ViCoS - Visualizing Conceptual Spaces

User's Guide

**The latest version can be downloaded
from: http://tla.mpi.nl/tools/tla-tools/vicos/**

This manual was last updated in June 2010

Original Author: Konrad Rybka

**Note: Some parts of the manual are incomplete
because the tool is still in development.**

The Language Archive, MPI for Psycholinguistics, Nijmegen, The Netherlands

ViCoS - Visualizing Conceptual Spaces: User's Guide
User's Guide

The latest version can be downloaded from: http://tla.mpi.nl/tools/tla-tools/vicos/

This manual was last updated in June 2010

Original Author: Konrad Rybka

Note: Some parts of the manual are incomplete because the tool is still in development.

Table of Contents

Chapter 1. Introduction

1.1. General information

ViCoS is a tool for creating relations between different lexical entries or parts thereof. It has been developed by the Technical Department of the Max Planck Institute for Psycholinguistics in Nijmegen and it is designed to interact with other tools developed there. In particular it is inextricably linked to LEXUS, Lexicon Manipulation and Analysis Tool, as it is from this source that ViCoS draws lexical data.

ViCoS allows users to elaborate on the lexical material provided by LEXUS by way of creating different types of relations between the lexical entries. In particular it has been devised to make it possible to abstract from words as such and to create links between concepts, thus creating a conceptual space. By a conceptual space we understand here a certain informal ontology that describes a given domain by means of predefined relations. ViCoS makes it possible for users not only to create such conceptual spaces by establishing links between lexical entries, but also to define their own types of relations, thus allowing for the creation of all kinds of ontologies.

ViCoS has been designed with the view to enhance language documentation activities by making it possible to complement a linguistic description of a language (grammar, lexicon) with a conceptual account. ViCoS is a perfect environment for visualizing conceptual spaces allowing the users to see which concepts are related, which are culturally most prominent etc. Thus words can be turned into culturally relevant concepts with the help of ViCoS and placed in a network together with others. The aim is to emphasize this cultural aspect of language documentation, as our assumption is that language users model and manipulate a world of concepts and their relations rather than just a set of lexical entries.

Being a web-based tool, ViCoS can be accessed through the Internet from any place in the world. Therefore it can be used not only by scientists (linguists and anthropologists in particular) but also by language community members. These two groups of users can complement each other in the process of language documentation. Speech community members can use ViCoS to describe and visualize their language and culture and to learn from such resources. From the perspective of community members, words are the keys to access and describe the relevant parts of a community's culture. For a community a lexicon is a practical tool and not a theoretical construct, and the understanding of words is best achieved through the multiple associations they evoke, rather than in terms of any abstract theory of meaning. In ViCoS such networks of associations of fuzzily defined concepts can be easily visualized. Community members can therefore be actively engaged in the documentation of their culture and in particular in the process of defining their conceptual space. Scientists on the other hand, such as linguists and anthropologists can use ViCoS to contribute to and exploit the resources for the study of the community's language and culture, as well as to compare them with those of other communities.

1.2. ViCoS and LEXUS

As mentioned before ViCoS is inextricably linked to LEXUS - by this we mean that it takes the lexical material, which is the basis for the creation of conceptual spaces, from your lexica in LEXUS. It is also dependent on LEXUS in a few other ways but for now it is enough to know that you can only work with ViCoS on lexical data that has been imported into LEXUS. You can work on all the lexica that you have in your workspace in LEXUS and it is possible both to create conceptual links between entries within a particular lexicon as well as to link entries from different lexica in your workspace. Importantly everything that you create in ViCoS is created on the LEXUS data, but ViCoS does not modify your lexica in LEXUS in any way. In that sense the structures created in ViCoS are independent conceptual spaces. Still, ViCoS allows users to easily switch between the conceptual space that it embodies and the lexical space of LEXUS (see Section 3.3), which makes the study of language and culture more integrated.

1.3. Accessing ViCoS

In order to access ViCoS one has to connect to the Internet and go to the LEXUS webpage. There you can log in using the username and password that you use for your LEXUS account. In LEXUS main menu there is

a button that redirects you to the ViCoS workspace. At the moment the browser supported by the Technical Department of MPI for the use of ViCoS is Mozilla Firefox - therefore we advice to use its newest version. If you do not have Mozilla Firefox, you can download it for free from www.mozilla.com [???]. Moreover you will need to have a Java script activated in your browser. Finally, you will need an Abode Flash Player. If any of these applications is missing, your browser will notify you about that and suggest the appropriate download/installation.

Chapter 2. The Basics

2.1. ViCoS Workspace

The ViCoS Workspace consists of a number of separate fields and bars. In the right uppermost corner you will find two roll-out fields: Lexicon and Data Category, that will let you choose the right lexicon and the right data category from that lexicon for your searches.

Figure 2.1. Lexicon and Data category menu

To the right of these menus you will find the Help button, which you can click if you need guidance through some of the most common and basic functionalities. Even further to the right you can find the button that opens the Relation Type Manager, RT Mgr, in which you can define new relations according to your needs. To the left of these fields, in the upper part of the workspace we can see a bar that normally displays your lexicon. We shall call it the Search Bar. At the moment, however, this button does not display anything, as we have not chosen a lexicon yet, nor a data category. The left margin of the workspace constitutes the Word List Window, in which the results of your browsing or searching will be displayed. You can adjust the size of this column by clicking on the bar that separates it from the rest of the workspace and dragging it either to the left or to the right, thus resizing the column.

Figure 2.2. Search Bar and Word List View

The main part of the workspace is divided into three fields. The top most part, which will be called the Lexical Entry Window is the part with the text Welcome to ViCoS in it. The part below, which includes the two oval windows for Source and Target will be called the Relation Window. Finally, the part at the very bottom of the workspace that includes four oval fields is the Edit Window. These three windows are also adjustable, that is you can move the bars between them to resize them according to your needs. In the following sections we shall describe in detail the functions of the particular parts of the workspace.

