Part B   The lexicon handling capabilities

9.   Basic data structures.

While maclex has very few limitations on parameters, one that you may run into is that reversal mode assumes a maximum of 300 fields in an input record, more are allowed but would be ignored for reversal purposes. (This could be increased if users find it too limiting.) Lexicon mode and sorting have no limit on the maximum number of fields in a record. Each record must not exceed 32kb in size.

The basic data structures are the following:
a. the file,
b. the record,
c. the subrecord,
d. the group,
e. the field,
f. the field's token (SIL people will know this as a 'standard format marker')
g. the token's prefix (ie. its first character) - for SIL people this will be \

To review these briefly: the field is comprised of an initial token which the user can define, say, \1 for the first field of a record (ie. the 'header' field). While the generic tag, which we will hereafter call a token, can be anything (as long as it does not exceed 7 characters), in actual practice it is recommended that each token begin with a unique character that will never appear elsewhere in any file, and then be followed with up to 6 characters of the user's choosing.

The reason for this is that MacLex's lexicon and reversal functions require that every token begin with a unique[1] character which will appear nowhere else in any file of lexicon data. The SIL organisation has adopted the backslash character (\ ) for this purpose, and MacLex uses it as the default in dialogs. You are free to use another if you wish. We shall call this special character the **token prefix** character.

The other thing about tokens is that for reversals a token may not exceed a total of **7 characters**, including the token prefix. Examples of acceptable tokens, in SIL's "standard format" would be \1 \2 \exampl \ft \gram and so forth. (Lexicon handling and sorting can

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[1]MacLex uses this character to analyse a record into its fields when doing reversals; so if you have it in other places besides the start of tokens, MacLex might break up records the wrong way. MacLex cannot do reversals properly if every token does not start with the same (unique) character.

accept longer tokens.) When doing a reversal, any token longer than 7 characters will have the end clipped to a maximum of 7. You would be wise to limit tokens to a maximum of 7 characters, and then MacLex will always perform properly.

Following a token there comes a single[2] character to separate the token from the field's data. We call this character a delimiter. It can be a space, a tab, or a carriage return. Space is easy to work with. If you have tokens of varying length, you may prefer to use a tab. Everything following the delimiter up until the next token is treated by MacLex as data. It is acceptable, and makes for easy reading of the screen, if every field is terminated by a carriage return; however, this is not obligatory. Blank lines between records are fine, but totally unnecessary.

MacLex recognises some larger groupings. Part A has dealt with files, records and fields. Part B introduces some more groupings intermediate between records and fields. One is the subrecord, another is the group. Both of these are relevant mostly to the reversal process, so will be dealt with in detail later. Basically, a subrecord is a group of fields which starts with a unique field type[3] specified by you. A group is a (typically smaller) group of fields which also starts with a unique field type nominated by you. There can be several groups in a subrecord or record[4]; and more than one type of group is allowed within a single record or subrecord.

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[2]It is important that you realise that only the first character after a token is the token's delimiter. If, say, you typed two spaces following tokens, then only the first would be taken as the delimiter, and MacLex would think the second space was part of the field's data. If you typed two spaces after the token in each record's header field, then in lexicon mode when MacLex goes to look at the first data character of each header it would find a space every time - and when it constructs buttons on the left of the screen using the initial character it would use a space, with the result that the button would look empty, and there would only be one button for the whole lexicon instead of one per alphabetical division. So, if you want to type several spaces or tabs after a token, then be sure to tell MacLex to 'ignore' them for sorting purposes
[3]By 'field type' we mean a field with a certain token, which you can specify. Every field's type is defined by the token which starts it. A token acts like a name or label, and you can label your data however you please. For example, you might use \ms as a label for data which is the 'meaning sense' of a vernacular word; or \ps as a label for a 'part of speech', of \ex to begin a field containing an example of a vernacular work in context, and so forth.
[4]A record is really just the first subrecord of one or more subrecords. The record must have a header token different from a subrecord's header token in order to know when new records begin. And the fact that a subrecord, if it occurs, will have a different header means that when sorting records the subrecords get 'carried long for the ride'.

10. Preparing your lexicon files, and resizing files.

Preparation needs to be done only once. Thereafter you can load your lexicon files at at will without further preparation. Preparation is simple. The output of a sort operation done by MacLex gives you data files ready for use by the lexicon handling features.

