26. Semantic category functions.

MacLex has a powerful set of functions designed to let you easily choose, enter, search for, and manipulate hierarchical category labels. The primary application for this will be the use of semantic categories. MacLex allows the user to define the categories in a table, using a precise structure defined below, and provided the table structure rules are adhered to, you may make the categories be anything you like. You may like to use these features for some purpose other than semantic categories. That's fine.

MacLex can handle up to three levels of nesting of categories. How many you use can be selected in a dialog. There can be up to 200 primary categories, and as many secondary categories (ie. subcategories) per primary category as you like - with the proviso that the total number of secondary categories must not exceed 1000. There is effectively no limit on how many tertiary categories there may be. It is not necessary for every category to have one or more subcategories. Nor does every subcategory have to have its own subcategories at the next level down.

MacLex is distributed with two versions of the table of biblical language- and culture-related categories developed by Lowe and Nida. Their schema has over six hundred categories, organised in two levels, with ninety three primary categories. One table version reproduces their schema exactly. In the other version I have added a third level which is a set of eight primary categories, so the user does not have to search a list of 93 entries at the first level. Feel free to alter them if you can think of a better arrangement. In both versions, Lowe and Nida's numbering system is retained, though in the 3-level table there is some reorganisation of the order of some categories to make sense of the primary groupings that I have defined.

26.1 Category table format

Reproduced below are a few dozen lines of the 3-level table. Notice that each line has a "prefix" denoting its linear sequence vis-a-vis other adjacent categories. Level one prefixes are the letters a, b, c, d. etc; level 2 prefixes are identical to the Lowe and Nida ones (01, 02, ... , 10, 11, 12, etc) except that a leading zero is added to numbers 1 through 9 to ensure that they would sort properly if you used them as sort keys in a reversal. Level three category prefixes are upper case English letters, with one or more apostrophes added if there are more than 26 subcategories for a single category - this also follows Lowe and Nida's conventions.

a Nature

18. MacLex limits 2
01 Geographical Objects and Features
- A Universe, Creation
- B Regions Above the Earth
- C Regions Below the Surface of the Earth
- D Heavenly Bodies
- E Atmospheric Objects
- F The Earth's Surface
- G Elevated Land Formations
- H Depressions and Holes
- I Land in Contrast with the Sea
- J Bodies of Water
- K Sociopolitical Areas
- L Governmental Administrative Areas
- M Areas Which Are Uninhabited or Only Sparsely Populated
- N Population Centres
- O Pastures and Cultivated Lands
- P Thoroughfares: Roads, Streets, Paths, etc.

02 Natural Substances
- A Elements
- B Air
- C Fire
- D Water
- E Earth, Mud, Sand, Rock
- F Precious and Semiprecious Stones and Substances
- G Metals

03 Plants
- A Plants (General Meaning)
- B Trees
- C Plants That Are Not Trees
- D Fruit Parts of Plants
- E Non-Fruit Parts of Plants
- F Wood and Wood Products

Some further things to note: the table cannot be sorted - MacLex will put the categories up in lists within windows for you, and will do so in table order. It is up to you to give the categories whatever order you desire when you construct your table. Once the table is fixed, so is the order of categories.

Secondly, the prefixes can be anything you want, and they do not have to have some order (such as numerical or alphabetical order). MacLex will not impose any ordering on them, except when you use them as the header field in reversed records and do a sort operation. The prefixes don't even have to be things such as numbers or letters, they could instead be mnemonics for the longer category names which follow. MacLex allows you to dynamicially choose whether to operate with

prefixes only, category names only, or both prefixes and names together - all these options being based on the one table.

IMPORTANT: since MacLex allows you to edit records, you must refrain from making any editing changes to category names or their prefixes, when they appear in your lexicon's records. If you do, MacLex would not be able to find them in a search, or identify them if you ask it to convert them from one form to another. (The only grounds for editing them would be that you decide to rename some categories. Do so in the lexicon's records, then edit the table in a word processor so that its categories agree precisely with your changes. Otherwise, never edit categories.)

