains what the colors mean.

Color	Description

Red	Concepts to be deleted after comparison
Green	Concepts to be added after comparison
Yellow	Concepts to be modified after comparison
Orange	Possible misspelled terms
Cyan	Concepts found during a source
Pink	Terms added from stemming
Grey	Duplicate entries

Only the colors necessary for any particular tool will appear in the comparison tables. For instance if there is no stemming option then no magenta cells will ever appear.

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Script

Description

All of AutoMap's functions are readily found in the Script file. A few items are necessary when using the script.

AM3 Script Notes

AM3 Script Tags

DOS Commands

Things You Need To Know

1. Knowledge of the Command Run Window.
2. Understanding of XML formatting.

3. DOS Commands

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AM3Script Notes

Using AutoMap 3 Script

The AutoMap 3 script is a command line utility that processes a large number of files using a set of processing instructions provided in the configuration file. Following is a simple explanation of how to construct a configuration file.

Once the configuration file has been created, the Automap 3 Script is ready to use. The following is a brief on running the script.

1. Configure the **AutoMap 3 .config file** as necessary. (Tag explanations in next section). Be sure to include pathways to input and output directories and the name of the config file to use.

```
<Settings>
<AutoMap
    textDirectory="C:\My Documents\dave\project\input"
    tempWorkspace="C:\My Documents\dave\project\output"
    textEncoding="unicode"/>
</Settings>
```

2. Navigate to where AutoMap is installed.

3. At the prompt type: **am3script newProject.config** (where newProject.config is the config file you built).

4. AutoMap 3 will execute the script using the .config file specified.

For Advanced Users

It is possible to set the your PATH environmental variable to include the location of the install directory so that AM3Script can be used in any directory from the command line. Please note this is not recommended for users that have no experience modifying the PATH environmental variable.

Placement of Files

It is suggested the user create sub-directories for input files and output files in within an overall directory. This assists in finding the correct files later and prevents AutoMap from overwriting previous files. The **input** directory is empty except for your text files. The **output** will contain the output from AutoMap. The **support** directory will contain your Delete Lists, Thesauri, and any other files necessary during the run.

```
C:\My Documents\dave\project\input
C:\My Documents\dave\project\output
C:\My Documents\dave\project\support
```

NOTE : *It's important when typing in pathways that they are correct or AutoMap will fail to run.*

Script name

The script.config file can be named whatever you like but we do recommend keeping the `.config` suffix. This way if you can do multiple runs to the files in a concise order: `step1.config, step2.config, step3.config...`.

Pathways

Pathways used in attributes are always relative to the location of AM3Script, (e.g. `/some_files` uses a directory `some_files` below the directory AM3Script is located in. A full pathway always begins with the drive name e.g. `C:/` and follows the pathway down to the files.

NOTE : *Both relative and absolute paths can be used for the configuration path. Relative traces a path from the location the config to the file it needs* ***(e.g. ..\..\anotherDirectory/aFile)****. Absolute traces a pathway from the root directory to the file it needs* ***(C:\\{pathway}\aFile)****.*

If given a non-existent pathway you will receive an error message during the run.

Tag Syntax in AM3Script

There are two styles of tags in the AM3Script script. The first one uses a set of two tags. The first tag starts a section and the second tag ends the section. The second tag will contain the exact same word as the first but will have, in addition, a "/" appended after the word and before the ending bracket. This designates it as an ending tag. All the parameters/attributes pertaining to this tag will be set-up between these two tags. e.g. **`<aTag></aTag>`**.

The second style is the self-ending tag as it contains a "/" within the tag. Any attributes used with this tag are contained within the tag e.g. **<aTag attribute="attributeName"/>**.

Output Directory syntax (TempWorkspace)

Output directories created in functions under the <PreProcessing> tag will all be suffixed with a number designating the order they were performed in. If a function is performed twice, each will have a separate suffix i.e. Generalization_3 and Generalization_5 denotes a Generalization Thesauri was applied to the text in the 3rd and 5th steps. Using thesauriLocation different thesauri could be used in each instance. For all other functions outside PreProcessing there is no suffix attached.

NOTE : *The output directories specified above are in a temporary workspace and the content will be deleted if the AM3Script uses this directory again in processing. It is recommended that the directory specified in the temp workspace be an empty directory. Also, for output that user wishes to keep from processing it is recommend to use the outputDirectory tag within the individual processing step.*

Example

```
<AddAttributes3Col attributeFile="C:\My
Documents\dave\project\support\attributeFile"
outputDirectory="C:\My Documents\dave\project\output" />
```

By using these tags it allows the user to specify where they want the individual processing step output to go. It also makes finding the location of the output files much simpler instead of looking through the contents of the TempWorkspace.

AutoMap 3 System tags

The only line found outside these tags will be the declaration line for xml version and text-encoding information: `<?xml version="1.0" encoding="UTF-8"?>`

NOTE : *Any parameter can use inputDirectory and outputDirectory to override the default file location. These pathways will be relative to the location of the AM3Script.*

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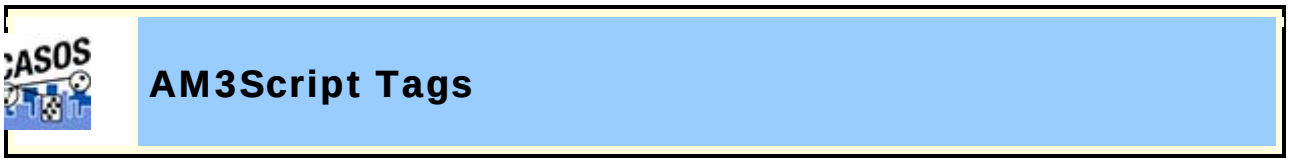

NOTE : *Note that every tag in here that can have an additional outputDirectory="" element added to permanently save file location. If the script is crashing on you, it may be because you aren't saving some output you've generated (like POS) and Automap wants to access it. Try running again and saving the output.*

<Script>

<Settings></Settings>

<AutoMap textDirectory="" tempWorkspace="" textEncoding="" textDirection="LT | RT | LB | RB" />

<Utilities><Utilities>

<Procedures></Procedures>

<ConvertFileEncoding inputFile="" outputFile="" />

`inputFile` is the file you want to convert. `outputFile` is the file which will be written. The input file will remain unaffected.

<MergeDeleteLists deleteListFiles="" outputDeleteListFile="" />

Set `deleteListFiles` to the directory containing all the Delete Lists to merge. `OutputDeleteListFile` is the file name to write to.

<MergeThesauri thesauriFiles="" outputThesaurusFile="" />

Set `thesauriFiles` to the directory containing all the Delete Lists to merge. `OutputDeleteListFile` is the file name to write to.

<SortThesaurus thesaurusFile="" outputThesaurusFile="" />

Set `thesauriFile` to the thesaurus you want to sort. `outputThesaurusFile` is the file name to write the newly sorted to.

<PreProcessing></PreProcessing>

<DedupeText />

<DeleteList adjacency="d | r" deleteListLocation="" />

The Delete List is a list of concepts to remove from the text files before output file. Set `adjacency="d"`, for direct, removes the space left by deleted words. Remaining concepts now become "adjacent" to each other. Set `adjacency= "r"`, for rhetorical, removes the concepts but inserts a spacer within the text to maintain the original distance between concepts.

<FilterDirectory filter="" />

<FormatCase changeCase="l | u" />

FormatCase changes the output text to either "lower" or "upper" case. If `changeCase="l"` then AutoMap will output all text in lowercase. `changeCase="u"` outputs all text in uppercase.

<Generalization thesauriLocation="" useThesauriContentOnly="y|n" adjacency="d |r"/>

The Generalization Thesauri are used to replace possibly confusing concepts with a more standard form. e.g. a text contains both `United States` and `U.S.` The Generalization Thesauri could have two entries which replace both the original entries with `united_states`.

If `useThesauriContentOnly="n"` AutoMap replaces concepts in the Generalization Thesauri but leaves all other concepts intact. If `useThesauriContentOnly="y"` then AutoMap replaces concepts but removes all other concepts from output file.

<PdfConverter />

<PronounResolution />

<RemoveExtraWhiteSpace />

Find instances of multiple spaces and replaces them a single space.

<RemoveNumbers whiteOut="y|n"/>

This parameter accepts either `whiteOut="y"` or `whiteOut= "n"`. A "y" replaces numbers with spaces i.e. C3PO => C PO. A "no" removes the numbers entirely and closes up the remaining text e.g. C3PO => CPO.

<RemovePunctuation whiteOut="y|n"/>

This parameter accepts either `whiteOut="y"` or `whiteOut= "n"`. A "y" replaces punctuation with spaces. A "no" removes the punctuation entirely and closes up the remaining text. The list of punctuation removed is: `.,:;' "()!?-`.

<RemoveSpecialCharacters />

<RemoveSymbols whiteOut="y|n"/>

This parameter accepts either `whiteOut="y"` or `whiteOut= "n"`. A "y" replaces symbols with spaces. A "no" removes the symbols entirely and closes up the remaining text. The list of symbols that are removed: `~`@#$%^&*_+={}[]\|/<>`.

<RemoveUserSymbols symbols=""/>

Removes symbols like `RemoveSymbols` except it allows you to choose the symbols to remove. Place the list of symbols to remove in the `symbols` parameter leaving no spaces in-between the symbols.

<Stemming type="k | p" porterLanguage="" kStemCapitalization="y|n"/>

Stemming removes suffixes from words. This assists in counting similar concepts in the singular and plural forms. i.e. plane and planes would normally be considered two terms. After stemming planes becomes plane and the two concepts are counted together.