If you have not used MacLex before, then you need to know and or do the following things:

a. decide what your special sorting order is to be, if you want one. Default is English alphabetical order (for the buffs, that means "ascii order").
b. decide if certain characters in your data are to be ignored, for sorting purposes, and decide on which ones.
c. decide on an approximate file size for your lexicon files; shorter ones make MacLex work faster - in the range 5 to 20 kilobytes is a good size. Larger sizes would be okay for faster computers. Smallish files make MacLex's file handling seamless, and except for this fact file sizes are unimportant.
d. use your decision on c. to estimate how many files to tell MacLex to make when sorting. For example: if our lexicon is about 600kb, and you want 6kb files, then you would want about 100 files[5].
e. at the desktop, create another folder to hold any control files MacLex will need from time to time. You can put this folder anywhere, but a good place for it is inside[6] the folder you created at step e.
f. start up MacLex, open a **New** file and type in your special sorting order if you intend to use one. Save it in the folder created at step e. - give it a name which clearly tells you what it's for.
g. similarly, make a separate file containing any characters you want ignored when sorting, and save it in the same folder[7] as contains your file having your special sorting order
h. Close the editing window and using the results of these steps sort your dictionary files using the **Automatic filenames** option. (You must use automatic filenames; it's the only way to control the output file sizes.)

You have finished the preparation stage.

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[5]The actual number is irrelevant; MacLex can work with any size or number. The only affect file size has is that longer files take longer to read off the disk, and longer to save. With files of about 5-20 kb disk accesses become completely 'invisible' (if you have a hard disk). With faster machines like the SE/30 or the II series, larger files could be used.
[6]See Part A for an explanation of the rationale for doing this.
[7]Later, you can place your definition file/s for doing reversals in this folder too, and likewise for any other control files used in your lexicon work.

Note 1: In the lexicon's folder there should only be (a) your lexicon files, and , if you wish, (b) other folders[8].

Note 2: MacLex <u>updates files as necessary by overwriting them</u>. No backups are created.

Because of this, before beginning a session you could do a **Duplicate** (at the desktop) of the folder of lexicon files, if you want a backup.

As your lexicon grows, the file sizes will expand as MacLex puts more records in them. Eventually they might grow so large that you start to notice a deterioration in the responsiveness of MacLex. When this happens it is time to resize the files.

To do this just sort your lexicon files with the **Automatic filenames** option on, and increase the number of output files - doubling the quantity would be a good idea. When sorting is finished you are ready to go again. You can do this as often as you like.

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[8]MacLex ignores any folders it finds mixed in with your files. It just uses whatever files it finds and assumes they contain lexicon data.

11. Lexicon mode

To open a lexicon for a work session choose **Load Lexicon...** from the Lexicon menu. The following dialog will come up.

Most of the features of this dialog should be familiar. Running through them quickly...

(i) <u>Sort key token</u>.
This token is the one which starts the first field of every record. It is the token that MacLex looks for in order to break up a file's data into records. The field which has this as its token is called the record's **header**. The default is \w, but you can set it permanently to anything you like using the Preferences... dialog. MacLex uses the data in each record's header field to construct a 'sort key' which defines that record's place in the ordered list of records comprising the lexicon.

(ii) <u>Key length</u>.
This tells MacLex how many characters can be used for a sort key. The default value of 16 is adequate for most needs. If short on memory you might shorten it to about 10. Unnecessarily long keys achieve nothing except wasting memory space. You can increase the value to a maximum of 32.

(iii) <u>Ignore data in (parentheses)</u>.
If this box is checked then MacLex will check the beginning of each record header (and only the header) for an opening parenthesis. If it finds one, it will ignore everything up till and including the matching closing parenthesis when constructing a sort key. What follows the closing parenthesis is what is used. If there is no matching closing parenthesis (maybe you forgot to type it) then it will use whatever follows the opening parenthesis to construct a key.

For example, in the Djinang language, reflexive verbs are preceded by a particle *inydji*. I want the following stem to be used for constructing the sort key, so I would type such a header[9] as follows:
\1 (inydji)birrindjingilgi
The sort key will then be based on birrindjingilgi.

(iv) <u>Special sorting order, and Ignore these characters when sorting boxes</u>.
In the first of these you can type your special sorting order, if you use one. Ignore it if you are content with default (English) order. How to define a special order is fully covered in the documentation of MacSort.

In the second box you can type those characters you want MacLex to ignore when it constructs sort keys in order to place records in correct sequence. Things you might type here are characters like space, hyphen, inverted comma, etc. if they appear[10] in headers and are not important for sorting purposes. For more details, see the MacSort documentation.

(v) **Locate Lexicon Files...** button.
When you press this a standard input file dialog comes up. Use it to go to the folder where your lexicon files reside. "Open" <u>any one</u> of the lexicon files in that folder (by double clicking it, or pressing the **Open** button). This does not actually open that file; instead, it tells MacLex which folder has the lexicon files. There will be a short delay while MacLex scans the folder and prepares a list of all the files which it uses subsequently for all file handling. You can press this button more than once. What folder of files gets used when you are ready to begin is whatever one you specified last.