Figure 2.3. Relation Window

2.2. Selecting the lexicon

After logging to your workspace, the first thing that you have to do is choose a lexicon that will be the source of data for ViCoS during this session. In the right upper corner there is a field called Lexicon. In the roll-out menu of that field you will find all the lexicons that exist in your workspace in LEXUS with the same names as in LEXUS. Remember that your workspace in ViCoS is linked to that of LEXUS, so you cannot work on lexicons that are not in that particular workspace:

Figure 2.4. Choosing the lexicon

Sometimes you have only one lexicon in your workspace in LEXUS, which means that there will be only one lexicon to choose from in ViCoS. Still, whenever you start a new session in ViCoS you have to click the roll-out menu and choose that lexicon. This menu also allows you to switch between lexicons - you just have to open the roll-out menu and choose a different lexicon to start working on a different conceptual space.

2.3. Selecting the data category

Once you have decided, on which lexicon you are going to work, it is time to decide through which data category you want to search. The data categories that you can choose from are defined by your LEXUS lexicon, ViCoS does not add any new categories. In the Data Categories field you will therefore find all the categories that are present in your lexicon structure in LEXUS. Again from the roll-out menu, you can choose which data category you want to investigate. Notice that once you have done that, the search button appears and the appropriate sort order (dependent on the particular data category) is activated. The search option, that we will discuss in Section 2.5, will then search through the values of this data category.
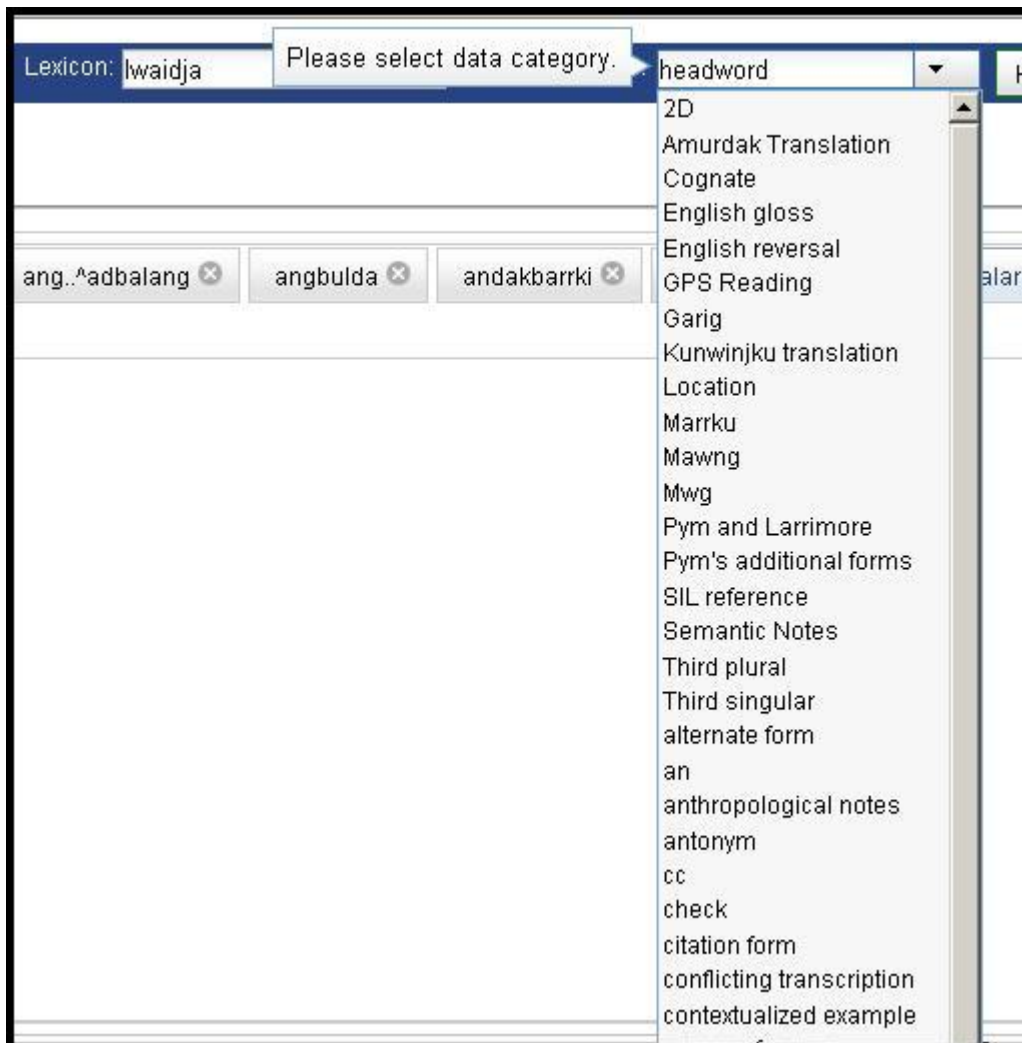

Figure 2.5. Choosing the data category

Whenever you want to change the data category that you are currently using for searching or browsing, you have to go back to this roll-out menu and switch to any other category. Importantly, when you change the data category the order in which the entries are displayed, either in the Search Bar or in the Word List Window. The entries are always arranged according to the sort order of the particular data category in LEXUS.

2.4. Browsing the lexicon

Notice that once you have chosen a certain data category the Search Bar changes: the Search button appears and the relevant sort order is displayed. You can now browse through the entries. If you click on any of the letters in the Search Bar, the entries that begin in that letter will appear in the Word List column.

