multimedia
document
communication
software

Quarter 1
Quarter 2

BBN/Slate ™

Reference
Manual

multimedia
document
communication
software

This document reflects the BBN/Slate Release 1.1 software.

BBN/Slate™

Reference
Manual

BBN Software Products
A Division of Bolt Beranek and Newman Inc.

Contents

Preface

This preface contains the following:

* an overview of this manual
* a list of the documentation conventions used in this manual
* an overview of the BBN/Slate™ documentation

About This Manual

The *BBN/Slate Reference Manual* describes in detail all the components, including the seven media types, that comprise BBN/Slate. After you complete *Getting Started*, this manual will provide in-depth information about each component of this multimedia system. The contents of the chapters are as follows:

* Chapter 1 introduces the basic concepts of the system.
* Chapter 2 explains how to use the elements of BBN/Slate -- menus, dialog boxes, scroll bars, mouse usage, and keyboard editing commands.
* Chapter 3 discusses the Document Manager, which organizes, manages, and selects BBN/Slate documents.
* Chapter 4 describes how to use the multimedia Document Editor, which lets you create and edit a document. Using only BBN/Slate, the document can include text, spreadsheets, and illustrations.
* Chapter 5 explains how you can control and change the text of your documents.
* Chapter 6 explores the possibilities you have for adding line drawings, or graphic objects, to your documents.

- Chapter 7 shows you the ways you can create visual images, including photographs, for your documents.
- Chapter 8 discusses creating and manipulating spreadsheets and data.
- Chapter 9 explains how to use the voice capabilities to communicate your ideas to others using BBN/Slate.
- Chapter 10 describes how to send complex multimedia packages of information to someone else using enclosures.
- Chapter 11 discusses how to print your documents.
- Chapter 12 tells you how to send the multimedia documents as electronic mail to others.
- Chapter 13 describes how to initiate and use the conferencing system to confer with colleagues about your documents.
- Appendix A explains how to use QuickStart menus, which are shorter versions of the standard menus.

BBN/Slate is a menu-based system. Every chapter describes a different component of this multimedia system. Within each chapter, the pertinent menus are discussed separately, beginning with the top-level menu and working down through each menu choice.

Some of the menu commands lead to dialog boxes. These dialog boxes provide specific information that BBN/Slate needs to execute the command. The dialog boxes are shown in the text just as they are displayed on the screen.

The boldface heading in the left margin generally indicates the menu being described. A picture of how the menu appears on the screen accompanies the description. The bold headings also indicate BBN/Slate functions and all other components of the media types.

Documentation Conventions for This Manual

Unless noted in the text, this book uses the conventions described in this section.

Mouse Operations

This book uses the following format for describing mouse operations:

> **BUTTON action**

or

> **modifier BUTTON action**

where:

- **BUTTON** is the left, middle, or right button.
- **Action** is click, hold, drag, or release.
- **Modifier** is the key you hold down while performing a mouse operation, either the control or shift key.

For example:

> **LEFT click** means you click on the left mouse button.

> **Shift MIDDLE hold** means you press and hold the middle mouse button while holding down the shift key on the keyboard.

Menu Commands

Menu commands are given with the form:

> **menuname-commandname**

For example, the following menu command:

> **Text-Fonts-Face-Italics**

shows that **Text** is the top-level menu, **Fonts** is a submenu of **Text**, **Face** is a submenu of **Fonts**, and **Italics** is an option of the **Face** menu.

Boldface Font

This boldface font is used for menu activities and mouse operations. For example:

> You can adjust the spacing of points in the grid with the **Graphics-Style-Grid** command.

> To listen to a speech passage in a document, you **LEFT click** while the mouse pointer is over the icon or passage.

Boldface is also used for keys you press on the keyboard, such as the **Return** key.

Italic Font

This italic font is used to give emphasis, especially when a new term is introduced in the text. In discussions of command-line activity or programming, italic represents a placeholder in command syntaxes and directory specifications. For example, in the following command syntax:

```
% install/install_lang package
```

package is a placeholder for the actual name of the language package you are installing.

Monospace Font

This `monospace font` is primarily used in descriptions of command-line activity and programming. It is used to represent filenames, directories, BBN/Slate commands and functions, UNIX operating-system commands, prompts and messages you see on your screen, and user input. For example:

> You must define the program by adding it with an `autoload` statement to your `.slate_editor.init` file.

BBN/Slate folder names are also represented in monospace font.

Control Key	For key sequences that use the control key, a caret (^) indicates the control key. For example, **^A** means that you type the control key and the letter A together. You can type A in upper- or lowercase.
Escape Key	The escape key is represented by **Esc**, as in **Esc-D**. In this example, you type the escape key and an uppercase D together. You would not type a lowercase d; case matters when you are using the escape key.
Alternate Key	Key sequences that use the alternate key represent the key with **Alt**, as in **Alt-w**. In this example, you type the alternate key together with lowercase w. Again, case matters when you use **Alt**. Please see the *Release Notes* for information about which key serves as the **Alt** key on your system.

Overview of BBN/Slate Documentation

User Documentation	The BBN/Slate documentation set includes the following manuals:

- *Getting Started* introduces you to BBN/Slate through a series of tutorial exercises.
- The *Reference Manual* gives a complete description of the BBN/Slate system.
- The *Customizing Manual* explains how you can tailor your BBN/Slate system to fit your needs. Topics include reconfiguring the menu system, and writing your own programs using the Slate Extension Language (SEL).
- *System Topics* is a collection of documents covering system topics such as the structure of BBN/Slate document files, command-line document management tools, and mail utility programs.

- *Multilingual Documents* describes how to create documents in five other writing systems (Arabic, Cyrillic, Hangul, Hebrew, and Thai) available with the BBN/Slate Multilingual Option. *Note*: If you did not order the Multilingual Option, you will not receive this manual.