(vi) **Get Order...** button.
This is a shortcut to help you get your special sorting order into the large text box. If you have saved your order in a text file, you can use

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[9]MacLex has a built in capability to remove the parentheses in certain circumstances, such as when reversing, or when exporting.
[10]Beware, do not ask MacLex to ignore a character which is part of the orthographic system of the vernacular - this might cause loss of contrast of some phonemes and hence records not always in the order you expect.

this button to locate that file. The button puts up a standard file dialog. When you click the **Open** button, the file's data is written to the dialog's text box. If you open the wrong file, just press the **Get Order...** button again and locate the right one. MacLex does not use the contents of the special sorting order text box until you press the **Begin** button.

(vii) **Get Ignores...** button.
This works just like the Get Order... button, but fills the "Ignore these characters when sorting" text box with the contents of the file you open.

(This button and the one above it are repeated as menu items in the **File** menu, but are not accessible there while the dialog is up.)

(viii) **Begin** button.
When you are finished with the dialog, pressing **Begin** sets the loading operation going and sets up the screen for interactive manipulation of your lexicon. The dialog below will come up after the files are scanned and an index table prepared in memory.

(ix) **Cancel** button.
Press this if you choose not to go ahead with your session.

Certain settings will be 'remembered' even though you have cancelled. For example, if the two large text boxes have text in them, it will be there in these boxes (or their equivalents in other dialogs) if this or other dialogs are opened later. Likewise, if you have typed a different header token, it will be remembered and be used as the default in other dialogs. If you want to restore everything to their defaults quickly, choose the **Restore Defaults** item in the **Sort** menu - it restores everything except the special sorting order and any characters to be ignored when sorting. To clear a special sorting order, just drag across it and press the backspace key. Similarly the "Ignore these characters when sorting" text box.

12. Lexicon display

After the index table has been prepared, MacLex will create the following kind of display. It is your working environment for interactively manipulating your lexicon data.
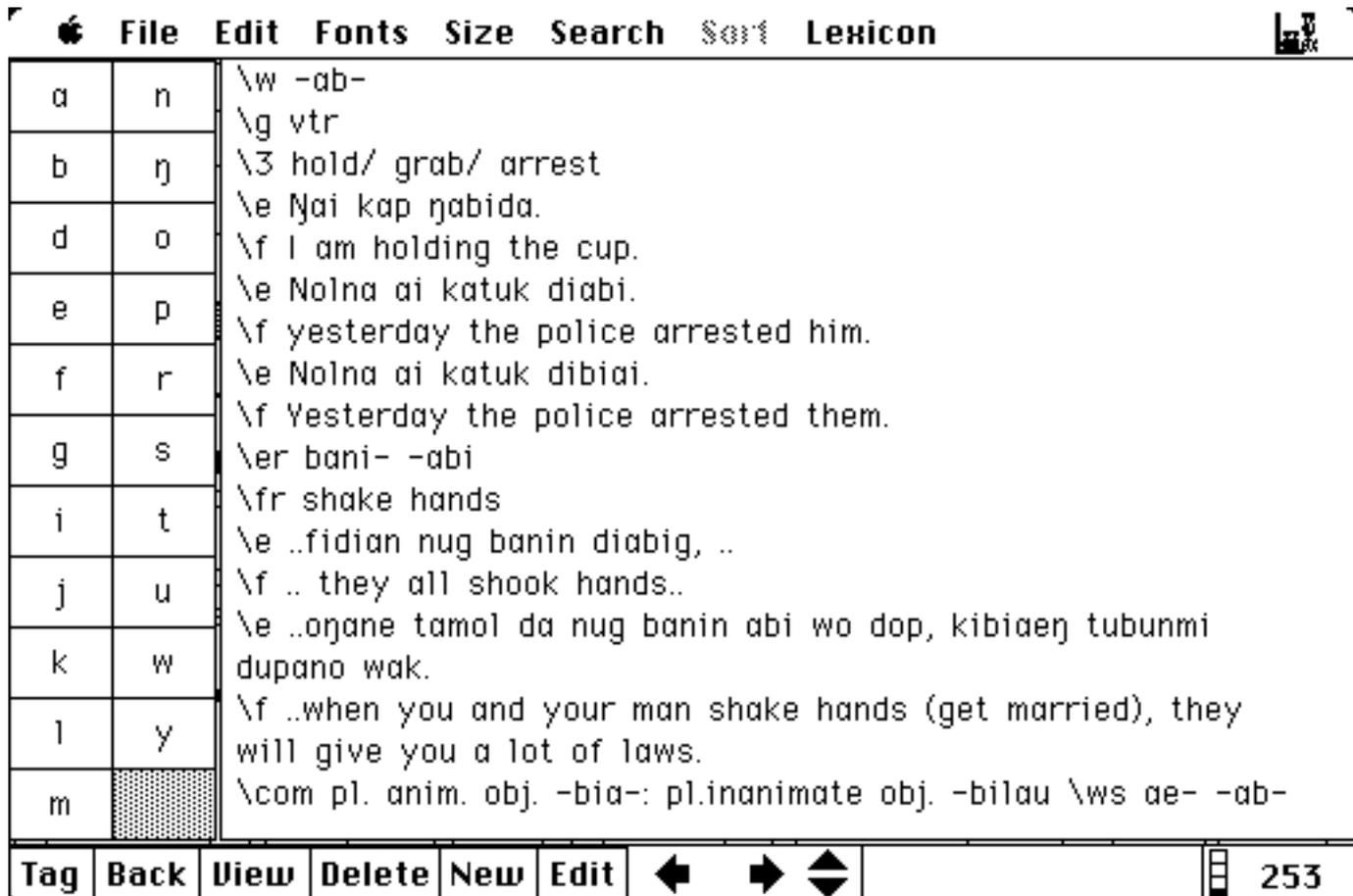
Note: the appearance of the screen in the current version may differ slightly from the above because features have been added or changed.