Sometimes not all results can fit into the screen, in which case you can move to the next list with the **>** button or go back to the previous one with **<**.
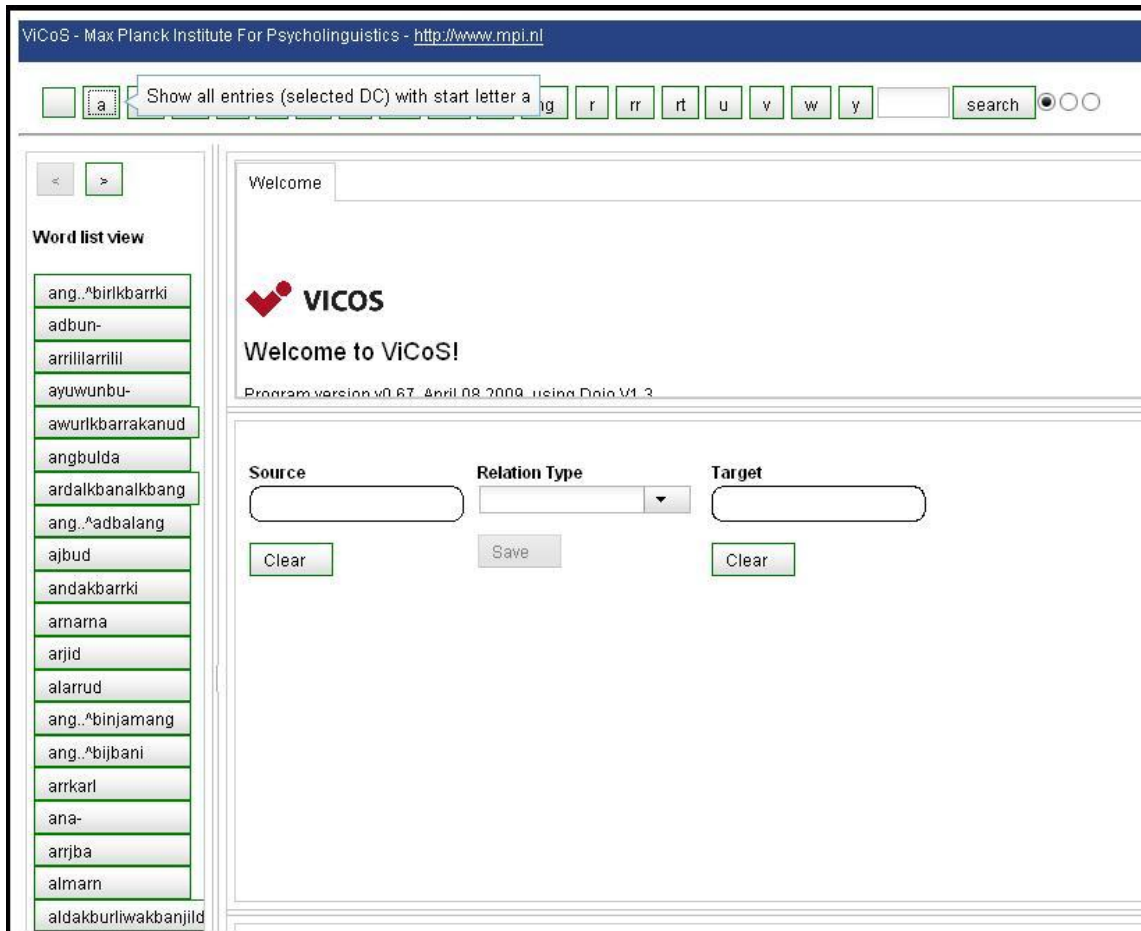

Figure 2.6. Browsing through the lexicon

2.5. Searching the lexicon

Now that we know how to choose a lexicon and the relevant data category, we can search through the lexicon. For that we are going to use the Search button. Importantly there are three options of searching. These are displayed next to the Search button. The three dots, looking from the left, stand for: "starts with", "contains" and "ends with" respectively.

Figure 2.7. Search options

The results of the search appear in the Word List Window (this might take a while depending on the size of your lexicon) in such a way that the relevant part of the data category will be visible.

2.6. From Word List to Lexical Entry

Once you have obtained the results of your search in the Word List Window, it is possible to have a closer look at them. If you click on any of the items in the word list, it will appear in the Lexical Entry Window. By default only the lexeme will appear there, but as we will see in the next section, you are free to define which categories of the entry should appear in the Lexical Entry Window.

If you now click on another entry from the word list of your results, this lexeme will also appear in the Lexical Entry Window, but as another tab. In this way you can choose a group of items and look at them in greater detail.
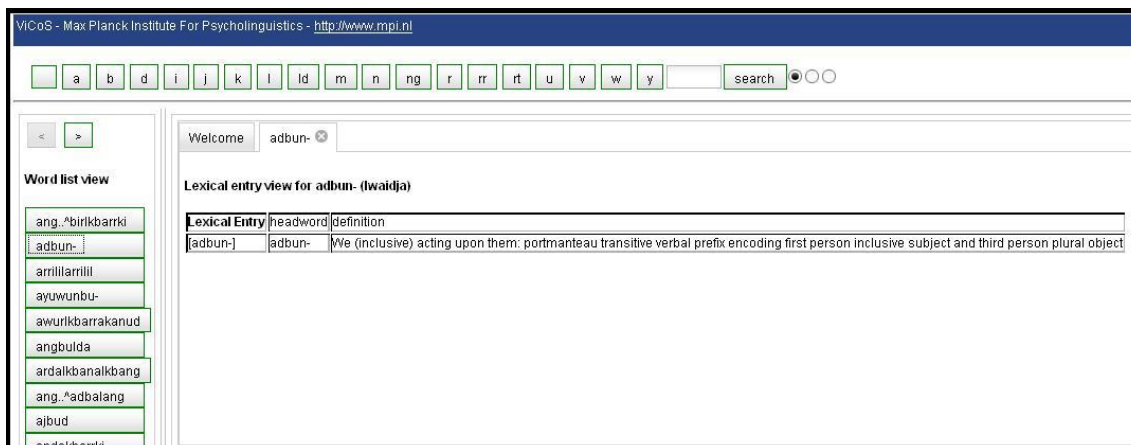

Figure 2.8. Viewing entries in the Lexical Entry Viewer

If you now start a new search, the items you have displayed in the Lexical Entry Window will not disappear. They will stay there and you can add more lexemes from the results of the new search to the previously obtained results.

2.7. Defining lexical entry view

By default the data category that is displayed in your Lexical Entry Window is lexeme. This is actually not a default setting but rather a reflection of the fact that in most lexicons in LEXUS, this is the category that is used in the Word List View. ViCoS displays in the Lexical Entry Window the category which is defined in LEXUS for the Word List View. It might be the case that it is not lexeme in your lexicon, in which case you will see that very category here.