On-line Help

In addition to the printed documentation, BBN/Slate has an on-line menu help facility that provides information on all command and menu choices. Also, BBN/Slate provides on-line UNIX manual pages with information about BBN/Slate's command-line programs and utilities.

Installation and Release Notes

System-specific installation instructions and release notes supplement the BBN/Slate user documentation set.

Obtaining Documentation and Services

This section explains how you can:

* order documentation
* obtain technical assistance
* obtain training services

How to Order Documentation

To order additional copies of this manual or any other BBN/Slate manual:

* In North America, mail a completed purchase order to:

    BBN Software Products
    A Division of Bolt Beranek and Newman Inc.
    10 Fawcett Street
    Cambridge, MA 02138
    ATTN: Sales Administration

    For prices and other ordering information, call Sales Administration at 617/873-5115.

* Outside North America, contact the nearest Sales and Support office.

How to Obtain Technical Assistance

For BBN/Slate customers who are on maintenance and need technical assistance:

*   In North America, call the Hotline number: 617/873-3968. Hotline hours are Monday through Friday, 8:30 a.m. to 8 p.m. (EST).
*   Outside North America, contact the nearest Sales and Support office.

How to Obtain Training

BBN supports its customers and products with a full range of training programs. BBN/Slate courses are offered in conjunction with hardware vendors or at BBN education centers. In addition, arrangements can be made with the Education Services department to present the same courses at customer sites.

To receive a course catalog or additional information:

*   In North America, call the Course Registrar at 617/873-8383.
*   Outside North America, contact the nearest Sales and Support Office.

1   Introduction

BBN/Slate software is designed to help you share ideas and
information with coworkers and associates. In today's business
and government organizations, ideas and information are expressed
in spoken, pictorial, schematic, photographic, and numeric forms.
BBN/Slate lets you combine these forms to express your ideas
more effectively, and collaborate with others to develop your
information, using all of these communication media. Communi-
cating ideas through compound documents with a rich variety of
media types is the essence of BBN/Slate.

This chapter introduces you to the basic concepts of BBN/Slate:

*   sharing ideas and information in the BBN/Slate environment
    (Section 1.1)
*   major components of BBN/Slate (Section 1.2)
*   basic multimedia elements and the structure of BBN/Slate
    documents (Section 1.3)

1.1   Sharing Ideas Using BBN/Slate

Multimedia sharing lets you communicate ideas easily with your
associates. Documenting your ideas typically involves:

*   creating a document
*   collaborating with others
*   exchanging ideas
*   consolidating ideas from differing sources
*   arriving at a consensus of ideas

After creating a document that includes such things as text in various fonts, sketches, spreadsheet models, and photographs, you can then send it to necessary collaborators using electronic mail. To reach a consensus on the final document, you can meet "over" the document to settle differences and exchange ideas with people in different locations. Alternatively, you can produce a printed copy, or file different versions of the document in a filing system. BBN/Slate lets you do all these things from your desktop.

Figure 1-1 illustrates one example of how BBN/Slate can be used effectively by people collaborating on the creation, revision, and release of a document.
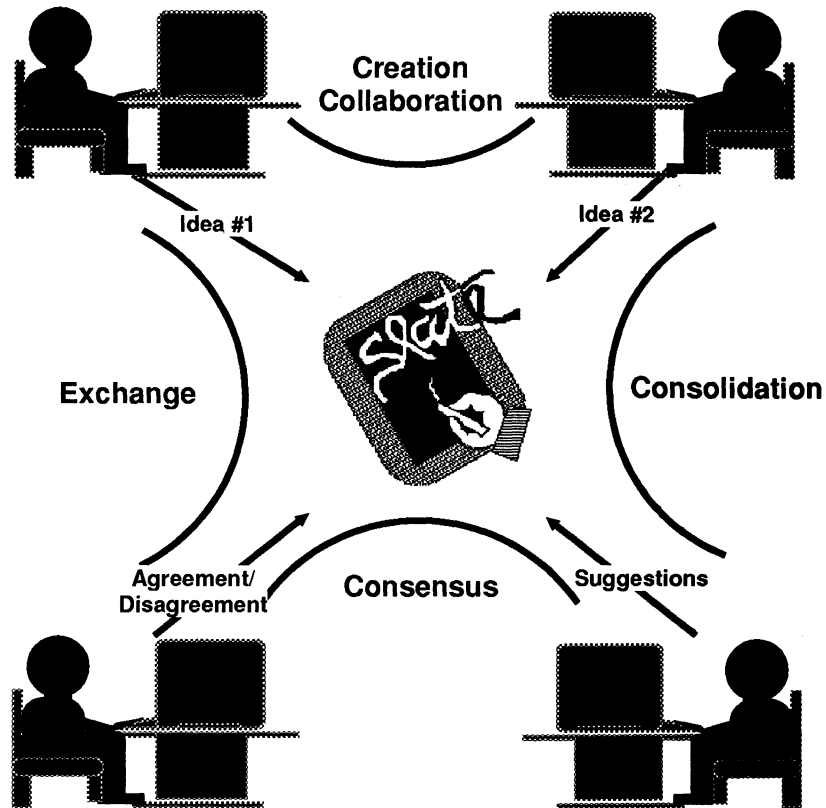
Figure 1-1   Conceptual Use of BBN/Slate

Integrated components of BBN/Slate help you:

- create and edit electronic multimedia documents with a variety of media types
- store and retrieve documents from an easy-to-use filing system
- print documents
- send and receive documents to and from geographically separated collaborators
- confer in real-time with others over the presentation or revision of a document

1.2   Major Components of BBN/Slate

The four major components to BBN/Slate software are described here.

Document Manager

You use the BBN/Slate Document Manager to organize, manage, and select documents. For example, to edit a previously filed document, you select the folder, highlight the desired document, then click on the **show** button to display your document. The Document Manager interacts with the Document Editor to display a copy of the document for editing.