`type="k"` KSTEM or Krovetz stemmer.

`type="p"` Porter Stemming.

The **kStemCapitalization="y"** tells AutoMap to stem capitalized words. **kStemCapitalization="n"** ignores capitalized words.

The **porterLanguage** parameter allows the user to select from various languages available. Currently the available languages are: **Danish, Dutch, English, Finnish, French, German, Italian, Norwegian, Portuguese, Russian, Spanish, and Swedish**.

NOTE : *If you select Porter Stemming then a language* ***MUST*** *be chosen or the script will error.*

<VibesParser />

<WebScraper url="" />

Give this a URL address making sure to use the proper protocol (e.g. http://). It will create text files from all files located on the base address.

NOTE : *This will convert all files found from the address downwards meaning that a simple looking URL might possibly contain hundreds, or even thousands, of sub files which will be converted.*

<WordDocConverter />

<Processing></Processing> or <Generate></Generate>

<Anaphora />

An anaphoric expression is one represented by some kind of deictic, a process whereby words or expressions rely absolutely on context. Sometimes this context needs to be identified. These definitions need to be specified by the user. Used primarily for finding personal pronouns, determining who it refers to, and replacing the pronoun with the name.

<CRFSuggestion />

This option automatically estimates mapping from text words from the highest level of pre-processing to the categories contained in the Meta-Network.

<ConceptList />

Creates a list of concepts for each loaded text file. A Delete List or Generalization Thesauri can be performed before creating these lists to reduce the number of concepts in each file. These output files can be loaded into a spreadsheet and sorted by any of the headers.

<FeatureExtraction />

The Feature Selection creates a list of concepts as a TF*IDF (Term Frequency by Inverse Document Frequency) in descending order. This list can be used to determine the most important concepts in a file. It's used to extraction dates and currency from text files.

<KeyWordInContext />

A list will be created so every concept in a file along with the concepts which both precede it and following it.

<MetaNetText thesauriLocation="" />

<Meta-Network thesauriLocation="" directional="U|B" resetNumber="1" textUnit="S" windowSize="5"/>

Applies the Generalization Thesaurus specified in `thesauriLocation` to the text files. Then creates a Meta-Network using the following four parameters. `Uni- or Bi- direction` considering terms in one or both directions, `resetNumber` how many textUnits to process before resetting back to 1, `textUnit` using text unit of word, clause, sentence, paragraph, or all, and `windowSize` the amount of concepts to be considered for replacement.

<Meta-NetworkList thesauriLocation="" />

This associates text-level concepts with Meta-Network (Carley, 2002) categories {agent, resource, knowledge, location, event, group, task, organization, role, action, attributes, when}. Concepts can be translated into several Meta-Network categories. `thesauriLocation` designates the location of the Meta-Network (Carley, 2002) Thesauri, if used.

<NGramExtraction createUnion="y|n" ngram="2" />

<NamedEntityExtraction />

Extracts proper names, numerals, and abbreviations from the texts loaded.

<POSExtraction posType="ptb|aggregate" saveOutputAs="csv|txt"/>

`posType` can specify either `ptb`, a tag for each part of speech or `aggregate`, groups many categories together using fewer Parts-of-Speech tags. The final file is specified with `saveOuputAs` and can create either csv or text files.

<PosAttributeFile />

<PositiveThesauri />

A `Positive Thesaurus` takes every concept in the text and defines it as itself. This can be used as the start in building a Generalization Thesaurus.

<SemanticNetwork directional="U|B" resetNumber="1" textUnit="S" windowSize="5"/>

<SemanticNetworkList directional="U|B" resetNumber="1" textUnit="S" windowSize="5" />

`windowSize="aNumber"` defines the distance between concepts which can have a relationship. `textUnit="S"=sentence, "W"=word, "C"=clause, "P"=paragraph. "A"=all` defines the units used. `resetNumber="aNumber"` defines the number of textUnits to process before resetting the window. `directional="U"` (unidirectional) looks forward in the text file only. `directional="B"` (Bi-Directional) finds relationships in either direction.

<UnionConceptList/>

Union Concept Lists consider concepts across all texts currently loaded, rather than only the currently selected text file. It reports total frequency, related frequency, and cumulative frequencies of concepts in all text sets. It's helpful in finding frequently occurring concepts over all loaded texts.

NOTE : *The number of unique concepts considers each concept only once, whereas the number of total concepts considers repetitions of concepts.*

<UnionKeyWordInContext />

<PostProcessing></PostProcessing>

<AddAlias aliasFile="" nodeType="" />

<AddAttributes attributeFile="" />

Additional attributes can be added to the nodes within the generated DyNetML file. `attributeFile` is the location of the attribute file containing a header row with the attribute name.

<AddAttributes3Col attributeFile="" />

`attributeFile` is the location of the file containing the attributes but uses `name and value` headers.

```
<AddTimePeriod />

<BeliefEnhancement beliefFile="" networkType="m|s"/>

<BeliefPropagationReport inputFile="" beliefFile="" reportName=""
/>

<ClickIt networkFile="" outputFile="" location="" />

<ImmediateImpactReport inputFile="" nodeFile="" reportFile=""
/>

<InferredBeliefs beliefFile="" />

<OraReports reportType="" reportName="" nodeType=""
nodeID="" />

<PictureIt networkFile="" outputFile="" imageDirectory=""
preserveExistingImages="y|n"/>

<TimeUnion unionType="s|m" startDate="" endDate=""
timeInterval="" />

<UnionDynetml unionType="s|m"/>
```

UnionDynetml creates a union of all DyNetML in a specified directory. It requires a `unionType` which can be `"s"` for a union of semantic networks or `"m"` for union of Meta-Networks.

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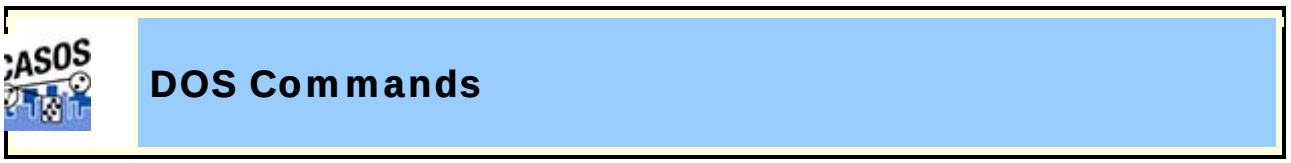


Description

A short description of some DOS commands that can be useful when using the Script.

CD: Change Directory

```
cd\
```

Goes to the highest level, the root of the drive.

cd..

Goes back one directory. For example, if you are within the C:\Windows\COMMAND> directory, this would take you to C:\Windows>

The CD command also allows you to go back more than one directory when using the dots. For example, typing: cd... with three dots after the cd would take you back two directories.

cd windows

If present, would take you into the Windows directory. Windows can be substituted with any other name.

cd\windows

If present, would first move back to the root of the drive and then go into the Windows directory.

cd windows\system32

If present, would move into the system32 directory located in the Windows directory. If at any time you need to see what directories are available in the directory you're currently in use the dir command.

cd

Typing cd alone will print the working directory. For example, if you're in c:\windows> and you type the cd it will print c:\windows. For those users who are familiar with Unix / Linux this could be thought of as doing the pwd (print working directory) command.

DIR: Directory

Lists all files and directories in the directory that you are currently in.

dir /ad

List only the directories in the current directory. If you need to move into one of the directories listed use the cd command.

dir /s

Lists the files in the directory that you are in and all sub directories after that directory, if you are at root "C:\>" and type this command this will list to you every file and directory on the C: drive of the computer.

dir /p

If the directory has a lot of files and you cannot read all the files as they scroll by, you can use this command and it will display all files one page at a time.

dir /w

If you don't need the info on the date / time and other information on the files, you can use this command to list just the files and directories going horizontally, taking as little as space needed.

dir /s /w /p

This would list all the files and directories in the current directory and the sub directories after that, in wide format and one page at a time.

dir /on

List the files in alphabetical order by the names of the files.

dir /o-n

List the files in reverse alphabetical order by the names of the files.

dir \ /s |find "i" |more

A nice command to list all directories on the hard drive, one screen page at a time, and see the number of files in each directory and the amount of space each occupies.

dir > myfile.txt

Takes the output of dir and re-routes it to the file myfile.txt instead of outputting it to the screen.

MD: Make Directory

```
md test
```

The above example creates the **test** directory in the directory you are currently in.

```
md c:\test
```

Create the **test** directory in the c:\ directory.

RMDIR: Remove Directory

```
rmdir c:\test
```

Remove the test directory, if empty. If you want to delete directories that are full, use the deltree command or if you're using Windows 2000 or later use the below example.

```
rmdir c:\test /s
```

Windows 2000, Windows XP and later versions of Windows can use this option with a prompt to permanently delete the test directory and all subdirectories and files. Adding the /q switch would suppress the prompt.

COPY: Copy file

```
copy *.* a:
```

Copy all files in the current directory to the floppy disk drive.

```
copy autoexec.bat c:\windows
```

Copy the autoexec.bat, usually found at root, and copy it into the windows directory; the autoexec.bat can be substituted for any file(s).

```
copy win.ini c:\windows /y
```

Copy the win.ini file in the current directory to the windows directory. Because this file already exists in the windows directory it normally would prompt if you wish to overwrite the file. However, with the /y switch you will not receive any prompt.

copy myfile1.txt+myfile2.txt

Copy the contents in myfile2.txt and combines it with the contents in myfile1.txt.

copy con test.txt

Finally, a user can create a file using the copy con command as shown above, which creates the test.txt file. Once the above command has been typed in, a user could type in whatever he or she wishes. When you have completed creating the file, you can save and exit the file by pressing CTRL+Z, which would create ^Z, and then press enter. An easier way to view and edit files in MS-DOS would be to use the edit command.