It will help us to have a few names for the things on the screen. The box on the left we will call the **divisions** box, and it contains a number of buttons each of which corresponds to one alphabetical division (or partition[11]) of your lexicon.

The box at the bottom we will call the **command bar**, it has arrow keys for going forward or back, a text box for typing a header for MacLex to search for, some buttons for adding, deleting and editing records, and a few other things as well. In version 1.0 and higher, the

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[11]The partitioning of your lexicon into alphabetical divisions is a wholly automatic feature of MacLex, you don't need to concern yourself with it.

record number is displayed at the far right - and the edit text box shortened to make space for it.

The window will display whatever record is 'current', and on entering this mode this will be the first record of your lexicon. The display shows records as they are in the disk files. A **Format** feature (selectable on the **Lexicon** menu) is planned for implementation at a later time. It will allow you the option of having records displayed in formatted form without their tokens, etc. Editing, however, will always be done with the unformatted 'raw' data.

MacLex automatically adjusts the size of the windows to whatever are the dimensions of your main screen. It also adjusts to menu bars of nonstandard height.

If you have your lexicon loaded at this point, you can play with the buttons and see what they do quicker than I can tell you about them. For those who like to read about it first, here is what they do...

12.1 The Divisions buttons.

As MacLex scans your files to prepare its index table, it also checks out the sort keys to see what they start with - as modified by whatever sorting order you have specified. Every time a previously unrecognised initial character is encountered, MacLex notes the fact and works out whether or not it corresponds to a digraph, trigraph, or whatever. Whatever it corresponds to is displayed as one button in the divisions box. There will be as many buttons as there are alphabetical divisions in your lexicon - up to a maximum of 72 buttons (in four columns) for small screen Macs, and for Macs with larger screens, up to 108 buttons.

The buttons are displayed in whatever font is current, and MacLex will reduce the font size used for the button names if you need lots of buttons - and hence smaller ones. As you enter records in your lexicon, if a record's header begins with a character (or digraph, etc) which MacLex did not previously encounter, then it creates a new button[12] and updates all the buttons to reflect the new situation. Similarly if you

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[12]This behaviour is a common source of (apparent) error in MacLex's behaviour. If you have a lexicon sorted using an order defined by yourself, and especially if it contains digraphs or multigraphs, and you load the lexicon while forgetting to specify the order you used earlier, then MacLex won't know about the digraphs or multigraphs, and what usually happens is that you will get very many divisions buttons, and some will have the same names. Don't do any editing or adding of new records when this has happened. Exit the lexicon, and reload using the correct sorting order. Another common (apparent) error is a blank button - this occurs if the header field's data starts with a white space character, such as a space or a tab.

delete the last record in a division, the number of buttons is reduced and the display updated.