Whatever the original setting is in LEXUS, you can change the definition of the Word List View in LEXUS to include other categories that interest you and to remove those that are of no interest to you. For that you need to log in to LEXUS with your username (the same as in ViCoS) and redefine the Word List View. Importantly, you should be aware that in this way you are not changing anything in the lexicon itself. You are simply changing the way it is displayed and you can always come back to previous settings without any difficulty.

Once you have changed the Word List View in LEXUS, ViCoS will use the new settings for displaying the lexical entries. If, however, you had already some entries in your list of results, their appearance will not be changed. You will have to delete them and add them again to the result list in order to get the new display. This is because there is no explicit refresh function in ViCoS.

2.8. Creating a single relation

There are a number of ways of creating relations in ViCoS. The most basic option is simply to use the Source and Target boxes. After you have opened a few entries in the Lexical Entry View, you can simple

drag and drop them into the appropriate boxes. Importantly, if you have defined the Lexical Entry View (see Section 2.7) to display more data categories, make sure you drag the appropriate part of the entry - each data category can be dragged separately and you will create a relation for that part of the entry, and not for the other parts if it. So if you want to create a relation for instance between the category lexeme, make sure this is the box you drag and drop.
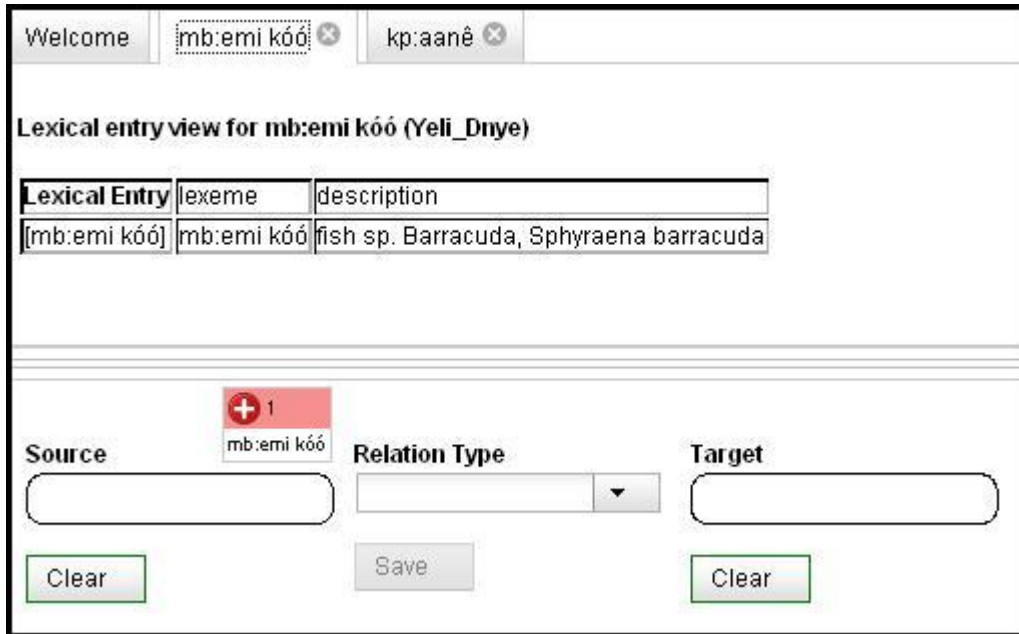
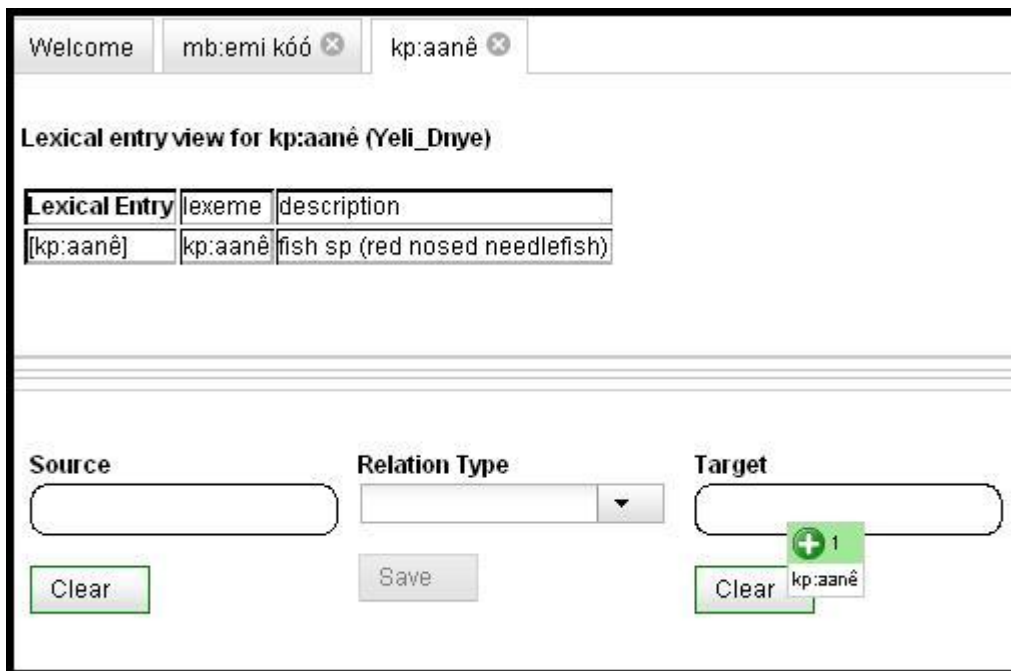**Figure 2.9. Dragging a particular data category of an entry into the Source box**

