2. Basic notions and facilities

Laurel is a display-based, interactive program that manipulates a particular class of files, called *mail files*. In essence, a mail file is just a sequence of *messages*, each of which is a text string formatted according to certain conventions. The details of these conventions are not of major interest to most users suffice it to say that messages have a *header* and a *body*; a header contains (at least) a *sender*, a *subject*, one or more *recipients,* and a *date*. For each mail file, Laurel constructs and maintains a *table-of-contents* that summarizes the messages residing in the file. Mail files are private to each user, meaning that your mail files reside on your own Alto disk(s). Laurel provides facilities for receiving messages, manipulating mail files, examining and responding to messages, composing and sending new messages, and cataloging, filing, and printing messages.

Laurel is an interface program that allows access to the facilities provided by the *Message Transport System*. This system provides users with *in-boxes*, *mail drops* and a *name data base*. An *in-box* is a place where messages sent to a message system user are stored until that user requests those messages. The in-box resides on a mail server or file server. A *mail drop* is a service to which messages addressed to any user(s) of the message system may be sent. The Message Transport System sorts out the recipients and delivers the messages to their individual in-boxes. The *name data base* holds the names of registered users of the message system along with named lists of such users.

Each user's message system name consists of two parts separated by a period. The second part is the *registry*; the first part is an identifier for a person within that registry. Registries exist to partition the number of names understood by the message system and to help the message system determine on which mail server the in-box for a particular user will be found. For example, in the actual message system name "LaurelSupport.PA", the registry is PA and the user name within that registry is LaurelSupport.

The Message Transport System is presently implemented by two distinct systems, MTP and Grapevine. For the most part, Laurel hides the differences between these two implementations so that you need not be aware of the particular system to which you are connected. However, there are some functions of the Message Transport System, particularly with regard to public distribution lists, that are different depending on which implementation is supported in your registry. These differences are noted in this manual.

MTP (for Message Transport Protocol) is the older system, and is currently used on IFS file servers and on Maxc. Grapevine (or GV) is the newer system, providing distributed functions throughout the Xerox Internet and more powerful operations to its clients. These two systems interface to each other so that users of either system are connected to the entire message system community. At the time of this writing, the PA and ES registries are served by Grapevine; all others are served by MTP. As time goes on, Grapevine will gradually replace MTP throughout the Xerox Internet.

2.1. The user interface

Laurel is a highly interactive system in which economy and clarity of expression are essential. In striving to provide a convenient user interface, Laurel borrows a number of conventions familiar to users of other Alto subsystems. This section describes the principles that underlie the Laurel user interface.

2.1.1. Command invocation

Most Laurel facilities are invoked by use of the mouse, with the keyboard being used almost exclusively for text entry. Commands are generally represented by words or phrases on the display screen. You invoke a screen command by moving the mouse until the cursor points at the desired command, then clicking a mouse button (usually RED). If you hold down RED and move the cursor to point at a command, the command will appear *inverted* (i.e., white letters on black background). When you release the button, the command name will appear *grayed* (i.e., black letters on a gray halftone background). If, while holding down the mouse button, you change your mind about the command you intend to select, simply move the cursor until the inverted name is restored to its normal state, then release the button. A fine point: position the cursor so that it *points at* the command, not so that it rests on top of it.

Normally, you use RED to invoke screen commands. Some commands have such a significant effect on the current state that you must confirm them explicitly, and in such cases Laurel will prompt you. If you are certain in advance, you may invoke the command by clicking BLUE. Laurel will then suppress the prompt for confirmation and execute the selected command immediately. Some commands require extra confirmation even when invoked with BLUE.

Laurel prompts you for confirmation by displaying the message
Type ESC to confirm, DEL to cancel command.
in the feedback region at the bottom of the screen. It also displays a large flashing question mark in the cursor. You may confirm by striking ESC, CR, Y, or space, or by clicking YELLOW. If you strike DEL or N, the command will be aborted. Ultra-fine point: if you change your mind after pressing YELLOW, but before releasing it, clicking RED will turn it into a DEL!