Document Editor

The Document Editor lets you create and revise powerful, content-rich documents with seven different media types: text, geometric graphics, color and black and white images, spreadsheets, charts generated from spreadsheets, speech, and enclosures. You can compose your ideas in one seamless, integrated document. Many of the techniques for creating and editing different media types are similar, so that once you learn how to edit one media type you will understand a great deal about editing other types.

Electronic Mail Interface

Documents that you create in the Document Editor can be sent electronically to other people. When your document is complete, you add an electronic mail header. The header addresses people to receive the document and summarizes the contents. Clicking on the **send** button from the Document Manager sends that document to the intended recipients.

Electronic Document Conferencing System

The electronic conferencing component of BBN/Slate lets you confer or collaborate over documents with other BBN/Slate users. When a BBN/Slate conference is augmented with a telephone voice conference call, a group of people can discuss and revise a set of documents just as if they were working together in the same room. If a document is formatted with large fonts, the BBN/Slate conferencing feature can also be used to make remote presentations.

1.3 Multimedia Documents in BBN/Slate

In a BBN/Slate document, non-text elements are embedded within structured text. For example, this chapter includes graphic elements embedded within a document framework that contains chapters, sections, subsections, and various paragraphs, nested lists, and captions.

Figure 1-2 shows a portion of a BBN/Slate document with a chart (a graphics object generated by a spreadsheet), a speech passage, and the accompanying text. BBN/Slate documents can be used for a variety of purposes, such as messages, reports, proposals, and forms.

```
┌────────────────────────────────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor                               │
├────────────────────────────────────────────────────────────────────┤
│ ▦  Add   Edit   File   Mail   Print   Classify   Document   Editor   Keycaps   Exit │
└────────────────────────────────────────────────────────────────────┘
```

Text **A few words about BBN/Slate Release 1.1 software.**
BBN/Slate software helps you create, edit, communicate, print and manage *multimedia* documents. A BBN/Slate document (you are reading one now!) may contain a number of powerful media types, including: Text, Geometric Graphics, Color Images, Scanned Black & White Images, Voice, Spreadsheets, Business Charts and Enclosures.

Spreadsheets

x	Sin(x)	Cos(x)
0.0000	0.0000	1.0000
0.3142	0.3090	0.9511
0.6283	0.5878	0.8090
0.9425	0.8090	0.5878
1.2566	0.9511	0.3090
1.5708	1.0000	0.0000

Charts Generated from Spreadsheets

Trig Functions

Func(X)

```
 1.5
 1.0
 0.5
 0.0
-0.5
-1.0
-1.5
      1    2    3    4    5    6    7
```

Speech Voice annotations may be inserted so that any reviewer of a BBN/Slate document can make comments about desired changes.

┌──┐
│ ◁))) ⌇ Remark by Kathryn Ellis on 04/27/90, 1:49 pm │
└──┘

```
Buffer: 01.introduction*  File: /home/spcsun7/docacct/Slate/refman/01.introduction.slt
```

Figure 1-2 Part of a BBN/Slate Document

1.3.1   Basic Media Types

There are seven media types in the BBN/Slate Document Editor:

- text
- graphics
- images
- spreadsheets
- charts
- speech
- enclosures

A summary of each one is presented here.

Text

You can format text in a wide range of styles. You can adjust margins, tab stops, line spacing, justification, and the font of a passage, and make other formatting choices. BBN/Slate has predefined styles for you to use, but you can also develop your own styles and use them for creating new documents. You can organize your document into various sectioning strategies. A standard sectioning discipline exists that includes chapters, sections, and subsections. Tables of contents for sections, figures, and tables are generated automatically.

Formatting is done as you enter the text and you can immediately see the effect of any formatting changes you make. You may display individual characters, words, phrases, or passages in normal, **bold**, *italic*, or ***bold italic*** font, or in a font which is smaller or larger than the surrounding text, as $_{subscript}$ or ^{superscript,} underlined, double underlined, or ~~overstruck~~.

Graphics

You can create graphics (a drawing) that may include lines, geometric figures (polygons, circles, ellipses), text, and bitmap

images. You can shade closed regions (such as polygons) with textures (regular patterns that fill the regions), and you can make the individual objects in a drawing overlap one another. Figure 1-3 shows a simple line drawing.
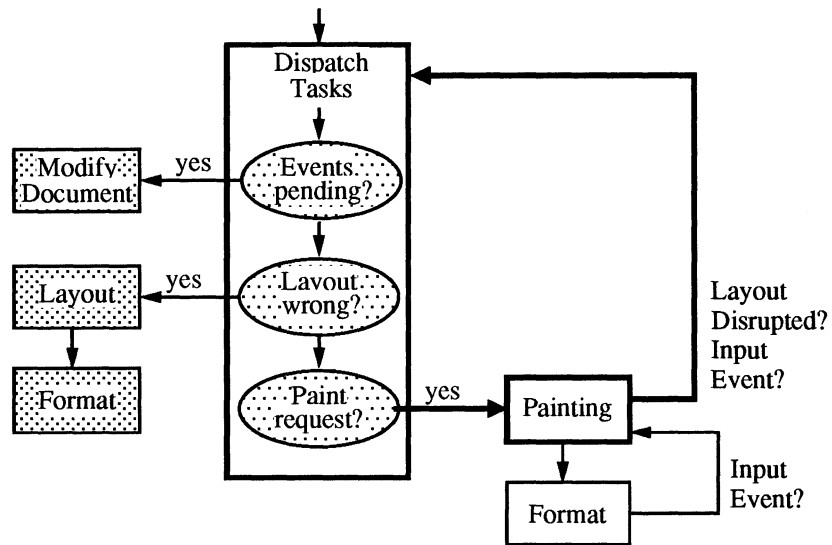
Figure 1-3   *Sample Line Drawing*

Images   You can create an image or import a digitized image of a drawing, map, photograph, or other picture. Figure 1-4 shows a bitmap image.