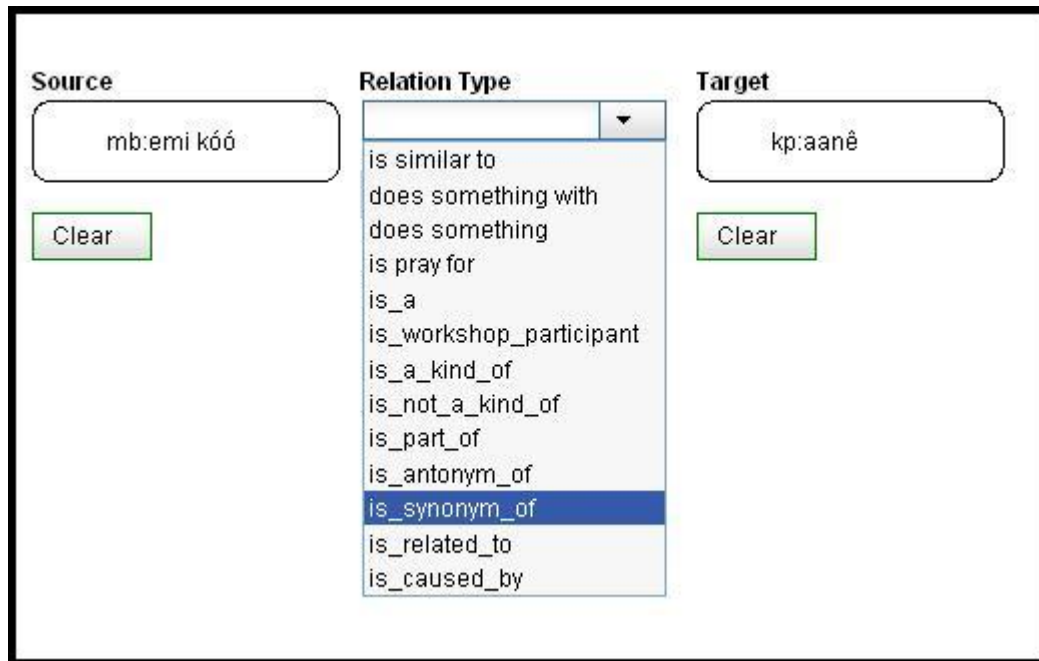**Figure 2.10. Dragging a particular data category of an entry into the Target box**

Figure 2.11. Choosing the type of relation between the Source and Target

When dragging, the item will turn green when your over the Source or Target box. Next, you have to choose the right relation between them and Save it. The relation is created. Make sure you know the precise definitions of the relation you are using to put the items correctly into Source and Target boxes.

2.9. Creating multiple relations

You can create multiple relations in the same way. Simply drag and drop as many items into the Source and Target boxes, choose the right relation type and save. You have now created relations of the chosen type between every item from the Source box and every item in the Target boxes.
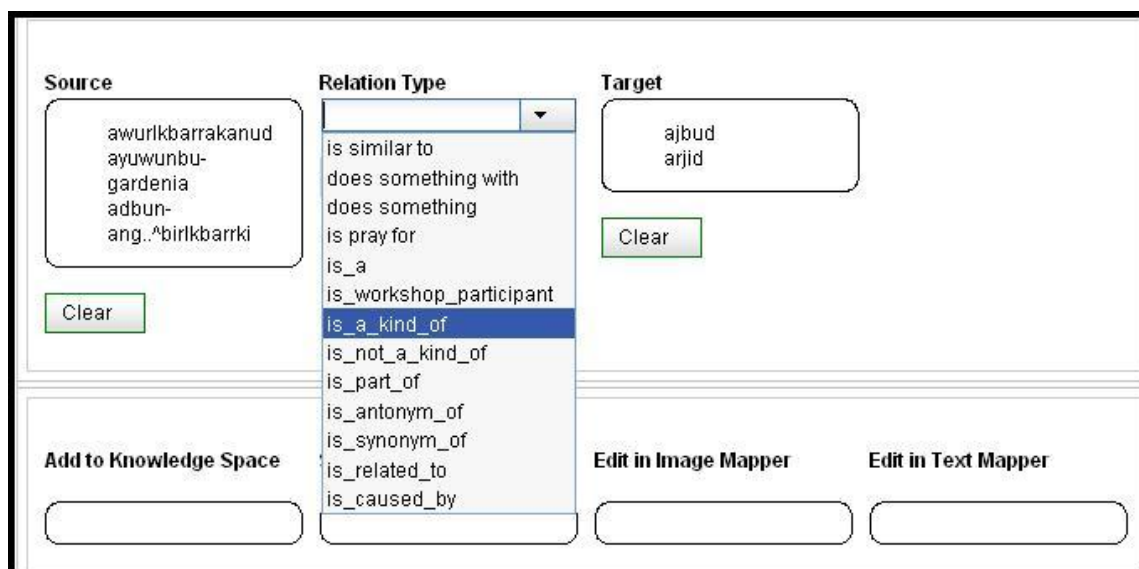

Figure 2.12. Creating multiple relations simultaneously

Chapter 3. Visualizing

3.1. Viewing relations in the Knowledge Space

In order to view the relations you have created for a particular item, you can simply drag and drop it to the Show in Knowledge Space box.