The category table has a very precise structure:

a. Nesting level is shown by using an initial tab, or pair of tabs, for categories at levels 2 or 3, respectively. No tab occurs at the start of a level one category line.
b. If you use "prefixes", there must be one (and only one) non-breaking space character between the prefix and the following category name (a non-breaking space is the character you get when you hit the space bar while holding the Option key down).
c. Each line must not exceed 255 characters, and each line must be terminated by exactly one carriage return.

A typical level 2 line therefore has the structure:
<TAB> prefix <non-breaking space> category name <RETURN>
while a level 3 line will have an extra tab, and a level 1 line will have no tabs.

d. The prefix is optional; and you may have prefixes in all lines, or just in some lines.
e. Never have a non-breaking space unless a prefix precedes it.
f. Prefixes may be as long or short as you like, provided the total length allowed for a table line is not exceeded (ie. 255 characters, including the token).

26.2 Loading the category table

On the Lexicon menu, there is an item called

Load Semantic Category Table...

When you invoke this item, MacLex puts up a standard file dialog. Use it to locate the table you wish MacLex to use, and **Open** it (or double click) to have it loaded.

The table which is loaded will stay in effect so long as you do not terminate MacLex itself. You can load and exit several different lexicons in a work session, and the one semantic category table will

remain in effect for each. Alternatively, you can, at any time while MacLex is running, load a different category table than the one currently loaded. The earlier one will then be replaced by the later one. You can therefore use more than one table with the one lexicon. However, only one table at a time can be in effect.

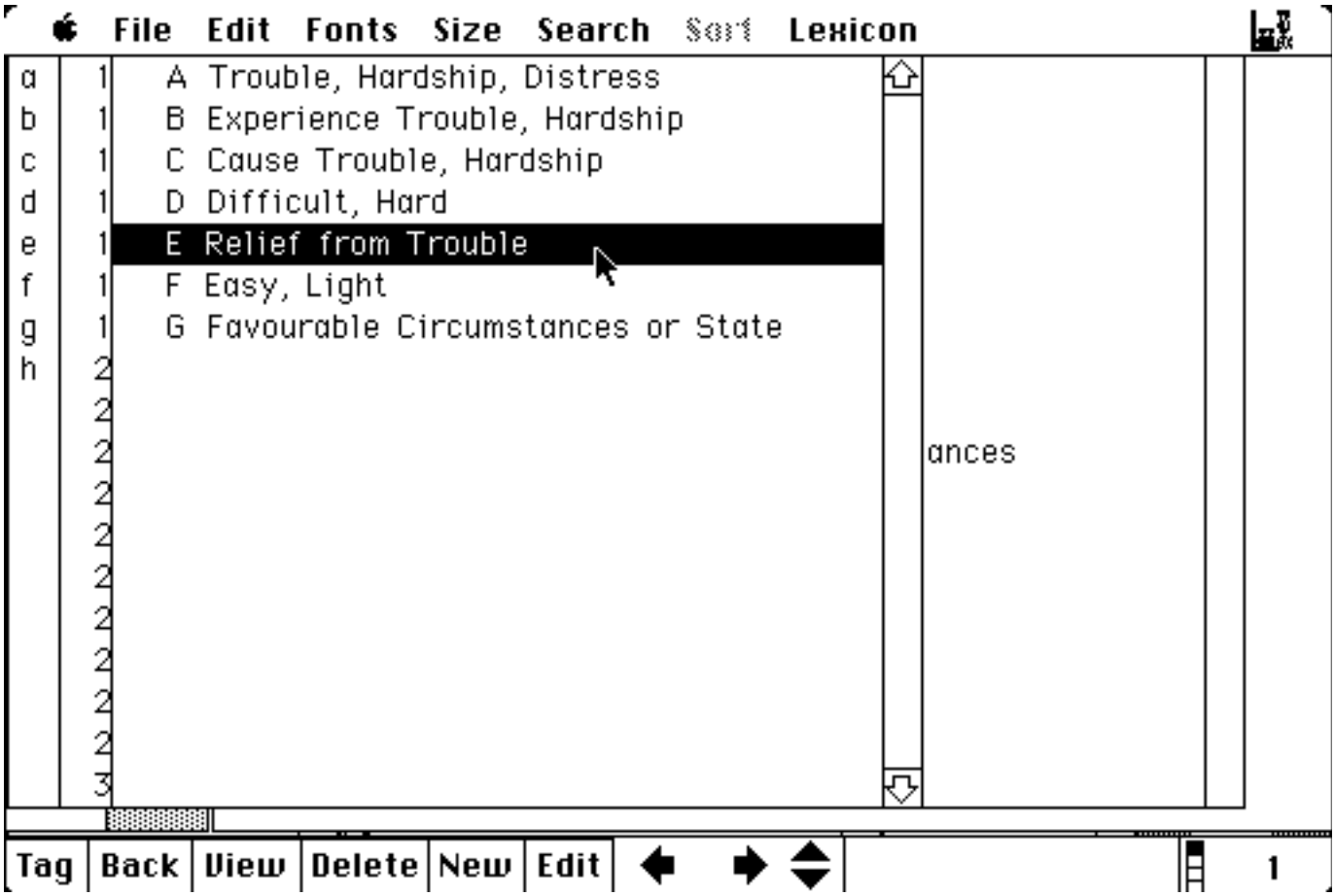
MacLex does not care about whether you load the table before loading the lexicon, or vise versa. If you use only one table, and memory is tight, it would be more efficient for memory utilisation to load the semantic category table first.