What do the buttons do? Their purpose is to allow to you navigate quickly about your lexicon. Pressing a button puts up a list of all the headers which begin with the character or characters comprising the buttons 'name'. You can scroll the list to find the header you want, and double clicking it will dispose of the list and leave you with that record showing on the screen. If you change your mind and don't want to go to another record, then just click outside the list and it will go away. So, for example, clicking the **ng** button for my Djinang lexicon would show the following list, and if I (single) click on any line it is selected, as follows:
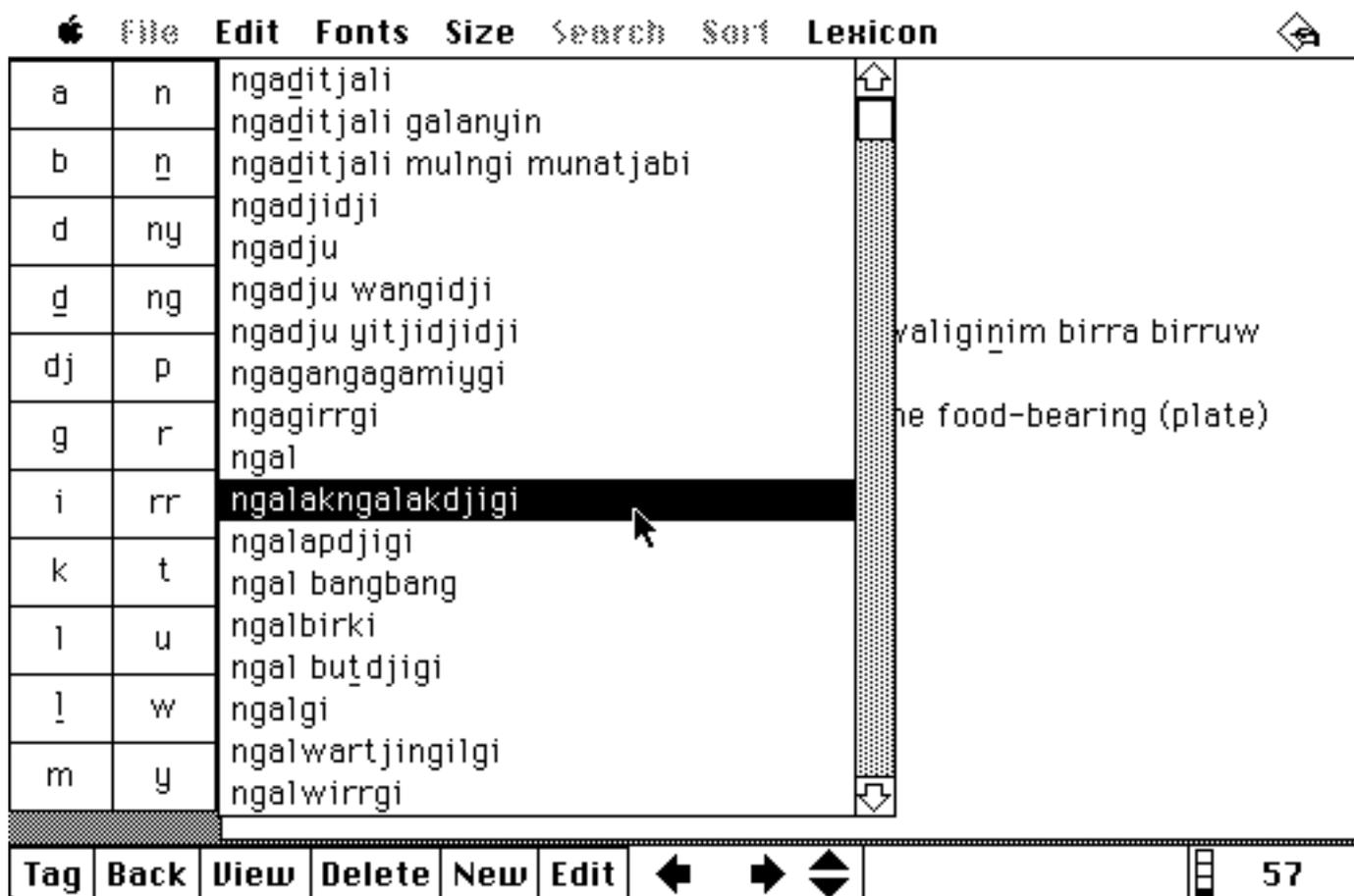
The list may be inhibited if you prefer a press of a divisions button to merely send you to the first record in a division. This is selectable in the Preferences dialog which we will discuss later.

12.2 The Command Bar

The **Tag** button.

This allows you to invisibly 'mark' a record as the one you want to return to later on.

The **Back** button.

This allows you to return immediately to whatever record was last tagged. At the same time, whatever record you were at when you pressed the **Back** button becomes the tagged record. Therefore, continually pressing the **Back** button will toggle you back and forwards between those two records.

The **View** button.

It gives a scrollable display of the records in the immediate context, one record per line (as much of it as can fit) omitting the tokens. This is called 'view mode'. You cannot enter, delete, or edit records while in view mode; but you do still have access to the Preferences dialog.

To scroll the display, press one of the two 'wedge' buttons[13] in the middle of the command bar. To exit from view mode, click on the window.

Which fields get displayed for viewing can be set in the Preferences dialog. If you don't specify which ones, or use the 'view these fields only' checkbox to turn the feature off, MacLex will display every field starting from the first.

The Preferences dialog also allows you to have MacLex drop into view mode automatically when you type a header in the command bar and that particular record does not exist. This gives immediate visual feedback on the lexicon's contents in the area where the searched for record would have been had it been present.

The **Delete** button.