Figure 3.1. Showing an entry in the Knowledge Space

This will open a new window: the Browser. Your item will be displayed there. If you have created relations between it and other items, the relations will be displayed too. Importantly, the item will be placed in the centre and only the relations that hold directly between it and other items will be shown. Further relations are not shown. Again, make sure that you drag and drop the right part of the lexical entry: the one for which you have created relations. If you drag another part of it, for which you have not created relations, then of course, you will see no relations.
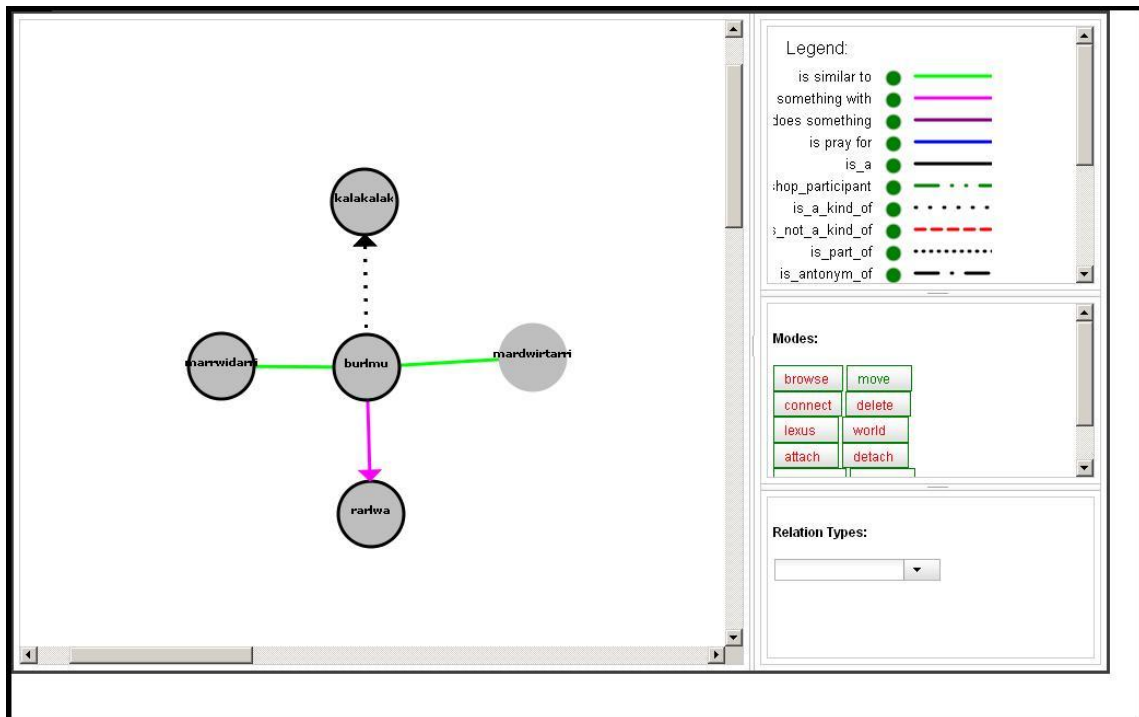
Figure 3.2. Browser View

In the right part of the screen you will see a legend of all the relations that you have defined in your workspace. If you click on a particular relation in the legend it will be made invisible in the Knowledge Space. This way you can decide which relations you want to view at the moment. If you click on the relation in the legend again, it will appear again.

3.2. Adding more items to the Knowledge Space

You can now add another item from the Lexical Entry View to your Knowledge Space by simply dragging and dropping it into the Add to Knowledge Space box.
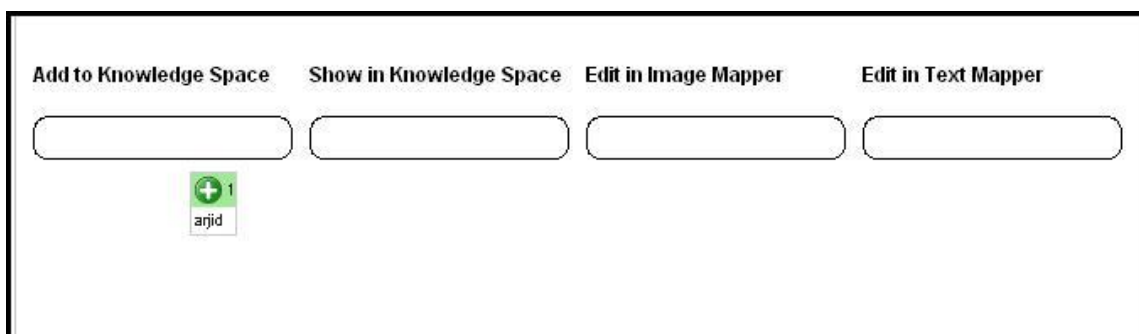

Figure 3.3. Adding more items to the Knowledge Space

f you then go to the Browser window, the item you have added, will be in the left upper corner of the Knowledge Space. If you have dragged and dropped it to the Show in Knowledge Space box, it would be in the centre, and the items that you added there previously would be gone. In the next section you will learn what you can do further with the items you have added to the knowledge space.

3.3. Knowledge Space functionalities

The Browser window has a number of functionalities. They are all displayed below the legend and can be activated by clicking on them. Whichever function you are using, be sure to save the result with the Save button.

Move. The Move functionality is the default when you open the Browser for the first time. It allows you to move the items in the knowledge space. Just drag the items around. If you want to keep a particular configuration of items, click save. The next time you will be viewing this knowledge space, it will have the same configuration.

Connect. If you switch to Link mode, you can click any item in the Browser and connect it to another item. After that you can choose the type of relation that you want to hold between them. You will find all the relations in a window below the different functionalities.

Delete. When this mode is activated you can delete items from the Knowledge Space, as well as delete the relations, by simply clicking on them.

LEXUS. When this mode is on, you can click on any entry, which will open a new window displaying the lexical entry view of the lexeme in LEXUS.

Attach. By using this mode you can attach external links to the items in the Knowledge Space. If you click on an entry a box will show into which you can type/paste the desired link. After saving, this item will get a black rim, which indicates that there is a link connected to it.

World. When this mode is on, you can open the external links you have added using the Attach more. This works only for the items with a black rim, that is those that have external links.

Detach. This option allows you to remove any link from an item.

Browse. Shows more information about the item

Re-fetching. This option restores the last saved state of your Knowledge Space.

3.4. Browsing through the Knowledge Space

The Move mode allows you also to move through the Knowledge Space. As you remember, at any time in the Browser only the direct relations between the central item and other items are shown. If however you click on one of the other items in the Browser, then it will be centralized and its direct relations will be shown. This way you can move through the Knowledge Space.