Finally, if you forget to load a category table, and you invoke a menu choice which needs it, MacLex will put up the standard file dialog and ask you for the table you want it to use, and then load it for you.

26.3 Category lists and their windows

When a category table is loaded, MacLex analyses its structure before using it. Thereafter, MacLex knows what the level 1 categories are, and their order; similarly for the level 2 and level 3 categories. For each level, MacLex will put the categories belonging to that level in a window - which we will call a "category window". This allows you to select (by double clicking) the category you want. Each time you double click, the subcategories of the category you selected will be shown in a new window which will open slightly to the right and on top of of the earlier one. In this way you can progress through up to 3 levels of categories and their subcategories. A set of hierarchical category and subcategory choices made via these windows we will call a "category bundle".

An example is shown below. I have used the 3-level table, and chosen the "f States and Actions" category at level 1, then the "22 Trouble, Hardship, Relief, Favourable Circumstances" subcategory at level 2, and its subcategories are A through G as shown, and "E Relief from Trouble" is shown selected. Notice that the width of each window depends on the width of the data which is to go in it.



The menu command which invokes this feature is called

Define Categories...

and it is found on the **Lexicon** menu.

You do not have to use three levels of categories. MacLex allows you to use 1, 2, or 3 levels, and this is selectable via a dialog obtained from the **Preferences...** item of the **Lexicon** menu. It will be discussed in detail in section 26.5.

How about if you change your mind and want different subcategories? Or maybe you don't want to go ahead and chose a group of categories. A single click is all it takes. When you have one or more category windows open, and you click outside the currently topmost one, what happens will depend on where you clicked. MacLex's behaviour is as follows:

1. You click on a lower category window.

   This window becomes the current topmost one, open category windows above it are closed, and the category choices formerly made by double clicks on those windows are abandoned. You may then proceed to choose the same or different subcategories, starting from the window currently open.

2. You click outside all of the open category windows, but not over a button of the interface.
   All the category windows are closed. All category choices up to that point are abandoned.
3. You click outside all of the open category windows, and the click also happens to be over a button.
   As in 2. above, except the button's action will then be immediately invoked.

26.4 Inserting categories in records.

After you select a category, its subcategory, and its sub-subcategory (assuming three levels), MacLex will then close the open category windows, and change the cursor shape slightly. This new shape tells you that MacLex is "primed" and ready to insert the categories you chose within a record.