2.1.2. Editing conventions

Laurel supports two distinct editor styles, *modal* and *modeless*. By default, Laurel will use the modal editor; to change this you must place an entry in your Laurel profile (see section 5). The modal editor is similar to the Laurel 5.1 editor and to Bravo 7 and 8. The modeless editor is similar to the LaurelX editor (previously distributed on a limited basis) and to BravoX. When either editor allows you to supply text, it displays a blinking caret at the appropriate place on the screen. Striking BS or CTRL-A deletes the character to the left of the caret; CTRL-W deletes the word to the left of the caret.

Shifted selection is available as an alternative to typing in either editor. A shifted selection is made by holding down either SHIFT key on the keyboard, making a selection with the SHIFT key still down, and finally lifting up on the SHIFT key. At this point, the selected text will be copied to the point indicated by the blinking caret. Shifted selection may be used at any time during type-in, not just immediately after issuing an editor command.

In the modal editor, type-in must be terminated by typing ESC; in the modeless editor no explicit termination is required.

The Laurel editor is described in detail in section 4.

2.1.3. Brackets

Several Laurel commands require text arguments. For instance, commands that manipulate a file need to know the name of the file on which they are to act. Text arguments appear in **{***brackets***}** following the command name on the screen.

When you invoke such a command by clicking RED, Laurel prompts you to fill in the brackets by displaying a blinking caret within the brackets. If there is already text within the brackets, the caret follows the text. In addition to the type-in conventions described above (including shifted selection), the following rules apply: If you strike ESC, CR, TAB, or space, or click YELLOW on the original command, the caret disappears and the contents of the brackets remain unchanged. If you strike BS or CTRL-W the contents of the brackets will be edited as if you had just typed that text. If you type anything else, it replaces the complete text within the brackets. Type-in is terminated by ESC, CR, TAB, space, or YELLOW click on the original command. Striking DEL cancels the entire command. If the text is too long to be displayed in the brackets then the middle of the text is represented as ". . .".

If instead of typing to fill in brackets for several commands that require filename arguments, you click RED on the original command again, Laurel will search your Alto file directory for an appropriate filename. Holding RED down on the original command will cause Laurel to repeatedly fill in the brackets with successive appropriate filenames from your directory. The most recently used files will appear first. The meaning of "appropriate" varies with the particular command and is discussed in the section for each command.

If you invoke the command with BLUE rather than RED, Laurel executes the command immediately, using the text argument already contained within the brackets, with no further action on your part. This is true of all commands that have text arguments in brackets, with the exception of the **User** command.

2.2. The display

While reading this section, it will be useful to have Laurel running on on Alto so as to refer to its screen, or to have Figure 1, The Laurel Screen handy.

Laurel maintains four regions on the display screen. From top to bottom they are: the *table-of-contents region*, the *message display region*, the *composition region*, and the *feedback region*. The table-of-contents region holds a directory of the messages residing in the current mail file. The message display and composition regions are used to examine messages received and to compose messages to be sent, respectively. The feedback region displays various information (frequently error notifications) appropriate to particular Laurel commands. Each region will be discussed in detail in subsequent sections.

The display also has three *command menus*. The topmost menu, just above the table-of-contents region, contains a number of miscellaneous commands and status information. The commands, like all Laurel screen commands, appear in **bold-face** type; the status information is in normal type. We call this simply the *upper menu*. Below the table-of-contents region and above the message display region is the *middle menu*. The commands in this menu are used to manipulate selected entries in the table-of-contents. Below the message display region and above the composition region is the *lower menu*. This menu contains commands that facilitate the composition of new messages, responses to old ones, and manipulation of files. The composition region is separated from the feedback region by a single horizontal line.

2.2.1. Scrolling and thumbing

The table-of-contents region, the message display region, and the composition region each have a *scroll bar* in the margin to their extreme left. Within this scroll bar, the RED and BLUE mouse button clicks cause scrolling actions as in Bravo. Holding RED or BLUE down for some time will produce continuous scrolling, upwards or downwards respectively, by scrolling one line at a time until the mouse button is released. The cursor will appear as a double-headed arrow when positioned in the scroll bar and will change to point up or down when RED or BLUE is pressed.