3.5. Overview

Once you have created a number of relations, you might want to have a look at the overview of the whole system, as opposed to viewing only parts of it. The Overview button, opens another window, in which all your relations will be displayed. At the moment there are two available modes of viewing the data: force mode and random mode.
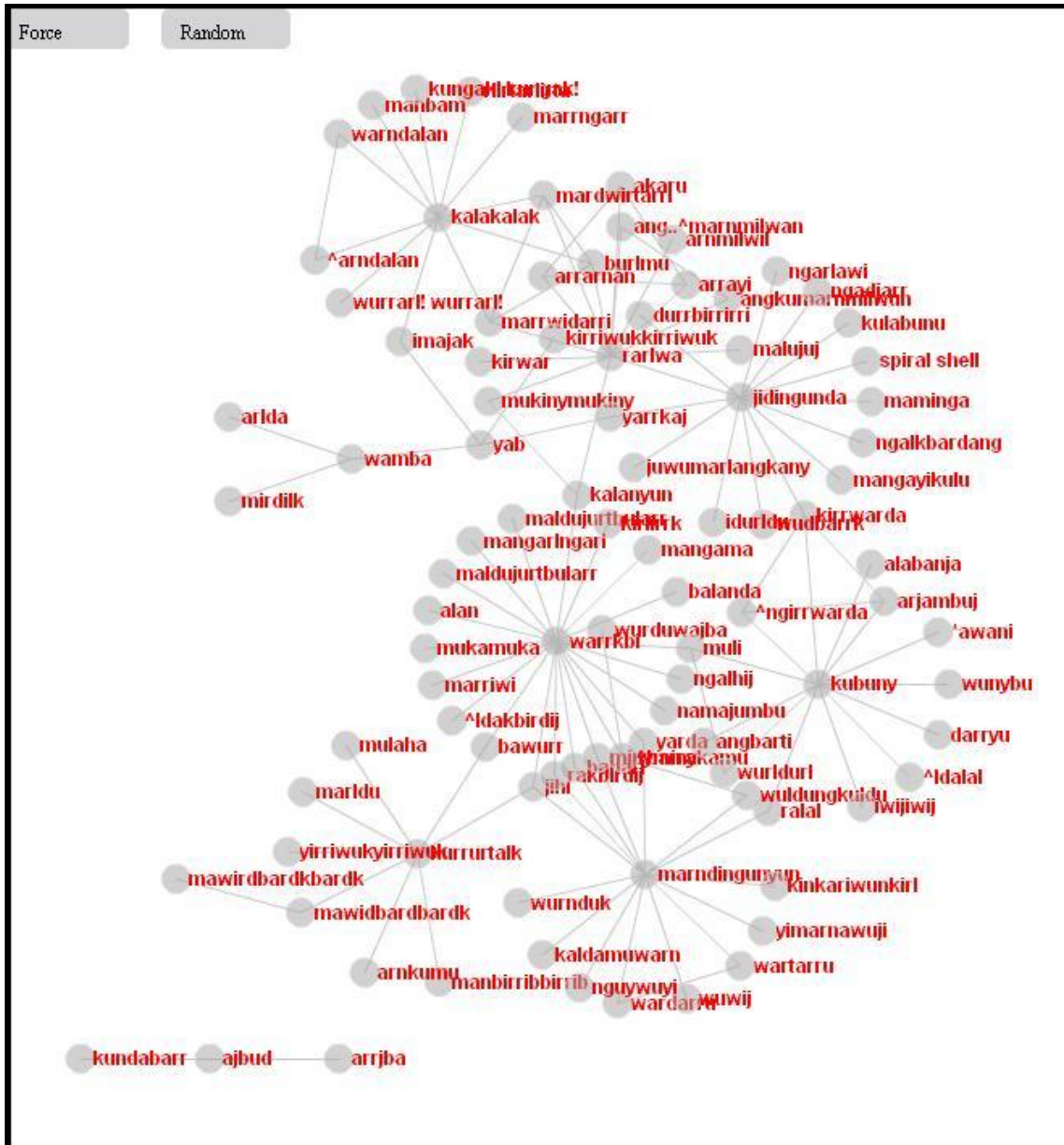
Figure 3.4. Overview Window

Chapter 4. Other functionalities

4.1. Relations type manager

The Relations Type Manager allows users to define their own types of relations, so that they can customize their Knowledge Spaces according to their purposes. To open the Relations Type Manager, click the RT Manager button in the rightmost part of the ViCoS workspace. This will open a new window, in which you will be asked to choose a lexicon. Subsequently, you will see a window, in which you see all the relations you have defined for this particular lexicon, and the option New Relation Type. After clicking the latter you will be redirected to the Relation Editorr:
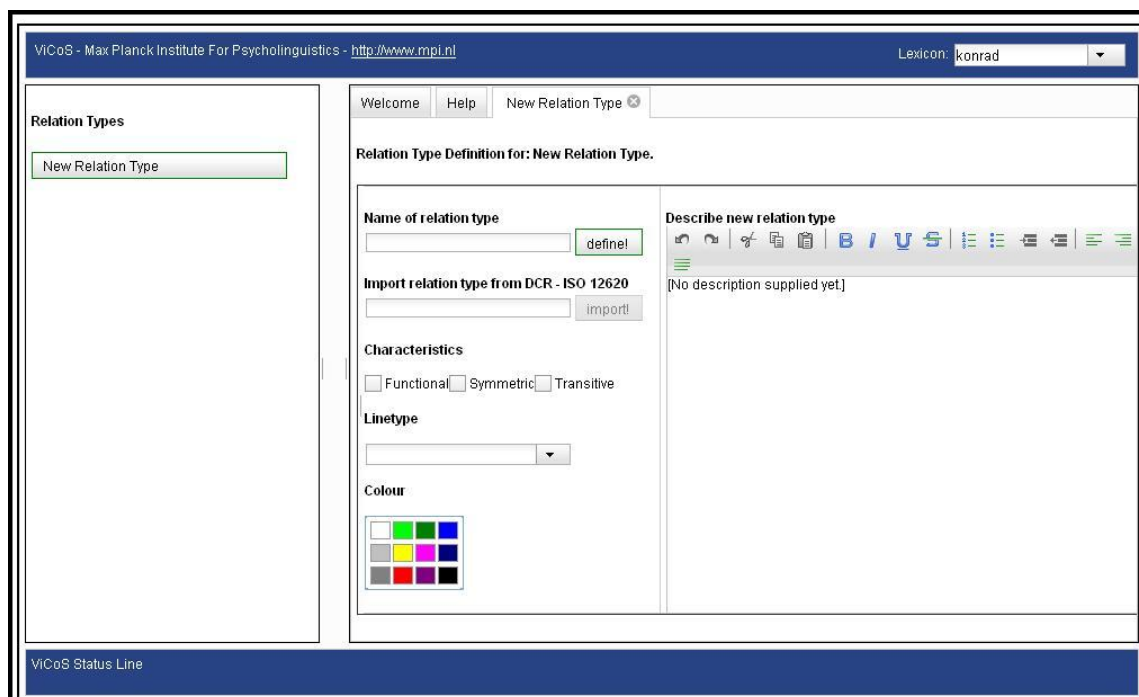

Figure 4.1. Relation Type Manager

Here the users can define all the properties of the relation: Name, Definition, Characteristics, Line Type, Color. Once all these properties have been decided upon press Define.