At this point, no record's window will be open for editing, so you must first get the desired record showing on the screen and then hit the **Edit** button to open it for the insertion of the category bundle.

You can then click somewhere in the record where you want the categories inserted. Or if you want to replace older categories with your later choice, drag over the older fields.

Then go to the Lexicon menu and choose the **Insert Categories** item. Your category choices will then be inserted at the cursor location, or replace the selection range, as the case may be.

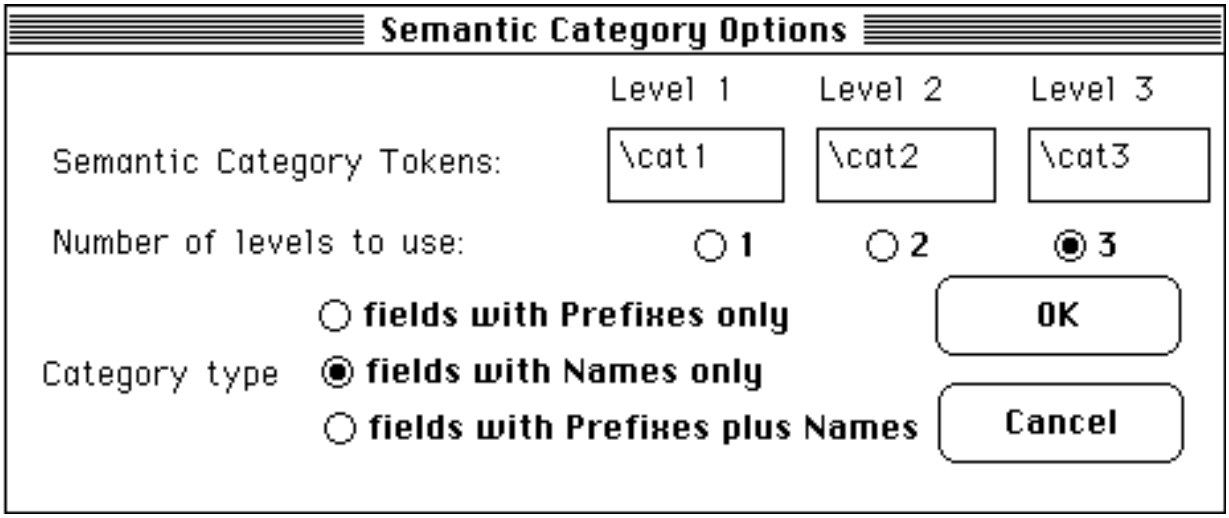
Try it out with one of the tables provided. You will notice that MacLex always puts the categories in a bundle of contiguous fields, starting with the level 1 category and ending with the level 3. (You will get fewer fields if you ask MacLex to use fewer levels - see the next section's discussion.) MacLex will also supply tokens for each field; namely, \cat1, \cat2, and \cat3, respectively.[1] Where do those paraticular token names come from? We will deal with that and a few other matters in the next section.

26.5 The Semantic Category Options dialog

In the Preferences dialog there is a new button called
Semantic Category Options...

When you press this button you get the following dialog:

[1]You don't have to use these token names. MacLex has provision for you to define your own.



The first thing to notice is that this dialog defines the token which is to be used for each level's field. Anytime you change one or more of those token names, the new names will be used in all subsequent insertions, category searches, etc.

Also, if you change a token, all fields currently in the lexicon which have the former token, will not be treated as 'semantic category fields' by MacLex - in particular, you will not be able to convert them (see later), or have MacLex's **Find Categories** search item find them - though you could find them with the normal **Find** menu item.[2]

The second thing to remember about the above dialog is that it is obtained via the Preferences dialog, and all settings for the Preferences dialog are saved to a preference file nominated by you when you hit the **Save Preferences...** button. This includes all the choices which are set by the Semantic Categories Options dialog. So if you prefer to use different tokens, type them in, close the dialog, and then use the **Save Preferences...** button to preserve your choices permanently.