RENAME: Rename a file

rename c:\chope hope

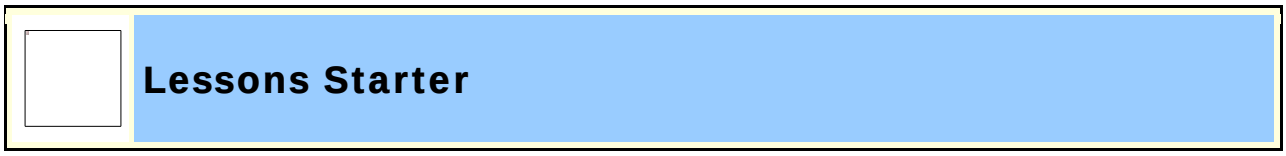
Rename the directory chope to hope.

rename *.txt *.bak

Rename all text files to files with .bak extension.

rename * 1_*

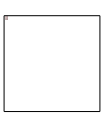
Rename all files to begin with 1_. The asterisk (*) in this example is an example of a wild character; because nothing was placed before or after the first asterisk, this means all files in the current directory will be renamed with a 1_ in front of the file. For example, if there was a file named hope.txt it would be renamed to 1_pe.txt.



Lessons Starter

1. Your First GUI Run
2. Text Encoding
3. Using a Concept List

4. Data Collection
5. Using a Delete List
6. Using a General Thesaurus
7. Compare Concept Lists
8. Compare Thesauri
9. Remove Items



First Run with the GUI

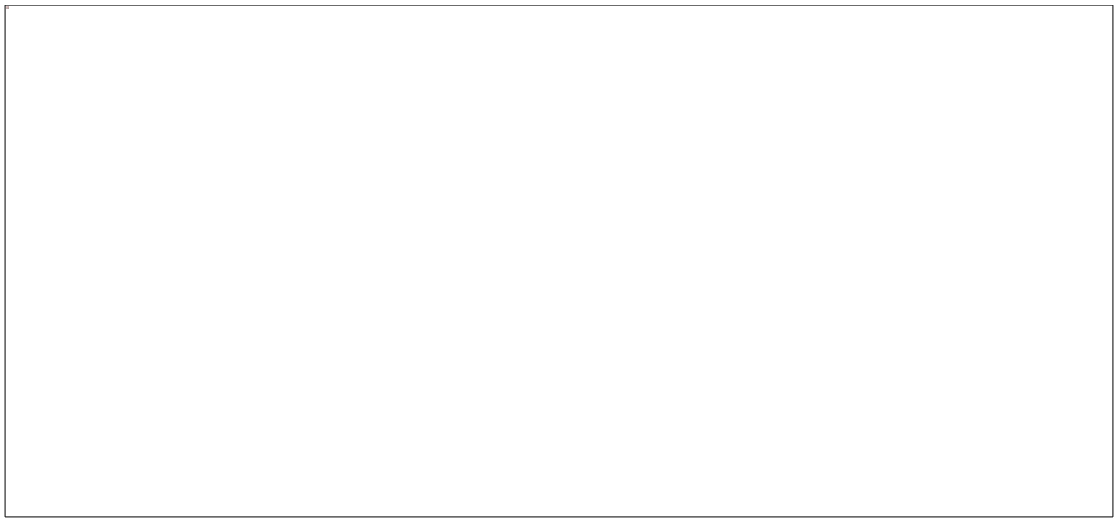
Description

This is an overview of your first run of AutoMap3. It is not an all-inclusive view of AutoMap but will cover the, more or less, necessary basics.

Procedure

1. Create Workspace

A good starting point is creating a project directory, a place where all your input files and output files will reside. This helps prevent files from getting lost. One suggestion is to create a top level project directory and create input and output directories within that directory. I also create a directory to place all support files such as Delete Lists and all the Thesauri.



Place all your input files into the **input** directory. Place any Delete Lists, Thesauri and other files to be used in the **support** directory. Direct all your results to the **output** directory.

2. Preparing Your Files

Files can come from any source. But to use in AutoMap3 they must be .txt files. Files in a **Word** format or **html** files will not be accepted into AutoMap. Any of these formats must be re-saved as a **.txt** format. This could be as simple as re-saving the file in the correct format to doing a copy-and-paste of the text into a text editor.

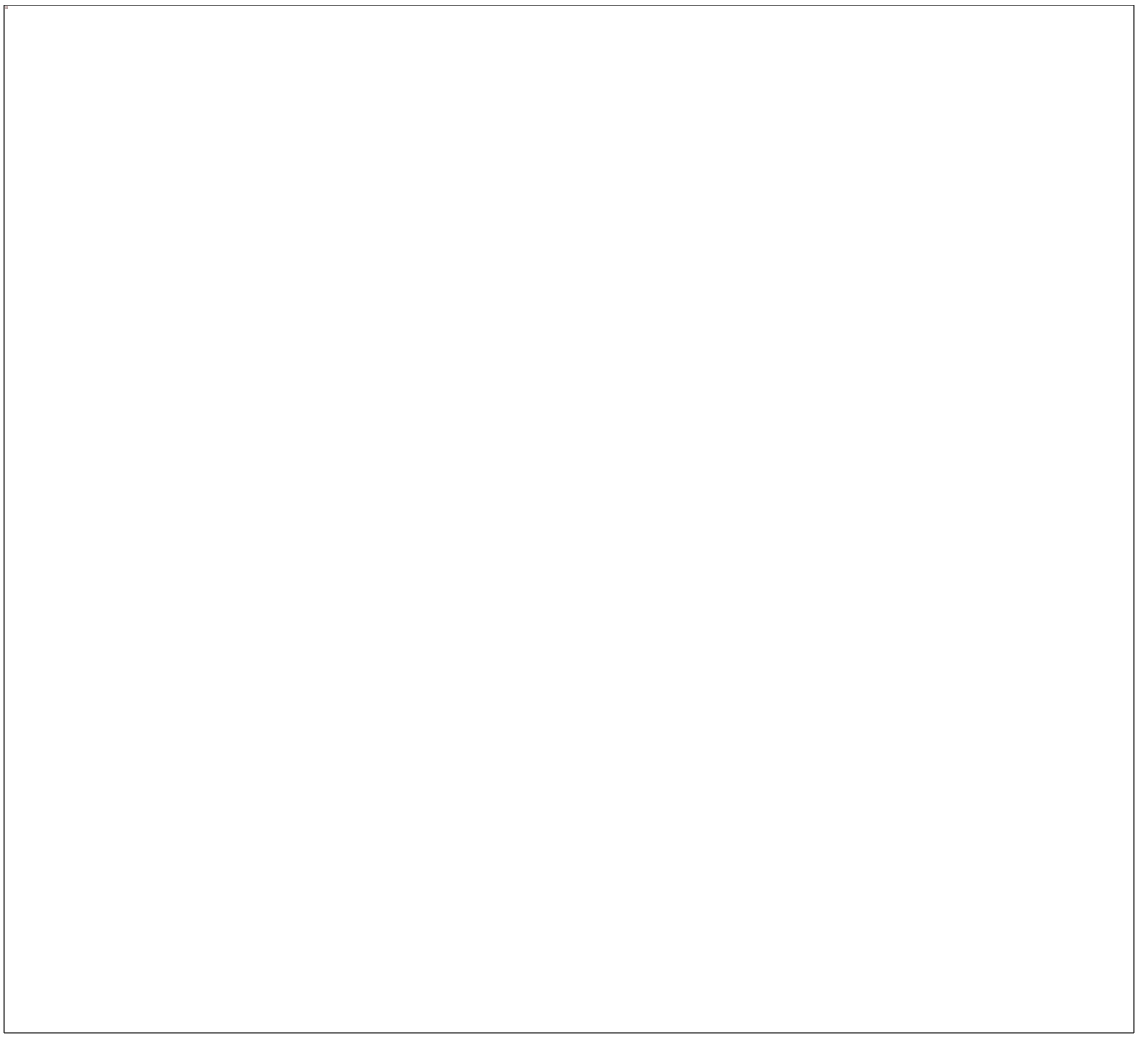
NOTE : *AutoMap accepts a variety of text encodings but they must be in a .txt format.*

3. Load your files into AutoMap

Once the text files are in the correct format they can be loaded into AutoMap. From the Pull Down Menu select ***File = Select Input Directory*** and navigate to the directory where you placed your text files. The first of these files will appear in the main window.

usCitizen.txt

```
John Smith lives in the USA. He is a United States citizen.
```



4. Decide on the Preprocessing Functions to use

Functions from the **Preprocessing Menu** affect all loaded text. None of these functions create any output files (though some require externally created files to work). These functions **remove excess concepts** (e.g. Remove Punctuation, Numbers, extra white spaces, or Symbols) or **modify concept names** (e.g. Thesauri for creating key_concepts) for easier generation and post-processing functions.

5. Creating a Generalization Thesaurus

Many people, places and things can be known by a variety of different formats of their names. A General Thesauri helps consolidate these various names under one unifying term. Below is an example. The format is **concept,key_concept**. Concept can be one or more words but key_concept must be one single word which can use the underscore.

usCitizenGenThes.csv

```
John Smith,John_Smith
United States,United_States_of_America
USA,United_States_of_America
```

NOTE : *The Thesaurus changes both the 2nd and 3rd concepts to the key_concept* ***United_States_of_America****.*

Create this file in a text editor or spreadsheet program and save it as a **.csv** file.