Deletes a record instantaneously, without any annoying "Do you want to delete this record" messages. (There is provision to undelete when you make a mistake.)

The **New** button.

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[13]These buttons will also later be used for scrolling the display when the Formatted menu item is implemented.

This blanks the window, activates it for editing, and allows you to type in a new record. When done, just click outside[14] the window and your record will be entered into the lexicon and its file updated on the disk. Or you can press the **Enter** key instead - handy if you don't want to have to take your hands off the keyboard to grab the mouse.

If the window is empty when you exit it (ie. you typed no record), nothing is entered in the lexicon. This is quite safe to do. If you are using a template, and you type nothing, MacLex no longer requires you to dispose of two consecutive warning messages when you exit using the Enter key.

MacLex will check the header's token, and alerts you if it finds an error condition. You will then be given opportunity to correct it.

I intend (provided I don't forget) to provide an option whereby MacLex will check every token in the new record against a list of tokens supplied by you (or compiled by MacLex automatically), and alert you if it finds one which is new. That should catch most typing mistakes. It will be selectable from the Preferences dialog. Default will be to have the check turned 'on'.

There is one difference between clicking outside of the window to leave it, and typing **Enter** to do the same thing. Doing the latter leaves you in 'new record' mode with a blank screen ready for another record to be typed. This saves you from having to grab the mouse and hit the **New** button every time you want to type a record. If you want to use the **Enter** key to leave off entering new records altogether, just type it twice in succession.

Remember, it does not matter what record happens to be on the screen when you hit **New**. MacLex works out where to place each record that you type and does so, updating the relevant file. When you finish off entering records, you are left with the last one showing on the screen - so that's where you will be in the lexicon at that time.

Finally, the four small boxes, one of which will be black, allow you to control which template to use with the **New** command, from the command bar. Click on the top box to use the first template, the second to use the second template, etc. The bottom box turns off the use of a template.

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[14]Beware where you click. If you click over a button, the button will respond immediately. This is probably not what you would want. Click over the text box at the right of the command bar to exit without initiating some other action. Or you can use this to advantage; for example, click an arrow to exit from the editing window and also go to the next record.

The **Edit** button.

This button allows you to make changes to existing records.

If you want to enter editing mode to change a record, and do not want to have to grab for the mouse, there is an **Edit Record** menu item on the **Edit** menu. It has a command euivalent of Command + E. Typing Comand E, or clicking the menu item using the mouse, has the same effect as clicking the **Edit** button in the command bar.

Like the **New** button, you can use either the **Enter** key to leave off editing a record, or you can click outside the window. Either way is effective; however using the **Enter** key does not leave you in editing mode. To edit a series of records, you have to explicitly perform an action to gain access to each record in order to edit them. This may be a little tedious, but it is good protection against accidental changes or erasures.

You will note that you are unable to make the window active for editing by clicking on it. You have to press the button, choose the menu item, or type its command equivalent to gain access to a record.

The wedge buttons
The up and down wedge buttons have a function in lexicon mode. When a record is so large that it extends below the bottom of the window, you can click on these buttons to scroll the display up or down - it moves 10 lines at a time.

One last thing. The three buttons **New**, **Delete** and **Edit**, are the only ones which initiate updates of your lexicon files on the disk. If the unthinkable happens and your screen suddenly shows garbage, don't panic, all is well with your lexicon files provided you don't use one of these buttons. Just immediately choose **Exit Lexicon** on the **Lexicon** menu and all will be well. (Then you can safely choose **Load Lexicon** again and continue with your session.)

The 'next' and 'previous' arrows.

These hardly need comment. Press them to go forward or back to the next record. Hold them down to zip along really fast. When you come to the end of the lexicon, MacLex just wraps you to the beginning; or if you are going backward, it wraps you to the end. To alter the buttons' responsiveness, the Preferences dialog allows you to specify a delay, measured as a number of 'ticks' (one tick equals 1/60th of a second). A value of about 5 is recommended. A 0 value gives you maximum speed of response.

The left and right cursor keys on the keyboard also activate the 'previous' and 'next' arrows of the command bar, respectively.

The command bar text box.

If you want to go straight to the record with a given known header field, type the header and when you hit the carriage return key MacLex will search for it in its internal index table. If found it will appear on the screen.

If MacLex cannot find it, then it will beep. What record is showing on the screen after this will depend on the settings in the Preferences dialog. Default[15] is that you will be not moved elsewhere in the lexicon, the current record will remain on the screen. Alternatively, you can have MacLex go to the record which immediately precedes where the nonexistent one would have been; or you can have it go to the record which immediately follows where the nonexistent one would have been, or you can have it drop into view mode.

If you type a number in the box, MacLex will go to the record which has that number. The first record is numbered 1. If you type a number bigger than however many records are in the lexicon, MacLex will go to the last record. Typing zero or a negative number has the same effect as typing 1.