Figure 1-4   *Sample Image*

You can put images into the system several ways: by using an image scanner (discussed in Chapter 7); by capturing the graphical display of another program on the workstation display using a screen capture program (Chapter 7); by direct insertion of a file generated by some other program; or by using the multimedia Document Editor to "paint" an image.

Images are black and white pictures, while rasterfiles may be black and white, grayscale, or color pictures.

Spreadsheets   You can put spreadsheets into your document. A spreadsheet, as shown in Figure 1-5, is a two-dimensional array where each cell may be empty or may contain a number, label, date, or formula. A formula relates the contents of one cell to other cells in the table. A document containing a spreadsheet element includes the underlying spreadsheet model (i.e., the formulas that interrelate cells) in addition to the cell values. This feature lets the recipient of a message containing a spreadsheet do "what if" experiments with the spreadsheet table. Graphical rulings can be added to a spreadsheet to highlight relationships between cells.

Year	Prod 1	Prod 2	Prod 3	Maximum
1985	12	34	23	34
1986	13	35	24	35
1987	15	37	30	37
1988	14	34	22	34
Average	14	35	25	35

Figure 1-5   *Sample Spreadsheet*

Charts

You can include a line, bar, and pie chart based on values in a spreadsheet. As values in the spreadsheet change, the graphical depiction of those values in charts change as well. Even though charts are automatically generated, you can edit them like any other graphical object. For example, in Figure 1-6 below, the commentary "Bad Year" and the arrow were added on top of the chart that was generated by the spreadsheet.
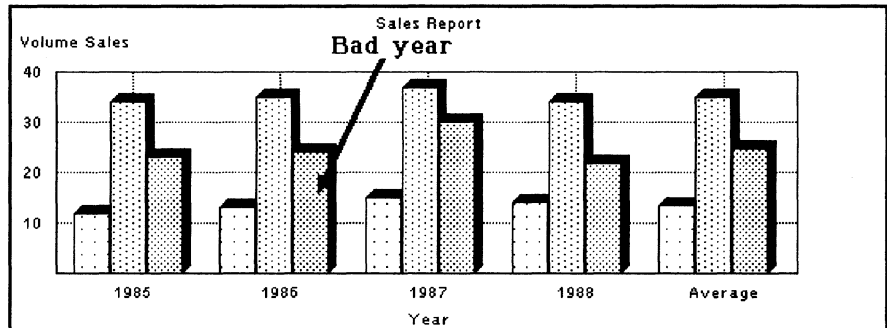
Figure 1-6   *Sample Chart*

Speech

You can insert voice annotations so that you or any reviewer of a BBN/Slate document can make comments about the document. A voice element is a digitized speech passage. You add voice elements into documents by using a speech digitizing device. For presentation purposes, BBN/Slate represents each voice element in a document by the speaker icon. A speech icon and passage is shown in Figure 1-7.
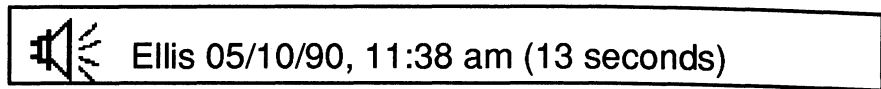
Figure 1-7   *Sample Speech Passage*

The Document Editor automatically adds a caption indicating the author, the date and time the passage was recorded, and the length of the speech passage. You can also edit the text caption. A reader of a BBN/Slate document can hear a voice element by pointing to the icon with the cursor and invoking a playback command. The icon representing a speech passage is not shown when a document is printed.

Enclosures

You can enclose any external file within a document. An enclosure can contain text, data, an executable program, or any other information. Enclosures greatly extend your ability to communicate information to others by letting you create documents that explain or describe files that are embedded within them. For presentation purposes, BBN/Slate represents each enclosure in a document by the envelope icon (Figure 1-8).
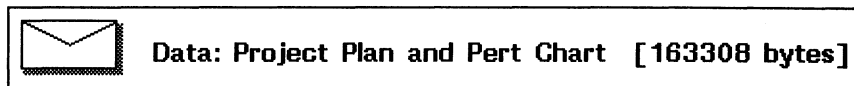
Figure 1-8   *Sample Enclosure*

You can use the Document Editor to add a caption indicating the type of enclosed file, the file contents, and its size. A reader of a BBN/Slate document can perform a variety of operations on an enclosure, including editing, printing, and executing it.

1.3.2   Document Structure

Text acts as the "fabric" into which all other media are woven. From the bottom up, text is structured according to the following plan:

1. Individual characters, or sequences of characters (words, phrases, passages) in a block of characters possess language and font attributes.

2. Entire blocks of characters are formatted in a simple style.

3. Other non-text media types (e.g., a line drawing or a spreadsheet) are equivalent to instances of simple text formatting styles.

4. Compound formatting styles are used to create various types of lists.

5. Sectioning and captioning styles can be used to organize a document.

A sequence of simple text elements, other non-text media elements, compound elements, and sectioning and captioning elements together form a document.

BBN/Slate documents are structured because the Document Editor knows about the relationship between the "underlying" elements of the document and will take actions to preserve that structure. Details of the approach to document structuring include:

1. **Individual characters, or sequences of characters (words, phrases, passages) in a block of characters are presented with a set of language and font attributes.**

   In BBN/Slate, the language is English; with the BBN/Slate Multilingual Option, you can select the language from the set of languages configured for your system. After choosing a language, you can select several alternatives for font attributes as appropriate in each of the following areas:

   Family The general style of the font. Standard font families include TimesRoman, Helvetica, and TV (a fixed-width font).

   Face There are usually four faces for each font family: normal, **bold**, *italic,* and ***bold italic.***

Size	The size of the font. There are normally 5 sizes: 8 point, 10 point, 12 point, 14 point, and 18 point. Some fonts have different size selections.
Superscript and Subscript	A sequence of characters may be elevated (superscript) or lowered (subscript) from the surrounding characters.
Lining	Any sequence of characters may be underlined, double-underlined or ~~overstruck~~.