6. Apply a Generalization Thesaurus

From the Pull Down Menu select ***Preprocess => Apply Generalization Thesauri*** and navigate to your Generalization Thesaurus. At the Adjacency dialog box select **Rhetorical**. After applying the text will change to reflect the application of the thesaurus.

Text after General Thesauri applied

> **John_Smith** lives in the **United_States_of_America**. He is a **United_States_of_America** citizen.

7. Edit your General Thesauri

After applying a Thesaurus the list can be altered by selecting from the Pull Down Menu ***Tools => Thesauri Editor***.

8. Delete Extra/Unneeded Concepts

Texts usually have many extra concepts, or noise, that are not relevant to the semantic connections. A Delete List removes those extra words. From the Pull Down Menu select ***Preprocess => Apply Delete List*** and navigate to the Delete List you want to use. The text in the main will change to reflect the application of the Delete List.

usCitizenDeleteList.txt

```
in
the
is
a
```

Text after Delete List with rhetorical adjacency

> John Smith lives **xxx xxx** USA. He **xxx xxx** United States citizen.

9. View and Alter Delete Lists

After creating Delete List you may want to make changes to it with the Delete List Editor. From the Pull Down Menu select ***Tools => Delete List Editor***. From this tool you can add or remove concepts from a Delete List. From the Pull Down Menu select ***File => Save as Delete List*** and either replace the old file or save it as a new file.

NOTE : *If you decide to make changes to the Delete List then* ***Undo*** *the applied Delete List and reapply the new one.*

10. Generate Output

After preprocessing the text it's time to produce output from them. The Pull Down Menu ***Generate*** contains functions that tell AutoMap to write output for the function selected; Concept Lists, Semantic List, Parts of Speech, and other useful functions.

Each function outputs files that can be examined for analysis and used to further process the text files.

11. Example of Output for Concept List

From the Pull Down Menu select ***Generate => Concept List***. AutoMap will ask for the directory to save the concept list.

```
concept,frequency,relative_frequency,gram_type,tf-idf
"He","1","0.5","single","0.0"
"John_Smith","1","0.5","single","0.0"
"United_States_of_America","2","1.0","single","0.0"
"citizen","1","0.5","single","0.0"
"lives","1","0.5","single","0.0"
```

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Encoding Lesson

Encoding Problems

The first you need to know is when you use the **Select Input Directory** AutoMap expects to find files in the standard **UTF-8** format. If the files in the directory are encoded differently the text in the display will not show up correctly.

Because the text you want to analyze could possibly come from a variety of sources there's no assurance that it's in the UTF-8 format. Word files, web pages, emails, or whatever else you can find can have a variety of encodings. And sometimes when you import text you find it's **NOT** in the form you thought it would be.

Those empty little boxes

Occasionally, when importing text, you will get empty boxes instead of the some specialty characters. This is due to differences in the encoding schemes. What is the problem? It's a simple explanation and a simple fix.

> There are two kinds of UTF-8, with and without the BOM (Byte Order Mark) at the beginning of the file. Microsoft products require the BOM in order to recognize UTF-8, and the UTF-8 they produce has a BOM. Most other products produce UTF-8 without a BOM.
>
> Technically no BOM is required for UTF-8, but Microsoft has adopted the convention of using its presence to distinguish that encoding from the OS default.

So without that marker some of your text may become mismarked.

Cut-and-Paste problems

Your first document may have started out with a proper UTF-8 format. But as you begin cutting and pasting material from other sources you may be adding oher formats. Anytime text is pasted into another document it retains it's encoding.

Smart Quotes

Smart quotes are not considered proper quote characters. The standard value for the straight quote character is **34**; there is only one character for both the beginning and ending quotes. The smart, or curly, quotes are actually two entirely different characters, **“** (left curly quote mark) and **”** (right curly quote mark).

The original designers of the ASCII character set did not define a standard method for identifying properly curved quotation marks, so computers have had a problem properly exchanging quotation marks ever since.

The Solution

First try AutoMap's **Text Import** function and allow AutoMap to try to detect the sources encoding. This function is designed to convert text into standard UTF-8 format.

If the program doesn't work, you can also use a third party text-editor to convert the data. Both Microsoft Word and the free Notepad++ text editor (http://notepad-plus.sourceforge.net/uk/site.htm) support this functionality. Simply open the file in your editor and do a **Save As...** a .txt file. Microsoft's Notepad saves files as single-byte ANSI (ASCII) by default.

Foreign Characters Sets

Foreign characters sets are an entirely different matter. These will require you to have the proper font installed on your computer as each font can possibly be encoded differently.

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Using a Concept List

Description

Concept Lists (the frequency of concepts in one file) and Union Concept Lists (the frequency of concepts throughout all loaded files) can be used to work with concepts from one or more text files. It lists the frequency, relative frequency, and gram type. When working with multiple files you'll find the Union Concept List useful.

NOTE : *The number of unique concepts considers each concept only once. The number of total concepts considers repetitions of concepts.*

Concept List Procedure

1. Select a text file(s) to use

Place your text file(s) in an empty directory. Load the file(s) by selecting from the Pull Down Menu ***File => Import Text Files***.

theBoy-4.txt:

```
See the boy named Dave. He has 2 balls. 1 ball is red. 1 ball
is blue.
```

milkAndCookies.txt:

```
Dave wants milk and cookies. He drives to the store. He then
buys milk and cookies.
```

2. Create Concept List

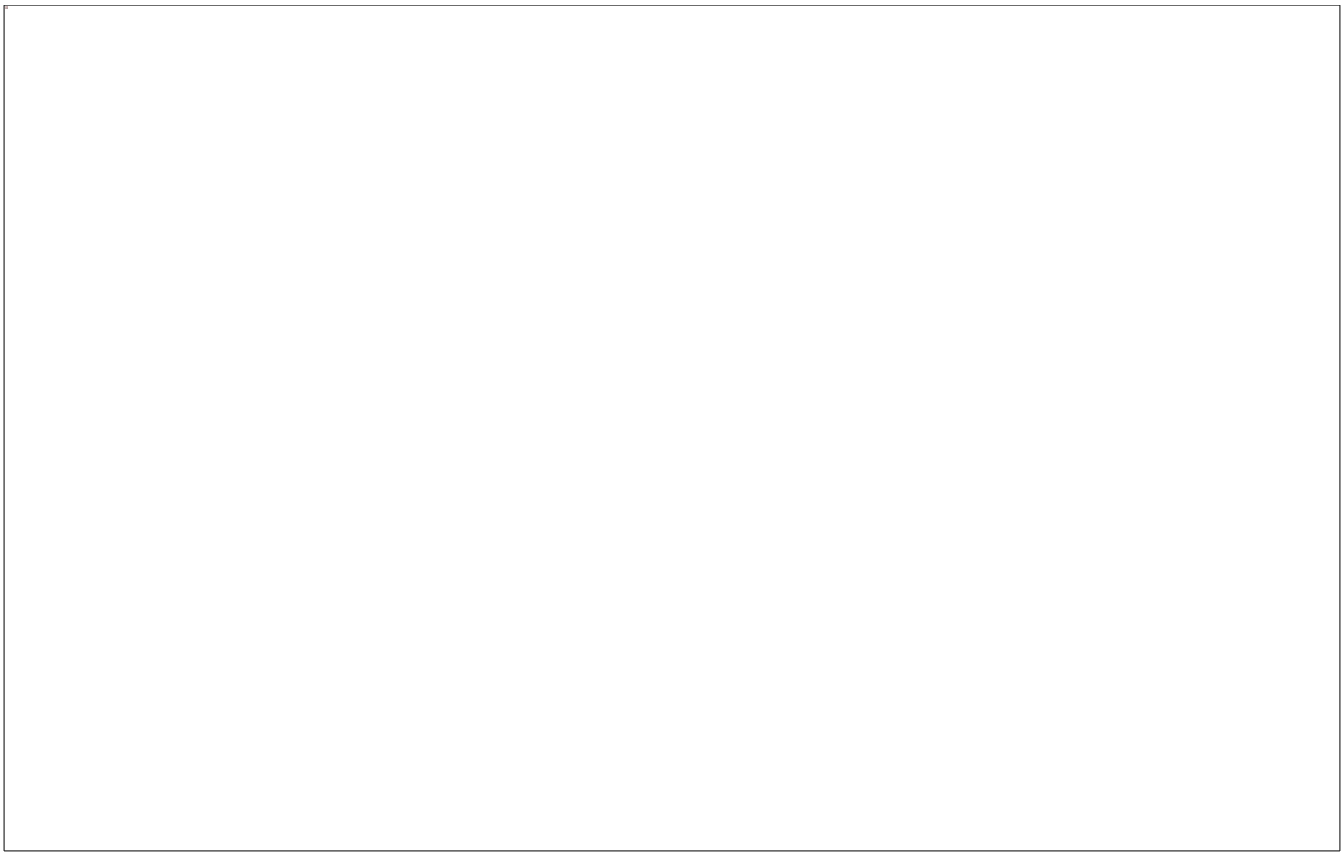
From the Pull Down Menu select ***Generate => Concept List => Concept List (per text)***. Navigate to where you want to save the file(s) and click **Select**.

3. Decide if you need Union Concept List

After specifying the directory for the Concept List(s) AutoMap will ask if you want to create a Union Concept List. Unless you know you will not need it, click **Yes**.