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[15]You can change this default setting using the Preferences... dialog.

12.3 The Preferences menu item.

Choosing **Preferences...** from the **Lexicon** menu will bring up something like the following dialog.

We have discussed the function of the radio buttons for what to do when a search for a typed header fails to locate a record with that header.

We have also discussed the effect of the radio buttons at the top right for suppressing or allowing the list of headers to come up when a divisions button is pressed.

At the middle top right are boxes which show the current settings for the "token prefix" and the (input) record's header field's token. The token prefix is especially relevant for the reversal process, and it is discussed in detail there. If you reset either or both of the contents of these boxes, then whatever you type there will come up in other dialogs - those for sorting, loading the lexicon, or reversing your lexicon.

MacLex allows you to specify up to three "templates" of tokens, including the delimiting[16] character after each token. The buttons below the text boxes allow you to turn off the use of all templates, or alternatively, to choose one of them. Whether the dialog comes up with something in the template boxes or not will depend on whether you have previously saved one or more templates using the **Save Settings** button - see below.

If a template is in effect, then every time you type the **New** button to enter a new record, the template is placed in the window and the cursor is positioned after the first token. Using a template is a handy way to avoid mistyping tokens. The more regular your record structure is, the more useful a template will be to you.

The text box at the top middle allows you to set the repeat rate for the 'next' and 'previous' arrow keys on the command bar, in units of 1/60th of a second.

The text box at the middle right allows you to specify one or more tokens for the fields that you want MacLex to display when in view mode. The checkbox immediately above allows you to turn this feature on or off. If not checked, then MacLex will just display every field in a record, going through the record in top to bottom order, displaying as many fields as the screen width will allow.

Below the text box the current font's name is displayed. This cannot be changed from within the dialog. To change it you must exit the dialog first.

The **Semanatic Category Options...** button brings up a dialog for setting various options related to how many levels of categories to use, the name of the token to use for each level, and what kind of category data is to be written to records. Discussion of this button and a picture of the dialog is reserved till section 26.

This dialog has some empty space on it for other options to be added as I add further functions to MacLex.

At the bottom right is a **Save Settings** button. Pressing this button will make all the settings currently showing in the dialog become

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[16]The use of carriage return as a delimiter is not supported when typing a template into the dialog. The dialog uses a typed carriage return to start a new line in the dialog's text box. If users are not happy with this then let me know. It would be possible to instead have the boxes run across the dialog and have any carriage return typed as a token's delimiter show in the dialog as a space. But I doubt if users will use carriage return as a delimiter, and if that is the case then the vertical display is nicer.

permanent (or at least until you change them again with another **Save Settings** button press).

The **Get Settings...** button allows you to input a new set of preferences from a previously saved preferences file, at any time.

These buttons bring up a standard file dialog, allowing you either to name the preferences file and store it wherever you like - with the other control files would be wise; or to select the preferences file to be input, depending on which button you pressed. (Earlier versions of MacLex stored preference data in the program file itself, which was an annoying limitation if you wanted to use the one program to handle different lexicons - each with a unique set of preferences. Now you can change preferences at will.)

12.4 Recovering Deletions

Every time you press the **Delete** button in the command bar, whatever record is currently on the screen gets immediately deleted and its file is updated. There are two ways to recover the deleted record if you change your mind.

Way One
If the record you want to recover is the last one deleted, then you can choose the **Undo Deletion** menu item in the **Edit** menu. The record will be immediately reinserted in its correct place and its file updated on the disk.

Way Two
If you have deleted several records, and then want to restore one deleted much earlier, then select the **Recover Deletions...** menu item on the **Edit** menu. The appearance of the screen will be similar to the following:

⌘	🗋 File	**Edit** Fonts Size Search Sort **Lexicon**

a	n
b	n̲
d	ny̲
d̲	ng
dj	p
g	r
i	rr
k	t
l	u
l̲	w
m	y

```
\w walgurwalgur
\p n
\d children
\ds
\d progeny
\s way walkirgin̲ingi
```