This dialog therefore preserves three types of information in a preferences file:

a. the token to use with each level,
b. how many levels you want MacLex to use (normally, this will be as many levels as exist in your category table, but it is quite permissible to use fewer levels than occur in the table)

[2]If you do change the tokens, all is not lost. You could use MacLex's **Find and Replace** functions to change all the instances of the old tokens to the new ones. This will immediately make those category fields be regarded as valid semantic category fields, and all the semantic category functions will then correctly operate on them - provided the categories are the same as what occurs in the currently loaded category table.

c. what information you want MacLex to use for the categories

We will discuss b. and c. further in what follows.

The radio buttons allow you to set the number of levels to use. You can change the number which you use as often as you like within the one work session. MacLex works with whatever the current setting is. For example: if you choose three levels, MacLex will open three consecutive category windows when you choose **Define Categories...**; but if you choose two levels, it will open only two windows (ignoring any subcategories of level 2 categories which may happen to be in your loaded category table).

Thus MacLex's behaviour is governed significantly by your choice of how many levels to use. Your choice will affect the operation of the **Define Categories...** , **Find Categories**, and **Find Categories Again** items.[3]

Finally, the three buttons at the end of the dialog allow you to tell MacLex what part of the category information in each table line to write into your records.

If your category table does not use prefixes, then your choice in the above dialog will not matter - MacLex will just use the full category name that appears in the relevent table line. However, if you have included prefixes in the table, then there are three possibilities: you may want it to only insert the prefix; or possibly only the category name - that is, the text which follows a non-breaking space, or you might want it to insert the whole lot - prefix, non-breaking space and category name exactly as appears in the table.

No matter what choice you make for these three radio buttons, MacLex always puts up the whole of each table line (ie. prefix plus category name) in the category windows opened when you invoke the **Define Categories...** menu item.

Using prefixes has the advantage of saving disk space; but if your prefixes are just meaningless labels or numbers, you lose the stimulous of seeing the actual category names when records appear on the screen. Fortunately, MacLex has power built in which allows you to have the best of both worlds - and we will discuss that topic when we deal with the **Convert Categories** menu item. At this point we can assure you that whatever your choice might be, it does not really

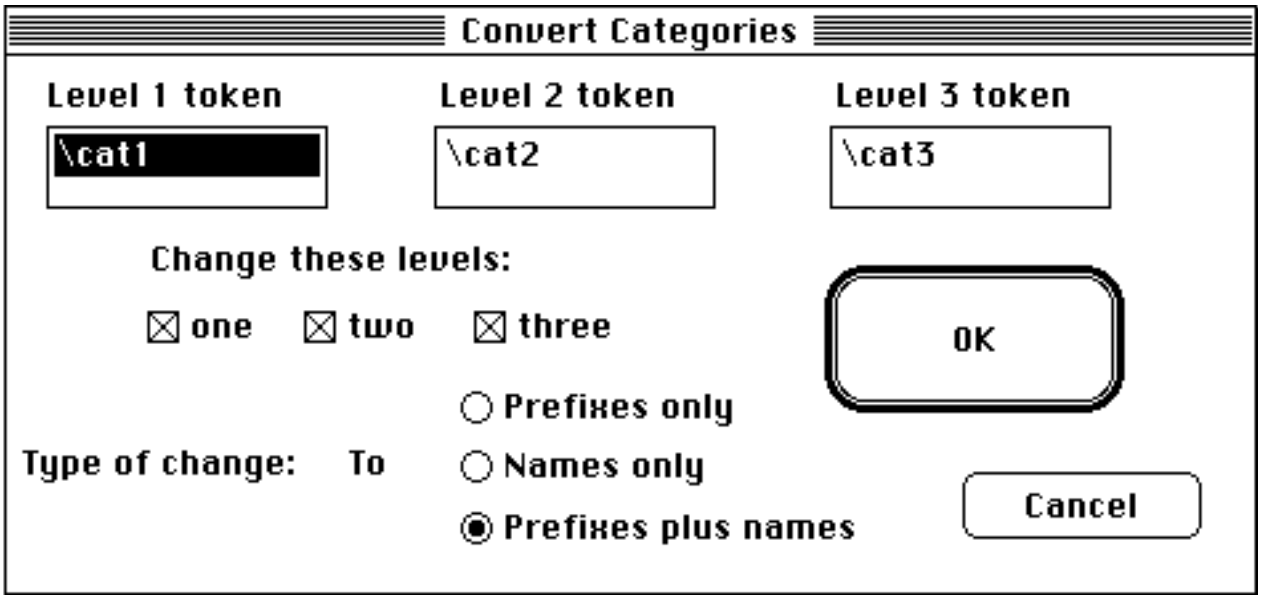
[3]Note: the **Convert Categories** and **Auto Convert Categories**, to be described later, are unaffected by this dialog. They use radio buttons in a different dialog, allowing the user to convert all or a subset of the semantic category fields appearing in a record.