4. Review a Concept List in the Concept List Viewer

The Concept List(s) and Union Concept List can be viewed using **Concept List Viewer**. From the Pull Down Menu select ***Tools => Concept List Viewer***. From the Viewer Pull Down Menu select ***File => Open File*** and navigate to the location of the concept list to view.



NOTE : *If you load a Union Concept List the right-most column has the header* ***relative_percentage*** *denoting the frequency of a concept occurring in all text files.*

Concept List Viewer functions

Sorting a Concept List

A Concept List can be sorted by clicking on any of the headers. This will sort the list in an ascending order. Clicking the same header again will reverse the sorting order to descending. Which header is being used will be denoted by a small triangle to the left of the header name.

NOTE : *The small triangle to the right of the header will tell you which header is used for sorting and whether it's in ascending* ***upward facing arrow*** *or descending* ***downward facing arrow*** *order.*

Creating a Delete List

A Delete List can be created from the Concept List Viewer. Place a check mark in the **Selected** column of each concept to include in a Delete List.

From the Pull Down Menu select ***File => Save as Delete List***. AutoMap will prompt you to select a location to save the Delete List. Give it a unique filename and click **Open**.

NOTE : *The Delete List can be saved in either the .txt or a .csv format.*

This new Delete File can now be loaded and applied to your texts.

Selecting Concepts

In the Viewer ***Edit*** menu the viewer gives you options for selecting/unselecting multiple concepts.

Select All : Places a check mark in every check box.

Select None : Clears all check marks from the concept list.

Select Minimum Threshold : The number input will select concepts with frequencies equal to or greater than the threshold to be selected.

Select Maximum Threshold : The number input will select concepts with frequencies equal to or lesser than the threshold to be selected.

Find : will highlight the input text, if found, with a cyan background.

Reset Colors : removes all highlighting.

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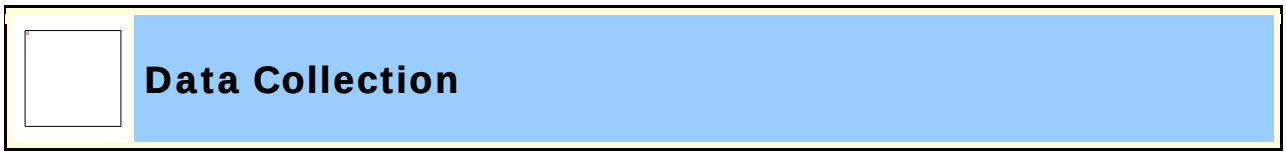


Description

AutoMap is designed to extract, analyze, and interpret relational data (also known as network data) from unstructured, natural language text data.

Relation Extraction Sources

The source of your daya can be anything: books, television, newspapers, blogs, emails, internet sites. AutoMap will extract the data and sort it into relational data which can be further analyzed in ORA.

Method

The first thing to do is identify the problem/goal.

Next all/some of the concepts need identified in the texts and the links between them (binary, typed, directed, weighted) can be defined.

Now this data can be represented as relational data (graph or list).

Then the data can be analyzed.

And finally the results can be interpreted.

How is network data collected?

Interviews, Automated (web-based surveys).

Person	Albert	Betty	Charlie
Albert	0	1	0
Betty	0	0	1
Charlie	0	1	0

Data collection is more of an approximation via Network Text Analysis as most real-world networks and sequential data are not iid (independent and identically distrbuted). Network data is a concise represntation of what's in the text data - Is it not the truth, only an approximation.

22 JUL 09

Using a Delete List

Description

Delete Lists allow you to remove **non-content** bearing conjunctions, articles and other noise from texts. It also allows you to delete concepts that you just don't care about for analysis purposes.

Delete Lists can be created internally in AutoMap or externally in a text editor or spreadsheet. They are a preprocessing stage done before doing any output.

NOTE : *Whether you apply the Delete List(s) before or after applying a Thesauri will depend on your exact circumstances. AutoMap allows for applying multiple Delete Lists is that is a necessity, one before and one after.*

Delete List Procedure

1. Select a text file(s) to use

Place the text to use in an empty directory. Below is an example text.

tedInUSA.txt

```
Ted lives in the United States of America. He lives on a
dairy farm. He considers it a good life. Would he ever
consider leaving?
```

2. Create a Concept List

To create a Delete List it helps to know the frequency of the concepts in the files. From the Pull Down Menu select ***Generate => Concept List***. Save the file in your output directory.

3. Create a Delete List

A Delete List can be created within AutoMap using the Concept List Viewer. From the Pull Down Menu select ***Tools => Concept List Viewer***. Navigate to the directory containing the Concept List file and select a file. In the Viewer place a check mark in the Selected column next to the concepts to include. From the View Pull Down Menu select **File => Save as Delete List**. Save the file in your support directory. The Delete List created can be viewed in the Delete List Viewer by selecting ***Tools => Delete List Viewer***.

A Delete List can also be created in Excel. Load the Concept List in Excel and sort by the frequency column. Create a new column and label it Delete List. Place an **X** next to all concepts to include in the Delete List. Sort the spreadsheet by the Delete List column. Copy all the rows containing an X in the Delete List column. Create a new sheet and paste these rows into it. Delete the column with the **X**s. Save this file as a .txt file.

NOTE : *For large concept lists review the top 100 entries and add concepts to the Delete List items. Resort primarily by the Delete List column and secondarily by the concept column. Review the top 100 again. Repeat this process until the top 100 entries are of interest. review the rest of the list for other unneeded or unwanted concepts. Save this list as a .txt file.*

TIP : *Create a cut-off limit (e.g. a word needs to be used at least three times. Concepts used less than that are placed on the Delete List.*

tedInUSADeleteList.txt

```
in
the
of
he
on
a
it
```

4. Apply a Delete List

From the Pull Down Menu select ***Preprocess => Apply Delete List***. Navigate to the directory where your delete list is stored.

5. Adjacency Option

AutoMap will ask what type of adjacency you what to use. The **Adjacency option** determines whether AutoMap will replace deleted concepts with a placeholder or not.

- **Direct Adjacency :** Removes concepts in the text that match concepts specified in the delete list and causes the remaining concepts to become adjacent.
- **Rhetorical Adjacency :** Removes concepts in the text that match concepts specified in the delete list and replaces them with **(xxx)**. The placeholders retain the original distances of the deleted concepts. This is helpful for visual analysis.

6. The newly pre-processed texts can be viewed in the main window.

Delete List with Rhetorical Adjacency

Ted lives **xxx xxx** United States **xxx** America. He lives **xxx xxx** dairy farm. He considers **xxx xxx** good life. Would he ever consider leaving?

Delete List with Direct Adjacency

```
Ted lives United States America. He lives dairy farm. He
considers good life. Would he ever consider leaving?
```

NOTE : *If using Direct Adjacency the concepts are* ***NOT*** *replaced with anything. The concepts are moved next to the ones before and after. For more information on Delete Lists see the Content section.*

NOTE : *If you need to remove the Delete List it can be* ***Un-applied*** *using the* ***Undo*** *function under the Pull Down Menu* **Preprocess** *or from the quick launch buttons.*

Other Delete List Functions

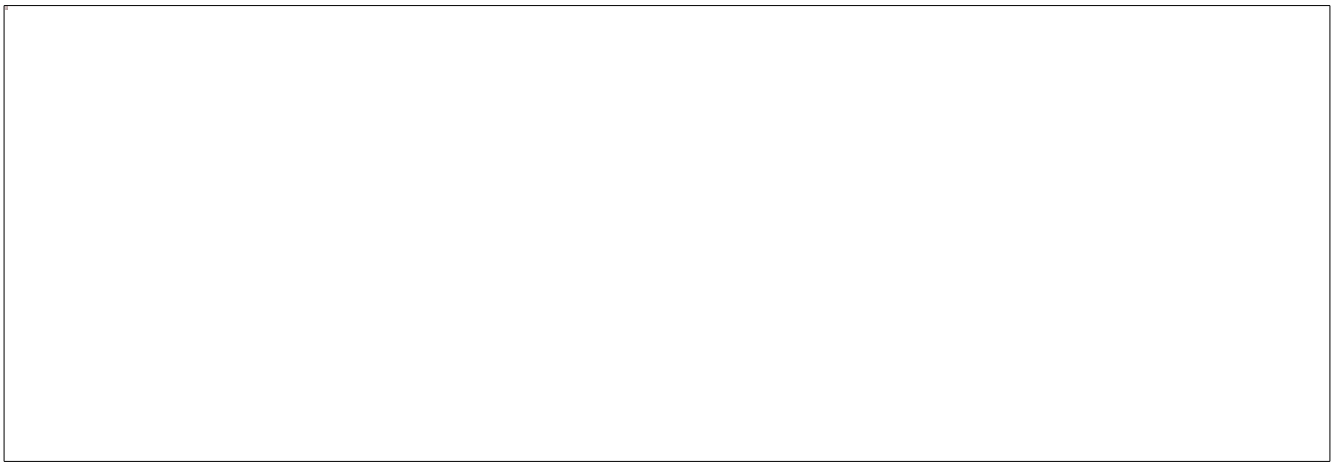
Multiple Delete Lists

Multiple delete lists can be applied to the same text in any order the user wants. They can be viewed in order using the Pull Down Menu.

NOTE : *This is useful if you have multiple specialty Delete Lists.*

Modifying a Delete List

After a Delete list is created you can modify it using the **Delete List Editor**. From the Pull Down Menu select ***Tools => Delete List Editor***. From the View Pull Down Menu select ***Open File*** and navigate to the Delete List to view.