2. **Entire blocks of characters are formatted in a simple style.**
   Examples of simple styles include *paragraph*, *noindent*, and *center* as shown in Figure 1-9.

This is an example of a *paragraph* formatting style.

This is an example of a *noindent* formatting style.

This is an example
of a *center* formatting style.

Figure 1-9   Simple Text Formatting Styles

3. **Other non-text media types (e.g., a geometric drawing or a spreadsheet) are equivalent to instances of simple text formatting styles.**
   For example, in Figure 1-10 each of the elements is treated the same way in the structure of a document.

This is a single
text element that
has been
formatted in the
noindent style.
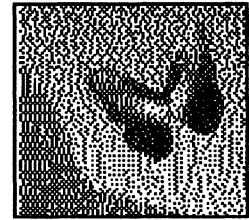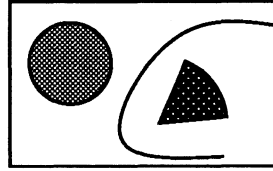
	Sales	Costs	Net
1987	100	300	-200
1988	500	400	100
1989	1000	500	500
Total	1600	1200	400
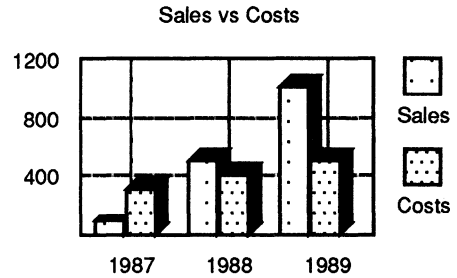
Figure 1-10   *Sample Non-text Media Types*

4. **Compound formatting styles are used to create various types of lists.**

   This feature lets you create expressive organizations and outlines of your documents. Compound formats include *enumerations, itemizations,* and *descriptions* (Figure 1-11). Lists are sequences of labeled points. The label may be generated by the Document Editor (*enumeration* or *itemization*) or supplied by the user (*description*). The points may be any of the simple styles, although the *noindent* style is the normal formatting style for the body of list items.

1. This is point one of a text block formatted with the *enumeration* style.

2. This is point two.

o This is point one of a text block formatted with the *itemization* style.

o This is point two.

GNP This is the description of the first item in the *description* style.

CPI This is the description of the second item.

Figure 1-11   *Sample Compound Text Formatting Styles*

Compound formatting styles may be nested. When you nest compound styles, BBN/Slate provides new labeling sequences. For example, Figure 1-12 shows two levels of enumerations and two levels of itemizations nested within each other.

A. This is point 1

    1. This is subpoint 1

       o This is the first item

          + This is a point under the first item.

            Notice that these points can be as complex as you want and can include internal structure of their own.

          + This is another point.

       o This is the second item

    2. This is subpoint 2

B. This is point 2

Figure 1-12   *Sample Nested Compound Styles*

5. **Sectioning and captioning styles can be used to organize a document.**

   Sectioning styles are composed of a *counter* (see Chapter 5) and some optional surrounding text. Examples of these styles include chapter, section, subsection, caption-figure, and caption-table (Figure 1-13).

Chapter 1. Economic Measures

1.1 Background

1.2 Gross National Product

1.3 Consumer Price Index

Figure 1-1: GNP 1900-1980

Chapter 2. Economic Cycles

2.1 Background

2.2 Recessions

Figure 2-1: Recessions 1900-1980

Figure 1-13   *Sample Sectioning and Captioning Styles*

6. **A sequence of simple text elements, other non-text media elements, compound elements, and sectioning and captioning elements together form a document.**

    Combinations of these styles are shown throughout this book.

2   BBN/Slate User Interface

This chapter describes how you use the user interface to "navigate" through the interactive elements of BBN/Slate's software design. It tells you how to use:

- the mouse (Section 2.1)
- BBN/Slate menus (Section 2.2)
- dialog boxes (Section 2.3)
- scroll bars (Section 2.4)
- keyboard editing commands (Section 2.5)

The user interface's keyboard component can be customized easily through keybindings and configurable menus. Information regarding this capability can be found in the *Customizing Manual*.

2.1   Using the Mouse

Mouse operations generally have three components: the button name, the action, and an optional modifier.

A standard format describing any mouse operation is:

> **modifier BUTTON action** (e.g., **control RIGHT hold**)

When the modifier is omitted, the format is:

> **BUTTON action** (e.g., **LEFT click**)

Descriptions of each of the operation components follow:

Button Name   There are three buttons:

                              LEFT   Selects and executes menu choices and confirms dialog boxes.

                              MIDDLE   Displays available help messages for menu items.

                              RIGHT   Selects and executes menu choices.

Action   There are four types of button actions:

                              click   Pushing and releasing the button quickly -- like typing on a keyboard. This action executes specific choices.

                              hold   Depressing the mouse button and holding the button down. This action activates pop-up menus.

                              release   Letting the button come up after it has been held.

                              drag   A combination of **hold**, moving the mouse pointer followed by **release**. This action selects objects and sublevel menu choices.

Modifier   A key you hold down while using the mouse. Possible modifier keys are:

                              shift   Either one of the **Shift** keys

                              control   The **Control** key

In addition, Chapters 3 through 13 end with a section on mouse usage pertaining to the topic of that chapter.

The standard notation that refers to commands invoked from menus is described in detail in Section 2.2.

2.2   Working with Menus

BBN/Slate's extensive menu system enables you to perform most editing and document management functions simply by making a menu selection with the mouse. Throughout the Document Editor and the Document Manager, menus present the list of available choices. The way you select menus and items from the menu bar depends on whether you have *pop-up* or *stay-up* menus. These menus are discussed in the next subsection.

2.2.1   Pop-up and Stay-up Menus

Throughout the Document Editor and the Document Manager, menus are sensitive to the current location of the mouse pointer. The way you select menus and items from the menu bar depends on whether you have stay-up or pop-up menus. BBN/Slate defaults to the setting you have for your window manager menus (i.e., if you have stay-up menus activated in the window manager, you have stay-up menus in BBN/Slate).