Instead of defining a relation by yourself, you can also import a relation from the DCS-ISO 12620 repository.

4.2. Text mapper

The Text Mapper allows users to divide the text data of a particular data category of an entry into substrings, so that relations can be created not only between data categories but also between parts of them. To do that, drag the data category of en entry into the Edit in Text Mapper box. The text will be displayed in a new window. In order to create a substring, mark the relevant part of the text with the mouse cursor.
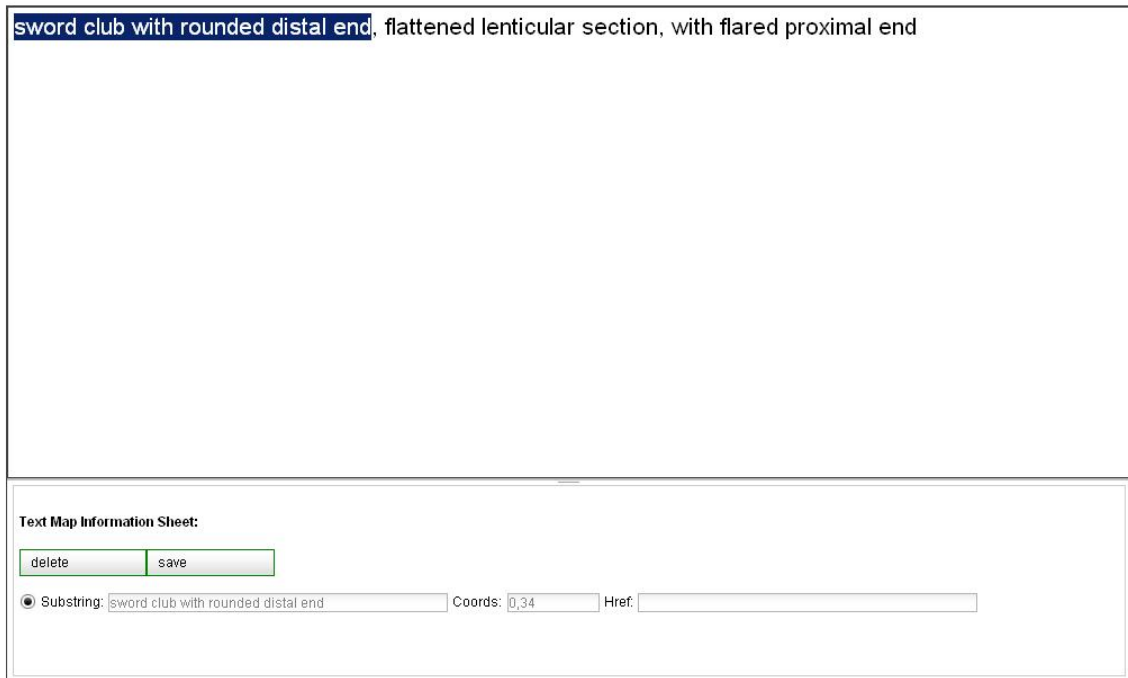
Figure 4.2. Text Mapper Window

The substring will appear in the bar at the bottom of the page. You can either save or delete them. The next time you will drag this item into the Show in Knowledge Space or Add to Knowledge Space box you will be asked whether you want to view the whole text or only one of the defined substrings. The same will happen if you drag it either to the Source or Target box, so that you can decide for which parts of the text you want to create relations.
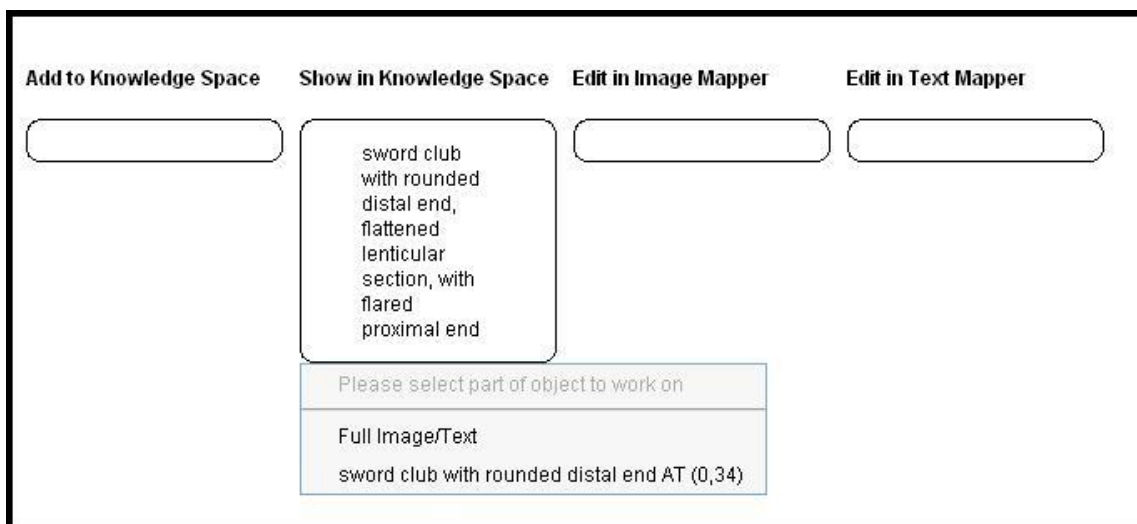

Figure 4.3. Adding an item edited in Text Mapper to the Knowledge Space

4.3. Image Mapper

Image Mapper works in the same way as Text Mapper, but instead of creating substrings of text, you can divide a picture into subparts. This will allow you to create links not between the whole picture and another entry but also between parts of the picture. After defining subparts of a picture and saving them, once you drag the picture into the Source or Target boxes, you will be asked which part of the picture (or the whole picture) you want to use.