From this window you can:

- **Add Concepts:** In the textbox above the list type **one** new concept then click **[Add Word]**. Your new concept will be added to the list. Repeat until you've added all concepts necessary. The next time you save the Delete List it will be saved without the checked concepts.
- **Remove Concepts :** Click in the check box next to the concept to remove in the **Select to Remove** column.. The next time you save the Delete List it will be saved without the checked concepts.

  NOTE : *No concepts are added or deleted until you actually save the file.*
- **Create New Delete List :** From the viewer Pull Down Menu select ***File => Save as Delete List***. AutoMap will prompt you to select a directory and give the file a new file name.

  NOTE : *Make sure to give the file the* ***.txt*** *extension.*

Save text(s) after Delete List

After applying a Delete you can save your texts by selecting from the Pull Down Menu ***File => Save Preprocess Files***. This step must be done before any other preprocessing as this option saves the texts at the highest level of preprocessing.

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Description

Thesauri are generally used to take multiple concepts, in different forms, and compile them under one **key concept**. If this is not done then the same concept could be listed many times as individual concepts.

Thesauri Procedure

1. Select your text file(s)

Copy these files into a text editor and save them as **johnSmith.txt** and **countryThesauri.csv**. Place the johnSmith.txt in a folder by itself. Place countryThesauri.csv in an accessible folder other than where johnSmith.txt resides.

usCitizen.txt

```
John Smith lives in the USA. He is a United States citizen.
```

2. Prepare your Thesauri

For this simple file the thesauri is short. Larger texts could easily have hundreds of entries. This can be done in either a text editor or a spreadsheet.

usCitizenGenThes-Ext.csv

```
The United States of America,United_States
United states,United_States
John Smith,John_Smith
America,United_States
USA,United_States
```

3. Loading the files

From the main menu select ***File => Import Text Files***. Navigate to the directory where you placed johnSmith.txt and click **Select**. The file will appear in the main window.

4. Applying the thesauri

From the main menu select ***Preprocess => Apply Generalization Thesauri***. Navigate to the directory where you placed countryThesauri.csv and click **Select**. The thesauri will be applied and a new text will appear in the window with the thesauri substitutions. **Apply Thesauri (3)** will now appear in the dropdown menu denoting AutoMap has applied the thesauri.

Text after thesauri applied

```
John_Smith lives in the United_States. He is a United_States
citizen.
```

Thesauri Editor

AutoMap contains a **Thesauri Editor** making it easy to revise your thesauri files. From the dropdown menu select ***Tools => Thesauri Editor***.

From the Thesauri Editor menu select ***File => Open File***. Navigate to the directory with your thesauri and click **[Okay]**. From the Thesauri Editor you can make changes to the thesauri.

Questions regarding Thesauri

Different Thesauri for different purposes

You might initially think it's necessary to keep all the thesauri entries in one place. Just easier to find everything. But it essence it would make it easier to keep track by splitting up the thesauri into smaller files, each with it's own purpose. Below are some of the specialty thesauri used in this lesson.

You might have a general countries thesauri that is always used to fix multiple ways of posting a country. The U.S. can be listed in a multitude of ways:

```
U.S., America, United States, The United States of America
```

A country thesauri could have all these permutations listed and convert them all to the same concept say, `United_States`. So instead of four individual concepts you would have one.

```
U.S.,United_States
America,United_States
United states,United_States
The United States of America,United_States
```

If your project concentrates on a particular field you could have a thesauri that contains names of organizations, resources, or people's names which appear with regularity.

Analysts working on a similar subject every day would need the same names, places, and resource for each run. A special thesauri could take care of that and would be easier to maintain as a single file.

Is the thesaurus case-specific?

NO! If there are two or more entries for the same concept the first thesaurus entry will be used for all replacements.

```
HE,Tom
He,Dick
he,Harry
```

Every instance of **HE, He, and he** will be replaced with **Tom** without comparing their case.

Running the Delete List Before or After the Thesauri

You may also find it necessary to run a Delete List on your files. Whether you apply a delete list before or after applying a generalization thesauri will

depend on your set of files. A longer discussion can be found in the Content section under **Process Sequencing**.

Using of one large thesauri vs. multiple smaller thesauri

This will be a personal choice of the user. Multiple thesauri have the advantage of easier editing but the downside is needing to apply multiple thesauri to the same set of files.

NOTE : *When doing multiple runs on the same data some analysts prefer to maintain a single thesaurus.*

NOTE : *The Generalization Thesaurus is NOT case sensitive to what it finds in the text. United States, United states, and united States are all considered the same bi-gram and would be replaced with the same entry.*

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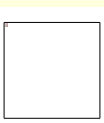


Compare Concept Lists

Description

Compares two Concept Lists and displays concepts that appear in either both files (white background) or in a single file (red or green background). The viewer is called from the pull-down menu by selecting ***Tools => Concept List Viewer***.

Load

This example will use a Concept List created with a raw file and a Concept List created after applying a thesaurus. This will be used to demonstrate how the viewer detects frequency differences.

tmbg.txt

```
John Flansburgh and John Linnell are musicians. John and John
are the group They Might Be Giants.
```

The tmbg's file is loaded into AutoMap with ***File => Import Text Files*** and a Concept List is created ***Generate => Concept List => Concept List (Per Text)***. This Concept List is then loaded into AutoMap with ***Tools => Concept List Viewer***.

NOTE : *Notice the concept* ***John*** *has a frequency of* ***4****.*

Close the Concept List Viewer.

Go to the directory where your Concept List is saved and rename it tmbg-noThes.csv. This will prevent AutoMap from overwritting the file.

Apply the generalization thesaurus tmbg-genThes.csv file with ***Preprocess => Apply Generalization Thesauri***.

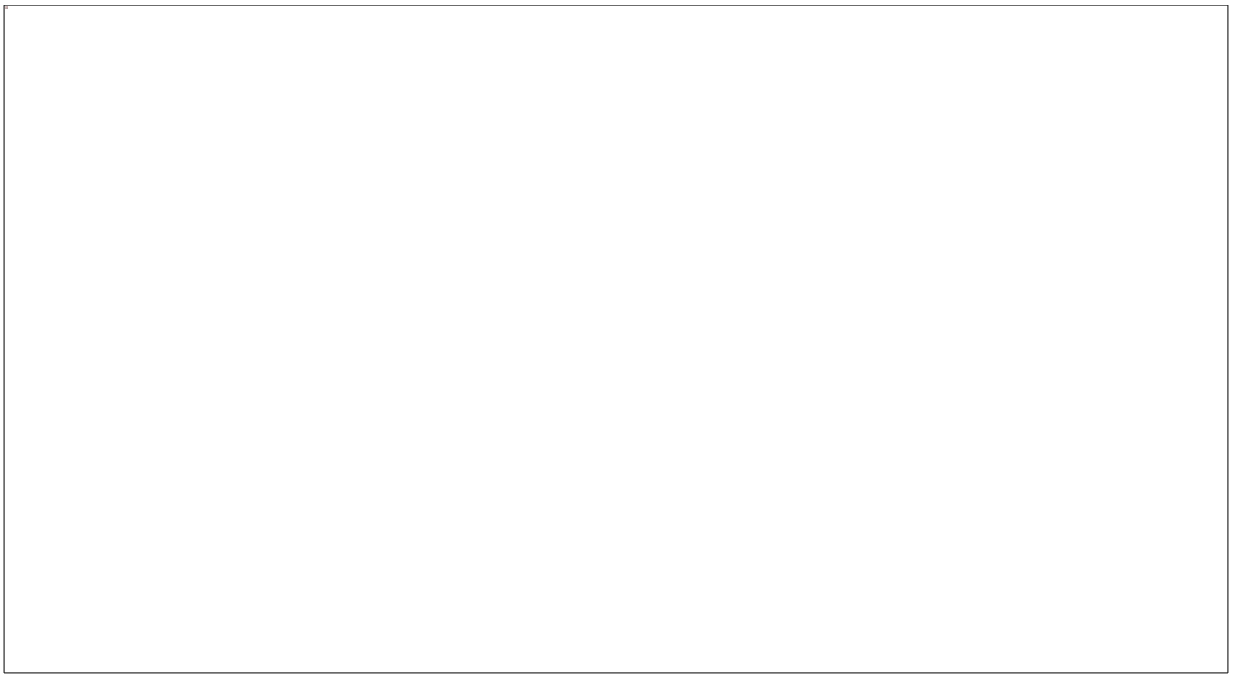
tmbg-genThes.csv

```
John Flansburgh,John_Flansburgh
John Linnell,John_Linnell
They Might Be Giants,They_Might_Be_Giants
```

Create a Concept List with ***Generate => Concept List => Concept List (Per Text)***. This Concept List, named tmbg.csv, will be used as the compare file.

Comparing the two files

Start the Concept List Viewer with ***Tools => Concept List Viewer***. Load the first Concept List with ***File => Open File*** and navigate to the directory containing the tmbg-noThes.csv (the file without the thesaurus applied). Next we will compare this with the second file. From the pull-down menu select ***Edit => Compare File*** and navigate to the direcoty containing tmbg.csv (the file with the thesaurus applied).



The concepts with white backgrounds are found in both files. The concepts with red backgrounds are found only in the original file. The concepts in green are found only in the newly compared file.

The cells with the yellow backgrounds are concepts found in both files (e.g. concepts on white backgrounds) but they have different values. Notice on the image below the arrow hovering over the frequency value for **John**. In the original file John had a value of **4**. The tooltip displays a value of **2** which is the value in the compared file.