[To First] [To Last]   ⬅ ➡   [Restore]   Repeats: [1]   [Cancel]
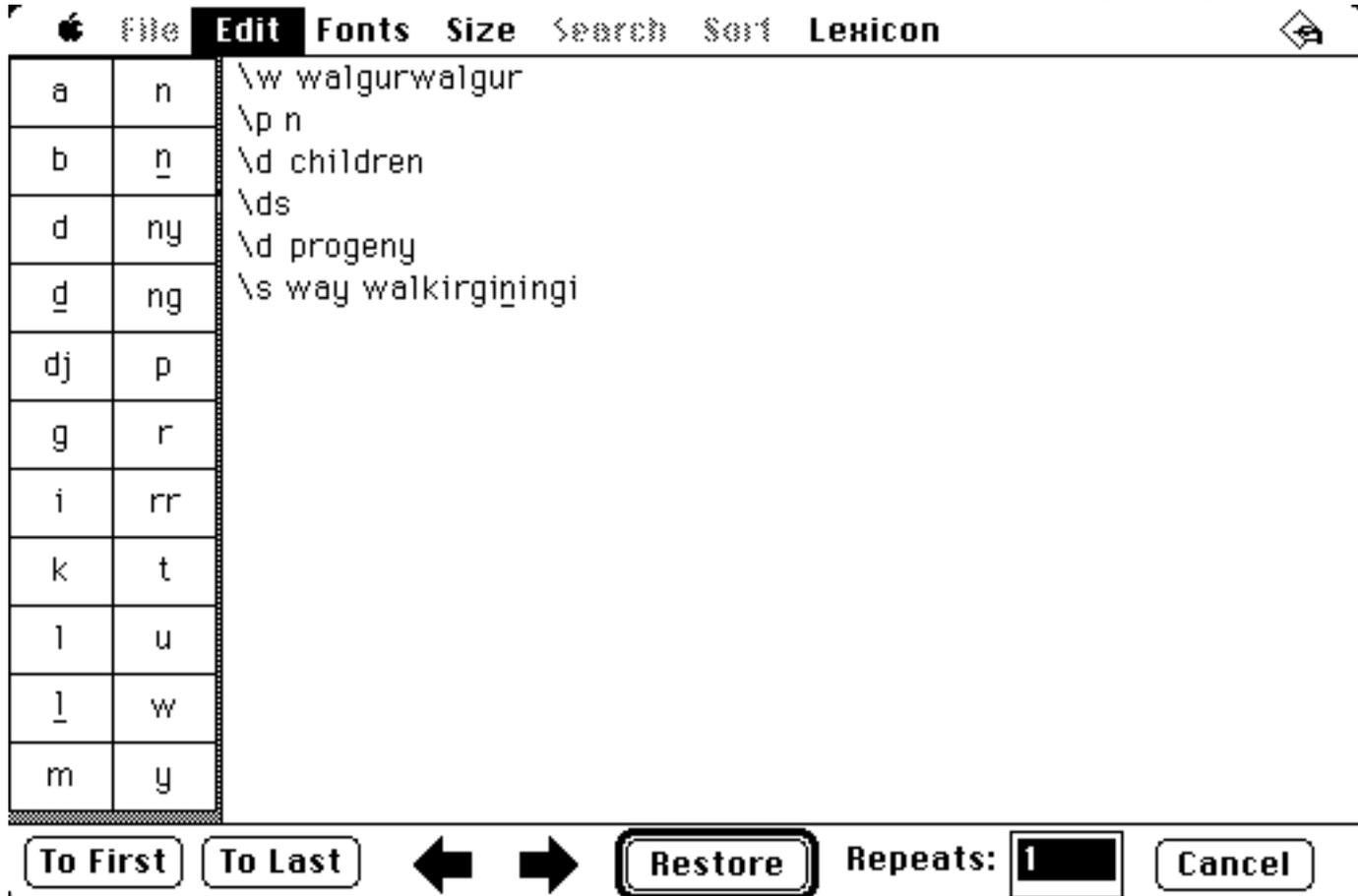
The record showing in the window will be the first in a list of formerly deleted ones. MacLex remembers the records you delete, up to a maximum of ten. After that, each new deletion goes on the list and the earliest stored deletion is then permanently lost. This allows you to restore, at any time, up to ten[17] of your earlier deletions.

To restore a record, use the arrow buttons to get it showing on the screen and then press the **Restore** button, or hit carriage return. The **To First** and **To Last** buttons take you to the first or last records in the list. The last record in the list is the earliest one you deleted, and is the next candidate for permanent loss when your deletions exceed ten.

Deletions stay in the list until either they are displaced by new deletions, or you choose the **Exit Lexicon** menu item.

The **repeats** text box allows you to specify how many times MacLex is to insert the diplayed record when you hit the **Restore** button. Default is one time.

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[17]It would not be hard, nor use much space to remember more than ten, if that is what users want. I feel that ten is enough protection. Let me know if you disagree.

If you want multiple copies of a record placed in your lexicon, then change the number to the number of identical records you want. If you have to enter a number of nearly identical records, then type the first record, delete it, and then replace it repeatedly using the **repeats** facility. At the end of the replacements, you will see the last replacement on the screen. You can then work back through the inserted records editing each according to your requirements[18].

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[18]Another way to accomplish the same thing is to type a record using **New**, and then select all of it and **Copy** it; then hit the **Enter** button to get a new blank window and **Paste** it there, and then change it to what you want. Repeat the last few steps for as many records as you need.