Thumbing differs substantially from the Bravo style. At the top of each of the scrollable regions is a horizontal bar (called the *thumb bar*) that separates the region from the menu above. When the cursor is positioned just below the thumb bar and YELLOW is depressed and held, the cursor changes shape to a short vertical line segment. The position in the text to which you want to thumb is indicated by the position of this cursor on the thumb bar. The left edge of the bar corresponds to the beginning of the text, the middle of the bar to the middle of the text, the right edge of the bar to the end of the text, and all points in between to the corresponding relative positions in the text. When YELLOW is released while the cursor is still a short vertical line, the indicated position in the text is brought to the top of the region.

A portion of the thumb bar appears as a dashed line, whose position and length correspond to the position and length of the portion of text displayed in the window relative to the entire text. Thus, positioning the line segment at the left edge of the dashed line indicates the beginning of the currently displayed text. (Releasing YELLOW at this point naturally has no effect on the display.)

As you will see shortly, it is possible to *select* entities within the table-of-contents and composition regions. The position of the first selected entity in these regions is indicated on its associated thumbing bar by a short vertical line segment. This segment is always present, and should not be confused with the cursor shape that appears when you depress YELLOW. You can therefore obtain the effect of Bravo's Normalize command by pressing down on YELLOW and positioning the cursor so that it coincides with the permanent vertical segment on the thumbing bar. Releasing the mouse button then causes the selected item to be moved to the top of the region.

2.2.2. Adjusting region sizes

You can adjust the boundaries of the three major regions using the small squares at the upper right-hand corner of the middle and lower menus. Point the cursor at the desired box, then press down and hold YELLOW. By moving the mouse up or down, you drag the box with you to a new position on the screen. When you release the mouse button, the menu will move to the new position, and the contents of the adjacent regions will be adjusted accordingly. A fine point: you may find it more convenient to hold down YELLOW and move the cursor to the vicinity of the box. The cursor will capture the box when it comes sufficiently close.

2.3. The table-of-contents region

This region provides an index to the messages in the current mail file. Each entry in the index is numbered and contains the date sent, the sender, and the subject. It is also possible for each entry to have a *mark character* for classification purposes. Laurel does not permit you to modify the information in the table-of-contents window (except the mark character).

When Laurel begins execution, it normally gets the default mail file and displays its table-of-contents in the top region on the screen. It also places a *selection pointer* (which appears as a small black triangle pointing to the right) next to the last entry in the index (or first unexamined entry, if there is one). These pointers indicate messages to be manipulated.

2.3.1. Selecting messages

Entries in the table-of-contents region are selected in a manner similar to the selection of lines of text in Bravo. Position the cursor to the right of the scroll bar next to the entry you wish to select. The cursor will appear as a right-pointing arrow when it is properly positioned to change the selection pointer. Click RED. Any existing selection pointers will be removed, and a new one will be placed at the indicated entry.

If you click YELLOW instead of RED, then existing selection pointers will not be removed. YELLOW adds a message to an existing selection. If you click SHIFT-YELLOW (hold down either SHIFT key, click YELLOW, raise the SHIFT key), then the indicated selection pointer will be removed, without affecting any other selection pointers.

If you click BLUE, then selection pointers are *extended* from some existing selection pointer through the indicated entry. If you click BLUE at an entry whose number is less than the lowest numbered entry already selected, then selection pointers will be placed next to the indicated entry

plus all entries between the indicated entry and the lowest numbered selected entry. If you click BLUE at an entry whose number is higher than the lowest numbered entry already selected, then selection pointers will be placed next to the indicated entry plus all entries between the indicated entry and the next lower numbered selected entry.

When making table-of-contents selections, think

RED:	NEW selection
YELLOW:	ADD to the selection
SHIFT-YELLOW:	REMOVE from the selection
BLUE:	EXTEND the selection.

2.3.2. Mark characters

You may wish to classify messages within a particular file. Laurel provides a primitive marking system by allowing you to supply a single *mark character* for any table-of-contents entry. To set a mark character, point the cursor at that mark character (to the left of the desired entry but to the right of the line bar and selection pointers) and click RED. A blinking caret will appear, inviting you to type a single character. This character will be retained in the table-of-contents entry and displayed whenever the entry is in the region. It will also be retained in the message if the message is moved to another file (using **Move to**, section 3.2.4). Some mark characters ("?" and "m") have additional semantics assigned to them by Laurel.