matter. You are not locked in forever to having just prefixes, or just category names, or to both prefixes plus names. MacLex will allow you to convert from one form to another, at any time, in selected records or throughout the whole lexicon. That's the topic of our next section...

26.6 Converting from one category form to another

On the Lexicon menu there are two commands, **Convert Categories** and **Auto Convert Categories**, which allow you to convert category fields in records from, say, prefix form to category name form, or to prefix plus name form; or from category name form to prefix form, or to prefix plus category name form, and so forth.

MacLex has to be told exactly what kind of conversion is to be done. This is accomplished by the **Define Conversions...** item on the **Edit** menu. Because this dialog is not reached via the Preferences dialog, the settings you make in this dialog will not last beyond quitting from MacLex. The dialog is as follows:



The buttons at the bottom allow you to define what will appear in the semantic category fields within records, after the conversion operation has taken place.

MacLex does not care which of the three possible forms is present in categories when it searches for the next bundle of semantic category fields to convert. It will find the correct category at each level, irrespective of whether that level's field has just a prefix, or just a category name, or both a prefix and a category name. This is a very powerful feature, and because of it you can fearlessly mix the form of categories within your lexicon's records at will. You always know that

at any time you can make selected ones, or the whole lot, be in prefix form, or name form, or prefix plus name form.

The checkboxes in the middle of the dialog let you define which fields the conversions are to be done in. You can choose or not choose each one independently of the others. You must choose at least one - you will get a warning message if you don't.

Note: when MacLex inserts a bundle of category fields in a record, all the fields will have the same form of category data (ie. prefixes, or category names, etc). The only way to mix category forms within a bundle is to convert some of them, or to edit them by hand - the latter way is not recommended practice, the former way will ensure it is done correctly.

Finally, the tokens shown at the top of the dialog will just be copies of those currently in effect for the Semantic Category Options dialog. Normally you would not change the tokens appearing in the Convert Categories dialog; but if you do, you need to know that whatever is in those boxes will be what MacLex searches for, and, those token names will replace the ones formerly in the Semantic Category Options dialog, so that new insertions using the **Insert Categories** command will use the changed token names.

How does MacLex do the convert operation? This is where the **Convert Categories** and **Auto Convert Categories** menu items come into the picture.

Suppose you invoke the **Convert Categories** command. First MacLex looks for the next level 1 token, as defined by the Convert Categories dialog, and the search starts from the start of the record currently showing on the screen. When it finds the next instance of that token, it selects it and automatically extends the selection to include whichever other semantic category fields are to be converted in the current bundle, and scrolls the window to ensure the selection can be seen. At this point it puts up a small dialog containing three buttons:

Convert **Skip** and **Cancel**.

If you press **Convert**, then the conversions are done on that category bundle, the record's file is automatically updated, and MacLex searches on immediately till it finds the next level 1 token, puts up the dialog again and awaits your next decision.

If instead you press **Skip**, then no conversions are done and MacLex just goes to the next level 1 token, etc.