To select a *pop-up* menu:

1. **LEFT** or **RIGHT hold** on the menu name.
2. **Drag** to highlight the desired item.
3. **Release** to select the highlighted item.

Note: If a menu name is followed by an arrow, that choice leads to a submenu.

To select a *stay-up* menu:

1. **LEFT** or **RIGHT click** on the menu name.
2. **Drag** to highlight the desired item.
3. **Click** again to select the highlighted item.

Most instructions throughout this book assume that you are using pop-up menus.

2.2.2   Selecting Menus and Submenus

Figure 2-1 shows a sample menu. Note that the **Text** menu is always available within text media.

To select the **Text** menu, **RIGHT hold** anywhere within the Document Editor's display area.
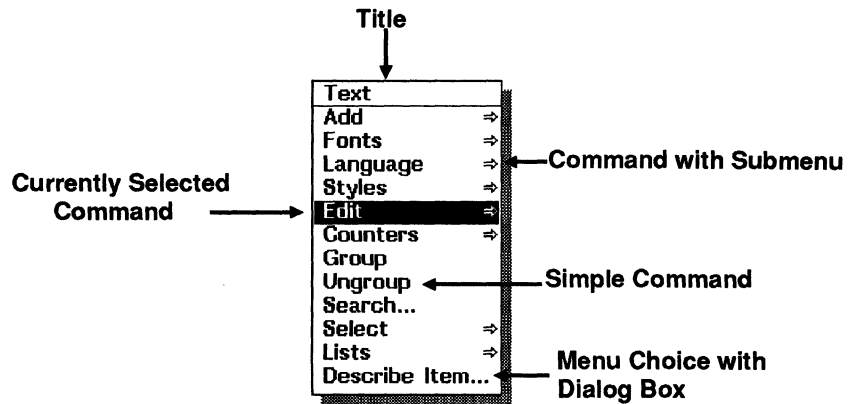
Figure 2-1   *Sample Pop-up Menu*

Each BBN/Slate menu has a title and a list of commands. A horizontal line separates the list of commands from the title. Any menu may contain commands, submenus, or a mixture of both. Menu choices that end in three dots (...), such as **Describe Item...** (Figure 2-1), bring a dialog box to the screen.

Many menu choices lead to *submenus*. Menu choices that lead to submenus are indicated with arrows to the right of the original menu.

To select a command from a submenu:

1. **RIGHT drag** over the menu until the item you want is highlighted.

2. Continue to **RIGHT drag** past the submenu's name, in the direction of the arrow until the submenu appears and until the desired submenu command is highlighted.

3. **RIGHT release.** The entire menu disappears, and the highlighted command is executed.

To deselect a submenu and make another selection:
Move the mouse pointer away from the submenu and onto the main menu. The submenu disappears and the main menu becomes active again. You may deselect multiple levels of submenus the same way. *Positioning the mouse pointer over any menu causes that menu to become active, and deselects any submenus that may be displayed.*

2.2.3   Menu Naming Conventions

Throughout the BBN/Slate documentation, menu commands are named with the convention: **menu name-command name.** For example, the command to change text to italic is **Text-Fonts-Italic** and is shown in Figure 2-2. It indicates that the top-level menu is **Text, Fonts** is a submenu of **Text, Face** is a submenu of **Fonts,** and **Italic** is an option of the **Face** menu.

Top-level (Main) Menu
(Text)   **First-level Submenu**
                    (Fonts-Face)

                              Second-level Submenu
                              (Fonts-Face-Italic)

Text		
Add	⇒	
Fonts	Face	Italic
Language	Family	Bold
Styles	Size	Bold Italic
Edit	Lines	Normal
Counters	Clean up	
Group		
Ungroup		
Search...		**Currently Selected Command**
Select	⇒	**(Text-Fonts-Face-Italic)**
Lists	⇒	
Describe Item...		
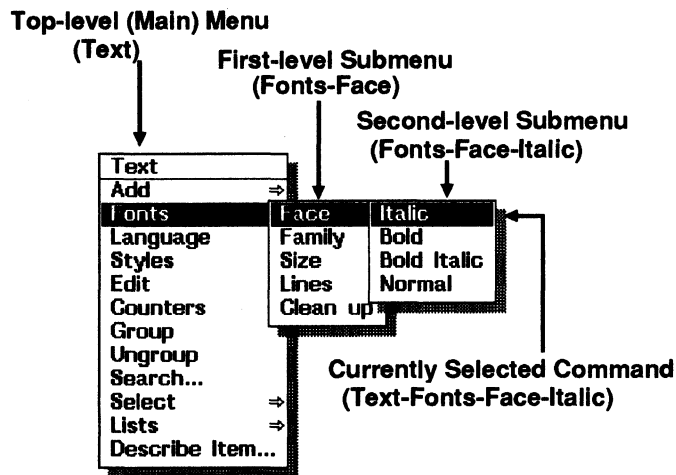
Figure 2-2   *Pop-up Menu with Submenus Displayed*

2.2.4 Getting Help in Menus

You can display brief help messages describing the items on a menu by using **MIDDLE click** (or **MIDDLE hold**) while a menu item is highlighted. The message remains on the screen until you select the item or move the mouse pointer to another item. If you use **MIDDLE hold** while moving the mouse through a menu, the help message for each item is displayed. Figure 2-3 shows a menu with a help message displayed.

Top-level (Main) Menu

Text
Add →
Fonts →
Language →
Styles →
Edit →
Counters →
Group
Ungroup
Search...
Select →
Lists
Describe Item..