Message Log Window

After making a comparison AutoMap will display the statistics of the comparison in the Message Log Window. It will display added (green), deleted (red), and altered (yellow).

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Description

Removing unwanted, or unneeded, items is important to reduce the amount of data to analyze. This include white space, punctuation, numbers and symbols.

Remove Extra White Spaces

In many texts there are extra white spaces inserted between words or before and after punctuation. This is partly a holdover from the days of the typewriter of double spacing after a period. But with proporional fonts it's now an unnecessary practice. AutoMap finds instances of multiple spaces and replaces them a single space. Below is a text with varying number of white spaces between words.

spaces.txt

```
one space. two  spaces. three   spaces. four    spaces.
```

After AutoMap removes extra white spaces it's much easier to read.

```
one space. two spaces. three spaces. four spaces.
```

Remove Punctuation

Punctuation is mainly for use in making sure the reader understands how the words are expressed. During analysis they are somewhat unnecessary as the words themselves are more important. The Remove Punctuation function removes the following punctuation from the text: **.,:;' "()!?-**. AutoMap will remove the punctuation and either close up the sapce between or insert a white space as a placemarker.

punctuation.txt

```
"English" is hard (so very hard)!?! What's with all these
commas (,), semi-colons (;), and colons (:).
```

Removing Punctuation and inserting white space

```
 English  is hard  so very hard    What s with all these
commas      semi colons      and colons
```

Removing Punctuation and NOT inserting white space

```
English is hard so very hard Whats with all these commas
 semicolons  and colons
```

Remove Symbols

Symbols are parts of language which are not concepts but assist in understanding the language. Occasionally these symbols need to be removed to make semantic networks and Meta-Networks better understood.

Removing the Default List of Symbols

AutoMap has a default list of symbols that can be removed:
~ ` @ # $ % ^ & * _ + = { } [ ] \ | / < >.

NOTE: *This option is an all-or-nothing function.*

symbols.txt

```
As he emailed {bob@jewelry.com} he knew the $200.00*
|+shipping| on [http://jewelry.com\~necklace] would = a ^50%
was a <`bargain>. And his #1 girl & mom deserved the best.
```

Removing Symbols and inserting white space

```
As he emailed  bob jewelry.com  he knew the  200.00
 shipping  on  http:  jewelry.com  necklace  would   a  50
 was a   bargain . And his  1 girl   mom deserved the best.
```

Removing Symbols and NOT inserting white space

```
As he emailed bobjewelry.com he knew the 200.00 shipping on
http:jewelry.comnecklace would  a 50 was a bargain. And his 1
girl  mom deserved the best.
```

Removing a User Set of Symbols

The second option for removing symbols is to define the list you want removed. The list consists of one line with all the symbols to remove together with no spaces between the entries.

symbols.txt

```
As he emailed {bob@jewelry.com} he knew the $200.00*
|+shipping| on [http://jewelry.com\~necklace] would = a ^50%
was a <`bargain>. And his #1 girl & mom deserved the best.
```

Removing Set of Symbols containing {}[]#

```
As he emailed bob@jewelry.com he knew the $200.00*
|+shipping| on http://jewelry.com\~necklace would = a ^50%
was a <`bargain>. And his 1 girl & mom deserved the best.
```

Remove Numbers

Removing numbers will remove not only numbers as individual concepts but also removes numbers embedded within concepts.

Remove Options

There are two options for removing numbers.

1. Replacing the number(s) with a space
2. Removing the number(s) and closing the distance between the letters before and after.

Examples

Remove numbers as individual concepts.

buckleMyShoe.txt

```
1, 2, buckle my shoe! 3, 4, shut the door
```

Text after RemoveNumber:

```
, , buckle my shoe! , , shut the door.
```

Numbers within other concepts and closing up distance.

c3pO.txt

```
C3PO was a robot in the movie Star Wars.
```

Text after RemoveNumber:

```
CPO was a robot in the movie Star Wars.
```

Numbers within other concepts and inserting white space.

c3pO.txt

```
C3PO was a robot in the movie Star Wars.
```

Text after RemoveNumber:

```
C PO was a robot in the movie Star Wars.
```

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Lessons Advanced

Lessons Advanced

1. **Working with a Large Thesaurus**
2. **Extracting a Semantic Network**
3. **Your First Script Run**

Working with Large Thesauri

Description

When working with a large amount of documents, each one being large themselves, you will find your thesauri growing increasing large. There are several items which you should be aware of in this circumstance.

The Order of the Thesaurus

The order of the thesaurus entries can have an impact on your results. Better results will be obtained if the thesaurus is in a descending length order.

The **Sort Thesaurus** function can assist in ordering your thesauri. From the pull-down menu select ***Procedures => Sort Thesaurus***. Navigate to the thesaurus you want to sort. Then give it a new name, and if you want, a new location and save it.

The Sort Thesaurus functions sorts by number of words in an entry. The order of entries with the same number of words will not change.

See The AutoMap GUI > Procedures Menu for more information

Conflicts in Data

A problem can occur when you have more than one agent or location with the same name. In the beginning the text may specifically refer to **John Smith** and **John Doe** but afterwards you might find that a person is only referred to as **John**. AutoMap will use the first occurrence of John it finds when making substitutions.

AutoMap processes a thesaurus from top to bottom. This is why it's important to sort a thesaurus by the length of the entries.

Sequence of Operations

```
Mohammed abd al-Sha'bai
```

This name contains both punctuation and symbols. Depending on the order of the preprocessing you could end up with any of the following three:

```
Mohammed_abd_al_Sha_bai
Mohammed_abd_al-Sha'bai
Mohammed_abd_alShabai
```

How General Is Too General?

If you start with a 2,000 page text set, you will probably be unable to read all of the text prior to starting the processing. One of the problems you may encounter in such situations relates to common names and terms. For example, a preliminary review of the text may reveal that the documents contain an individual named **Joe**. Given that this is very common name, the data may contain several other individuals named **Joe**. Should this occur the program will incorrectly process all Joes as if they were the first Joe. Users need to exhibit caution before including common names and common terms in their thesauri.

If your text contains two names, `Joe Smith and Joe Jones` and a thesaurus entry for the name `Joe` then AutoMap will substitute all Joes for the first entry in the thesaurus.

Using the ThesauriContentOnly option

You create a Meta-Network (Carley, 200) with the one-grams **dog, cow, and farm**. If you are going to use the **UseThesauriContentOnly** option then those three terms need to be in your General Thesaurus also. If they are not in the thesaurus then they will be eliminated from the output and the Meta-Network will not see them to tag them.

Positive or Negative Links

AutoMap creates links between nodes. But AutoMap does not differentiate between positive and negative links. After processing that is up to the analyst.

```
The U.S. lacks formal diplomatic relations with North Korea,
Bhutan, and Cuba, but has close relationships with Canada and
the U.K.
```

Using a large window will create a fully connected graph with all links the same type. It will also make connections for all the countries involved. The reality is that there should be positive links to Canada and the U.K. and negative links to North Korea, Bhutan, and Cuba.

Using a small window size would create a link set that is wrong:

```
US => North Korea => Bhutan => Cuba => Canada => UK
```

right:

```
negative links: US => North Korea; US => Bhutan; US => Cuba

positive links: US => Canada; US => UK
```

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Description

Text files have connections but they are sometimes difficult to see. You can use AutoMap and process them to create semantic networks which can be viewed in ORA.

This lesson details processing text files in AutoMap to extract a Semantic Network, how to view it in ORA. Other lessons will detail specific reports that can prove useful.

What is a Semantic Network?

Semantic networks are knowledge representation schemes involving nodes and links between nodes. It is a way of representing relationships between concepts. The nodes represent concepts and the links represent relations between nodes. The links are directed and labeled; thus, a semantic network is a directed graph.

Procedure

This lesson will use the file: **JC_summary-1.txt**.

Load text document into AutoMap

Place all the text files for conversion into a single folder. From the Pull Down Menu select ***File => Import Text Files***. The first text will be displayed in the main window and the filename will appear in the Filename Box. Using the File Navigation Buttons you can navigate through the loaded files.

Build a General Thesauri

Many people, places and things are made up of two or more words. For example Julius Caesar, Brutus's House, status of Caesar. Before producing any files usable in ORA it's necessary to combine these multi-word concepts into **key concepts**.

NOTE : *Some concepts include the definite article in their name and should be included in the thesaurus.*

If you have no previous thesaurus then one will need to be created from scratch. This will require going through the text files and finding those multi-word concepts and creating a list of key concepts. The format for this is `multi word concept,key_concept`.

NOTE : *Be sure **NOT** to leave any spaces before or after the comma.*

Below is part of the Generalization Thesaurus that is used for this lesson. It contains concepts from the Julius Caesar text.

juliusCaesar-GenThes.csv

```
Ides of March,Ides_of_March
Julius Caesar,Julius_Caesar
Julius Caesar's,Julius_Caesar
Julius Caesar's status,statue_of_Julius_Caesar
kill Caesar,kill_Caesar
kills herself,commit_suicide
king,emperor
letter,forged_letters
```

Apply a General Thesauri

After the thesaurus is created it is time to apply it to the text. From the Pull Down Menu select ***Preprocess => Apply Generalization Thesauri***. Navigate to the directory where the thesauri is saved and click **[Select]**. Next a dialog box will appears asking if you want to use **Thesaurus Content Only**. Leave the response as **No**.