You may change a mark character by pointing the cursor at that mark and repeating the preceding steps. The proper way to remove a mark character is to replace it with a blank.

2.4. Status information in the upper menu

The upper menu contains some obvious status information: the version of Laurel you are running, the date and time, the status of your in-box(es), and the amount of free space remaining on your Alto disk. The remaining items are screen commands, which are discussed in section 3.

2.4.1. Laurel version

The upper left corner of the Laurel screen identifies the version of Laurel that you are running. Several versions of Laurel have been released in the past. Laurel 6 unifies and supersedes all previous versions and should be the version displayed in this area. Future maintenance releases of Laurel will add a fractional part to this version number, and significant new releases will change the integer part. If you send a message to LaurelSupport.PA, or otherwise refer to Laurel, please specify both the name and number that appear in the upper left corner of the screen.

2.4.2. Date and time

The date and time displayed in the upper right corner of the Laurel screen are set from the time maintained in your local network. If this time is wrong, please notify your local network services maintainer.

2.4.3. In-box status

The portion of the Laurel screen directly below the Laurel version is used for short messages regarding the status of your in-box(es). Message system users in Grapevine may own multiple in-boxes, allowing mail delivery even when their primary in-box server is down. Status messages for such users may vary slightly depending on the up-down status of individual in-box servers.

The meanings of status messages are as follows:

You have new mail. Laurel has determined through in-box polling that your in-box contains new mail for you (on at least one of your in-box servers). If you invoke the **New mail** command, this new mail will be retrieved to your current mail file. If your in-box server has become unavailable after the presence of new mail was detected, the *You have new mail* message will remain on the Laurel screen until you invoke **New mail**, at which time you will be given the bad news.

Mailbox empty at <time>. The most recent check of your in-box(es) has not determined the presence of new mail. Checking for new mail is done approximately every five minutes. The finest of points: a period terminates this message if every one of your in-box servers has asserted that no new mail exists. If some in-box cannot be contacted due to network failures or a down server, then the period is not used.

Login please. You have no password on your local disk. You must login (use the **User** command) before checking of your in-box(es) begins.

Bad user name or password. The name and password you have given do not correspond to those of any valid mail system user. Login with the **User** command. Remember that when you change your password on your disks and on file servers, you must change it in the message system also.

Can't contact any inbox servers. Due to network problems or down servers, no in-box servers can be contacted. Try again later.

Can't contact authentication server. Due to network problems or down servers, password checking cannot be performed. Try again later.

2.4.4. Free disk pages

The count of free pages left on your Alto disk is displayed below the date and time on the Laurel screen. You should check this number frequently to make sure that you have an adequate amount of space left for fetching new mail, etc. Laurel does not always recover gracefully from a full disk; it is a situation that should be avoided.

2.5. Message display region

This region is used for the display of messages from the current mail file. Messages may be scrolled and thumbed, but not edited in this region. Text displayed in this region is available as source text for shifted selections.

The middle menu, located above the message display region, contains commands that operate on the messages selected in the table-of-contents region. Descriptions of these commands are given in section 3.

2.6. Message composition region

The third region on the Laurel screen is used for composing messages to be delivered by the mail system. The message editor is quite general and it may be used for a variety of purposes in addition to its primary role as a message editor.

The editor contains many commands, some available on the screen and others available from the keyboard. The screen commands, used for initializing and filing messages, are discussed in section 3. The editor, including all keyboard commands, is discussed in detail in section 4.

2.7 The feedback region

Laurel uses the feedback region for three classes of information: status reports, exceptions, and confirmation requests. Status reports are displayed by various commands, e.g., **Deliver**, to report circumstances of interest to you but which require no direct action on your part. Exceptions are notifications of errors committed by you (or Laurel) and are flashed to alert you that some corrective action is probably required. Confirmation requests (see section 2.1) flash both the feedback region and a "?" in the cursor, alerting you to the need for immediate action before Laurel can continue.