Submenu

| description |
| enumeration |
| itemization |

Help Message for Command

| A bulleted list |
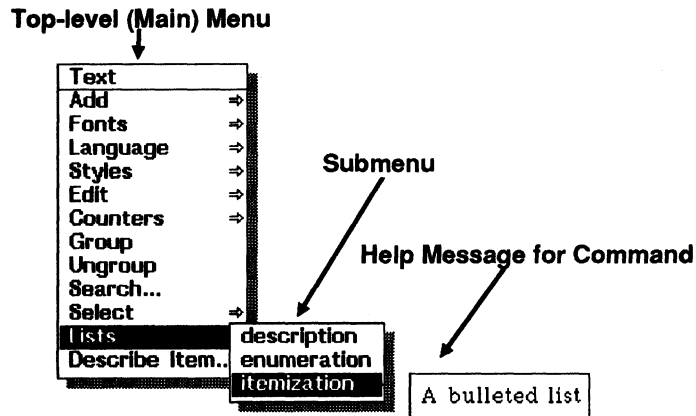
Figure 2-3   *Pop-up Menu with Help Displayed*

2.2.5   Active and Inactive Menu Commands

Sometimes not all of the commands listed on a menu are appropriate in a given context. For instance, the **Edit** submenu of the top-level **Edit** menu contains commands for cutting and pasting objects between a document and the *clipboard* (a temporary storage area). If no object in the document is selected, however, it would be inappropriate to invoke the **Cut** command.

When a command is inappropriate for the current editing context, BBN/Slate displays that command's named *dimmed*, that is, in a light grey color instead of the usual black. Figure 2-4 shows a menu with some commands dimmed.

You cannot select dimmed commands, nor are they highlighted when the mouse pointer passes over them. In addition, Help is not displayed for dimmed menu items.
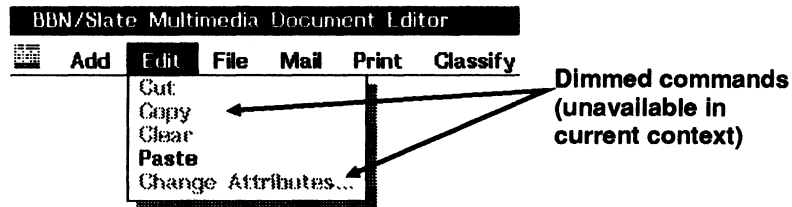
Figure 2-4   *A Menu with Some Commands Dimmed*

2.2.6 Review of Menus

- BBN/Slate uses *pop-up* and *stay-up* menus and *submenus.*

- To display the top-level menu, use **RIGHT hold**. To select a command, move the mouse pointer over the command name so that it is highlighted, and release the button.

- To display a submenu, use **RIGHT hold** to display the top-level menu. Move the mouse pointer over the submenu name so that it is highlighted and move the mouse to the right until the submenu appears. To select a command from the submenu, move the mouse pointer over the command name so that it is highlighted, and release the button.

- To deselect a menu or submenu, move the mouse pointer away from the menu so that no command is highlighted, and release the button.

- To get Help on a menu or submenu item, first display the menu. Then move the mouse pointer over the item name so that it is highlighted, and use **MIDDLE click.**

- To browse through Help on all the menu items, display the menu or submenu as directed above. Use **MIDDLE hold** over each item in turn to display its Help message.

- Menu items are dimmed when selecting them would be inappropriate.

2.3 Dialog Boxes

Some of the commands on a menu end with three dots (...). If you select one of these commands, a *dialog box* is displayed. The dialog box asks you to specify additional information that BBN/Slate needs in order to execute the command. For example, the command to create a new formatting style for text requires you

to specify what the new style should look like. Dialog boxes also present warning messages and ask for confirmation before taking irreversible actions or actions that may cause work to be lost (such as closing the editor without saving your document).

When a dialog box appears on the screen, the command that is displayed waits until you complete or cancel the dialog box. The dialog box takes over the keyboard and mouse while it is in the Document Editor window, allowing only dialog box commands to be issued within that window. Figure 2-5 shows a sample dialog box. Each dialog box has one or more of the following components.

Messages

A message is simply text to warn or inform you. A message may explain why a dialog box has been displayed and what information is required before a command can be completed, or it may provide a warning that some command requires confirmation before proceeding.

Fields

Fields are places where you can give the necessary information about a command. Most fields consist of a *label* or *name* that identifies the field and an area in which to enter the data associated with that field. The data are the field's *value*. In Figure 2-5, for example, there is a field whose name is **Name** and whose value is noindent.

Five basic field types can occur in a dialog box. They are **on/off** fields, text fields, toggle fields, choice fields, and numeric fields. Each of the five types is described in more detail in Section 2.3.2.

Command Buttons

Command buttons (not to be confused with mouse buttons!) are used to confirm or cancel the information entered in the dialog box (**OK**, **Cancel**), and to execute commands based on the dialog box's current contents.

Text Fields   On/Off Fields

Cycle Buttons

Name: noindent   Based on: paragraph

Help: A format for nested elements within a list

Font
Family ⟳ helvetica
Face ⟳ Normal
Size ⟳ 10 pt
☐ Underlined

☑ Word wrap   ☐ Width derived
☐ Keep   ☐ Keep with Next
Page break ⟳ None
Orphan: 1   Widow: 1

1 inch   2   3   4   5   6   7

t ꜱ t ꜱt ꜱt ⌐

Numeric Fields

Left Margin: 0i   Indent: 0i   White Above: 0i
Right Margin: 0i   Linewidth: 0i   White below: 0.5l

Spacing
☐ = = 1l

Justification
≡ ≡ ≡ ≡

Keyboard ⟳ English
Text Flow ⟳ Normal

Tab stops: 0.5i

Content:

Print Values:

Next Style:

(OK)   (Cancel)