*See **Content => Thesaurus Content Only** for more information.*

Notes about Thesaurus Building:

1. In large texts there may be multiple person with the same first name.

2. The definite article in the concept like **the USDA** would be placed in the Thesaurus instead of being deleted in the Delete List.

Create the Concept Lists

Next we need to create a Delete List. One way is to first create a Concept List and use this to help in creating a Delete List. The frequency attribute will assist in finding unneeded and unwanted terms.

From the main menu select ***Generate => Concept List => Concept List (Per Text)***. Navigate to the directory to save the files and click **[Select]**. AutoMap will ask if you want to create a **Union Concept List**. Click **[No]** as you only have one file loaded.

NOTE : *With multiple files loaded you would select* **Generate => Concept List => Concept List (Union Only)**. *This creates one list for all files currently loaded.*

Build a Delete List

Open the Concept List Viewer by selecting ***Tools => Concept List Viewer***. From the viewer menu select ***File => Open File***. Now navigate to the directory containing the newly created Concept List and click **[OK]**.

Click the header **Frequency**. This will sort the concepts by the number of occurrences in the file(s). To build a Delete List place a check mark in the **Selected** column for all the concepts you wish to place in the Delete List. When you are finished select ***File => Save Delete List***. Navigate to the folder you want to save the Delete List file. Close the Viewer.

Apply a Delete List

From the main menu select ***Preprocess => Apply Delete List***. Navigate to the directory with your newly created file and click **[OK]**. You will be asked whether you want Rhetorical (replaces deleted concepts with a placeholder **xxx**) or Direct (removes the concept entirely) adjacency. For this lesson I choose rhetorical.

NOTE : *The placeholder **xxx** will not output to the DyNetML file as a concept.*

Create a DyNetML file

Now it's time to generate the DyNetML. From the Pull Down Menu select ***Generate => Concept List => Concept Network (Per Text)*** for separate DyNetML files or ***Generate => Concept List => Concept Network (Union Only)*** to create one file with concepts from all files. AutoMap will output **XML file(s)** usable directly in ORA. You will directed to select the destination folder for these file(s).

NOTE : *When processing multiple files and selecting the **Per Text** function AutoMap will ask if you want to create a Union of all Semantic Network files.*

The DyNetML file(s) will contain one NodeClass of Concepts. After loading into ORA Nodes can be separated into individual NodeClasses and links can be created to form Networks.

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First Run with the Script

Description

All of AutoMap's functions can be accessed through the script. The two required files are the AM3Script (The AutoMap program) and a .config file

(designed by the user). Additional files could include Delete Lists, Thesauri, or other list files necessary by the program.

Create a Workspace

A good starting point is creating a project directory, a place where all your input (your text files), output (files AutoMap writes), and support (required files by certain functions) files will reside. This helps prevent files from getting lost. One suggestion is to create a top level project directory then create input, output, and support directories within that directory.

```
C:\My Documents\dave\project\input
C:\My Documents\dave\project\output
C:\My Documents\dave\project\support
```

The .config file

Find the blank .config file in the AutoMap directory and make a copy. Rename this to something regarding your project. Open it in your text editor to begin editing the file. The blank .config file will appear as below.

```
<?xml version="1.0" encoding="UTF-8"?>
<Script>
<Settings>
    AutoMap textDirectory="" tempWorkspace="" textEncoding=""/>
</Settings>

<Utilities>
<PreProcessing>

</PreProcessing>
<Processing>

</Processing>
<PostProcessing>

</PostProcessing>
</Utilities>
</Script>
```

Initial Setup

The first thing to do is tell AutoMap where your input files are and where you want the output files to be written.

```
<Settings>
    AutoMap textDirectory="C:\My Documents\dave\project\input"
    tempWorkspace="C:\My Documents\dave\project\output"
    textEncoding="" />
```

```
</Settings>
```

PreProcessing Functions

Now decide which functions of AutoMap you need to run on your files. These are divided into three areas: **Preprocessing, Processing, and PostProcessing**. Review the documentation on the various functions to decide which functions you need to run on your text.

A Generalization Thesaurus

Usually a Generalization Thesaurus is the first file to create. This can be done in either a text editor or spreadsheet. Create a list of single/multi word concepts from the text and the key concepts they should be translated to.

In a **text editor** create each pair on a single line separated by a comma. Make sure to **NOT** leave a space between the comma and the two items.

```
United States of America,United_States_of_America
```

Save this file as a **.csv** file.

In a **spreadsheet program** place the single/multi word concept in the first column and the key concept in the second column.

A	B
United States of America	United_States_of_America

Save this file as a **.csv** file.

In your project .config file in the Preprocessing section insert the command for applying a Generalization Thesaurus. Place the pathway to the newly created thesaurus in the **thesauriLocation** parameter and choose whether to use the **thesauriContentOnly** option.

NOTE : *thesauriContentOnly is set to* ***y*** *(put only concepts from the thesaurus in the output file) or* ***n*** *(use all concepts form the text files).*

```
<PreProcessing>
    <Generalization thesauriLocation="C:\My
    Documents\dave\project\support\thesauri.csv"
    useThesauriContentOnly="y" />
</PreProcessing>
```

Save the file.

A Delete List

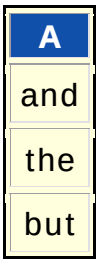
After all the key concepts have been identified it's time to find the **unneeded and unwanted** concepts. A Delete List removes these concepts and reduces the overall number of concepts to analyze. The procedure for applying a Delete List is similar to applying a thesaurus.

In a **text editor** create a list of concepts to be removed from the text. Each line should contain only one concept which consists of a single word. There should be no extra spaces or punctuation included.

```
and
the
but
```

Save this file as a **.csv** file.

In a **spreadsheet program** place each concept to delete in a single cell in the first column



A
and
the
but

Save this file as a **.csv** file.

In your project .config file in the Preprocessing section insert the command for applying a Delete List. Put the pathway to the newly created Delete List in the **deleteListLocation** parameter and choose whether to use the **saveTexts** option.

```
<PreProcessing>
    <Generalization thesauriLocation="C:\My
    Documents\dave\project\support\thesauri.csv"
    useThesauriContentOnly="y" />
    <DeleteList adjacency="r" deleteListLocation="C:\My
    Documents\dave\project\support\deleteList.txt"
    saveTexts="y"/>
</PreProcessing>
```

Save the file.

Other Preprocessing Functions

Any number of the preprocessing functions can be included in the script file in whatever order you need them. Insert the commands within the **<Preprocessing** tags in the order you need them performed.

NOTE : *am3script will perform these function in the order they are placed in the script. Make sure you know what order you need to perform each task.*

Processing Functions

Next thing to consider are the steps to take after the preprocessing is finished. These include most of the functions that output files and are based on the text after preprocessing. To run a Processing function the command is placed between the **<Processing>** tags.

Processing functions with no parameters

Processing functions which take no parameters include **Anaphora, ConceptList, UnionConceptList, and NGramExtraction**. Placing these tags between the **<Processing>** tags automatically performs these functions in the order that order.

```
<Processing>
    <ConceptList />
    <UnionConceptList />
</Processing>
```

Processing functions with parameters

All other Processing functions require parameters to set for successful completion. This is either the location of a support file or parameters necessary to complete the function. The parameters follow the tag and are separated by a space and the value is enclosed in quotes.

```
<Processing>
    <SemanticNetworkList directional="U" resetNumber="1"
    textUnit="S" windowsize="5" />
</Processing>
```

If a tag requires a file to work then the pathway needs to be placed in the location parameter. An incorrect pathway will cause the AutoMap function to fail.

```
<Processing>
```

```
    <Meta-Network thesauriLocation="C:\My
    Documents\dave\project\support\thesauri.csv" />
</Processing>
```

PostProcessing Functions

The last step is to determine which, if any, postprocessing functions are needed. These are used to alter the DyNetML before running in ORA. They include **addAttribute, addAttribute3Col, and UnionDynetml**. The addAttribute and addAttribute3Col both take an external file with a list of attributes to add. The UnionDynetml requires the **unionType** to create either a **s** semantic or **m** Meta-Network (Carley, 2002) output file.

```
<PostProcessing>
    <addAttribute attributeFile="C:\My
    Documents\dave\project\support\attribute.csv" />
    <unionDynetml unionType="s" />
</PostProcessing>
```

Output files will be written to the designated output directory.

Running the Script

After all the Preprocessing and Processing tags are completed the script can now be run.

Open a Command Window from the Start menu and navigate to the directory containing AM3Script. Move your **.config file** to this directory. At the command prompt type **am3script project.config**. Am3script will execute using the .config specified. Output files will be found in the directory specified in the tempWorkspace parameter.

```
<Settings>
    AutoMap textDirectory="" tempWorkspace="" textEncoding=""/>
</Settings>
```

NOTE : *Be sure to leave a space between am3script and the name of your config file.*

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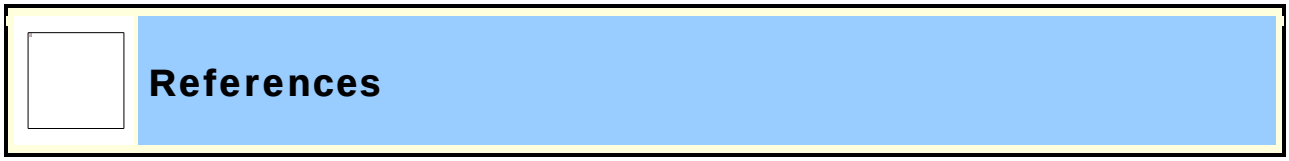

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