If you press **Cancel**, the conversion operation is discontinued.

The **Auto Convert Categories** menu item just does the work of the **Convert Categories** item, except that MacLex does not stop each time to allow you to either convert, skip or cancel. This menu choice does all possible conversions, starting from the current record, and proceeding to the end of the lexicon.

Aborting automatic conversion:

Since this operation may take some time, you can cause the operation to be safely aborted by typing Command-. (ie. hold the command key down and type the period key). If MacLex does not immediately respond, keep pressing the key combination rapidly for a second or two.

26.7 Searching for semantic categories

It is likely that you will want to search for a given category, or a given category group (ie. category, subcategory, and sub-subcategory). There are two commands for this purpose, and both are on the **Search** menu. The first command is **Find Categories**.

This command puts up the level 1 category window. You then proceed to choose a category, and then a subcategory when then next window is put up, etc. - depending on the current setting for the number of levels to be used, and how many hierarchical levels there are at the relevant part of the category table. When the final choice is made, the windows are disposed of and MacLex then searches for the one, two or three categories you chose. When found, they are shown selected. The search starts from the beginning of the current record on the screen.

Note; the find operation works independently of the form of the categories in the target fields - the fields could contain prefixes only, category names only, or prefixes plus names only, or any mix of these three possibilities. So if your particular choice of category, subcategory and sub-subcategory is present in the lexicon at or beyond the current record, the **Find Categories** operation will certainly find it.[4]

On the **Search** menu there is also a **Find Categories Again** item. You can use this to find the same category bundle later on in the lexicon, without having to define the categories to be found by double-clicking

[4]MacLex depends heavily on the presence of a non-breaking space character to be able to distinguish a prefix from a category name. So never edit out any non-breaking spaces in semantic category fields.

in the category windows a second time. The search starts not from the start of the current record in the window, but rather from the last selection range - which is typically somewhere further down in the screen record than at its beginning.

26.8 Reusing old category choices, or abandoning your last choices

Suppose you have chosen a category from each category window, then entered the chosen bundle of categories in a record. At that stage the cursor will have reverted to normal, and the **Insert Categories** command will be dimmed. But suppose you then move to another record, and realise that the category choices last made are equally apt for this record. Can you reuse the old categories without having to choose them from the category windows once more?

The answer is 'yes'. On the **Edit** menu there is a command called

Enable Last Categories

This command changes the cursor shape, thereby showing that MacLex is "primed" to insert the last set of categories somewhere. The **Insert Categories** command of the **Lexicon** menu will also become enabled. You can then proceed as if you have just finished selecting the categories from the hierarchical category windows.

Alternatively, having made selections from the category windows, and with MacLex showing the "primed" cursor shape, you might decide not to go ahead and insert the category bundle somewhere. You could merely just go ahead with other actions, but the cursor shape will stay in the "primed" shape which is likely to annoy you. To "unprime" MacLex, and return the cursor shape to normal, choose the **Disable Categories** command, which is also to be found on the **Edit** menu.

This command really only affects the cursor shape. MacLex keeps the old set of category choices safely stored away for you, and you can reactivate them anytime by choosing the **Enable Last Categories** command discussed above.

26.9 Summary of the semantic category dialogs and menu items

There are eleven menu items for the semantic category functions. Most have a keyboard command key equivalent, shown in brackets after the command name.

Edit menu

Define Conversions... (section 26.6)
Disable Categories (D) (section 26.8)
Enable Last Categories (L) (section 26.8)

Search menu

Find Categories (3) (section 26.7)
Find Categories Again (4) (section 26.7)

Lexicon menu

Define Categories... (K) (section 26.3)
Insert Categories (I) (section 26.4)
Convert Categories (1) (section 26.6)
Auto Convert Categories (2) (section 26.6)
Load Semantic Category Table... (section 26.2)

Plus two dialogs for parameter setting:

Semantic Category Options (section 26.5)
Convert Categories (section 26.6)