Command Buttons   Choice Fields

Figure 2-5   *Sample Dialog Box*

2.3.1   Getting Help in a Dialog Box

Help is always available for the command buttons and fields of a
dialog box. Sometimes it is convenient to browse through the
items in a dialog box, examining the description of each one to see
what kinds of options are available. Using **MIDDLE hold**, while
the pointer is near any item (field name, field value, or command
button), displays the help message for whichever item is pointed to
(see Figure 2-6). Help messages are displayed until you release
the middle mouse button.
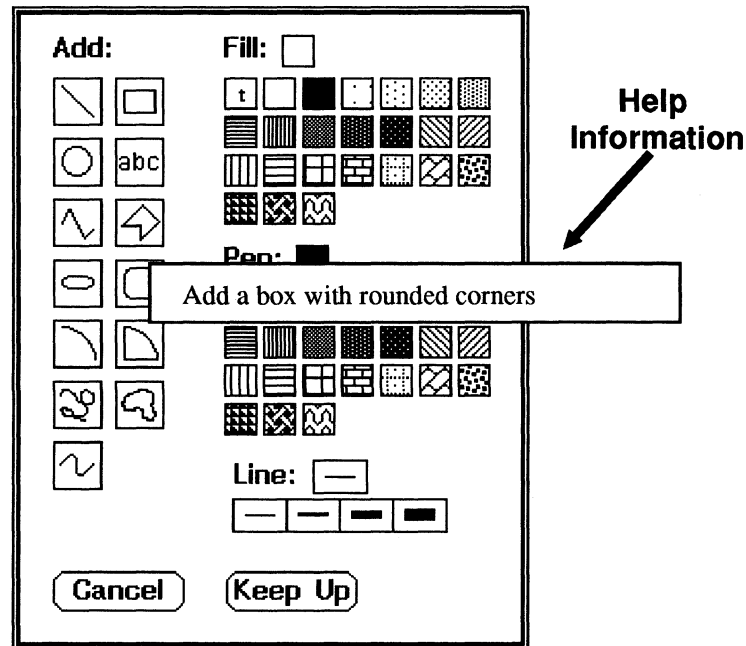
Figure 2-6   *Help Information*

2.3.2   Field Types in Dialog Boxes

You can enter information in a dialog box in four ways: typing
text, entering numbers, choosing values, and selecting one of a set
of mutually exclusive options (cycle button). The field types,
which were illustrated in Figure 2-5, are described in detail here.

Text Fields

Text fields consist of a name, and a box in which you can type text. If the box is not wide enough to contain all of the text, the text scrolls horizontally as the cursor moves beyond the left or right edge of the box. If a dialog box has more than one text or numeric field, the active field (the Help field in Figure 2-6) contains the text cursor to start with. Some text fields check for valid input whenever you change their values, while others allow you to enter any text. You can edit the contents of a text field using the commands in Table 2-1.

Numeric Fields

Numeric fields are like text fields, except that they only allow you to type in numbers. Some numeric fields (like those in Figure 2-5) allow dimensions such as inches or lines to be specified with the numbers. You can edit the contents of a numeric field using the commands in Table 2-1.

On/Off Fields

On/Off fields describe options that can take on only one of two values (e.g., on/off, true/false, or enabled/disabled). An on/off field is shown as a small box with a name next to it. When you **LEFT click** while the mouse pointer is in an unselected box, the option is selected (on, true), and a mark appears in the box. When you **LEFT click** while the mouse pointer is in a selected box, the option is deselected (off, false) and the mark disappears. In Figure 2-5, **Word Wrap** is selected, while **Width Derived** is deselected.

Cycle Buttons

Cycle buttons indicate options that are more complex than simple true-or-false options, but are still limited to one of a small number of possible values. To see all the possible values for this field, click on the field until all choices have been seen. The value you choose by using **LEFT click** is shown to the right of the cycle button. You can also **RIGHT hold** to see a menu of choices and select your choice by sliding the mouse pointer over the proper value.

Choice Fields (Icons)
Each value is represented by a small icon, or picture (see, for example, the Spacing or Justification fields in Figure 2-5). The value you choose with the mouse pointer and **LEFT click** on is indicated by a box.

In addition to the field types described above, virtually all dialog boxes contain one or more command buttons. Some command buttons are represented as rounded boxes (for example, **OK** and **Cancel**) with the name of the button inside, while others are represented by icons like those in certain choice fields.

Unlike fields, which merely gather information, command buttons take some action based on the values in the dialog box. For instance, many dialogs have buttons named **OK** and **Cancel**. Choosing the **OK** button confirms the information in the dialog and proceeds with the command that caused it to be displayed. Choosing the **Cancel** button cancels the dialog and the command that displayed it. In general, choosing any command button removes the dialog box from the screen and takes some action based on the button that was selected. (Permanent dialog boxes, discussed below, are an important exception to this rule.)

2.3.3   Selecting Fields and Values in Dialog Boxes

Dialog boxes in BBN/Slate use a simple point-and-click approach to selecting fields and values. In general, to change the value of a field, simply move the pointer to the correct value and **click** on the **LEFT** mouse button. The procedure for each field type is as follows:

- **LEFT click** anywhere on a text or numeric field places a text cursor at the end of its value and makes that value available for editing. If the text cursor is already in this field, using **LEFT click** on it positions the cursor at the character nearest the mouse pointer.

- **LEFT click** anywhere on an on/off field, and the value toggles between the selected and deselected states.

- **LEFT click** on one of the cycle buttons in a choice field sets the value indicated by the button's label or the icon selected.

You may change values as often as you like until you confirm or cancel the dialog box. To cancel the dialog box and remove it from the screen, **LEFT click** on the **Cancel** command button. When you choose any other command button, the dialog box disappears and BBN/Slate executes the appropriate command.

2.3.4   Pop-up versus Permanent Dialog Boxes

Dialog boxes normally function in a *pop-up* fashion much like menus; they appear on the screen when they are needed and disappear when they are confirmed or canceled. All dialog boxes are initially in pop-up mode.

Some of the more frequently used dialog boxes, however, can be made *permanent*. Permanent dialog boxes remain on the screen

until you explicitly close them. You can use them repeatedly without waiting for them to be displayed and removed between each use. Dialog boxes that can be made permanent include a command button labeled **Keep Up** (see Figure 2-7).
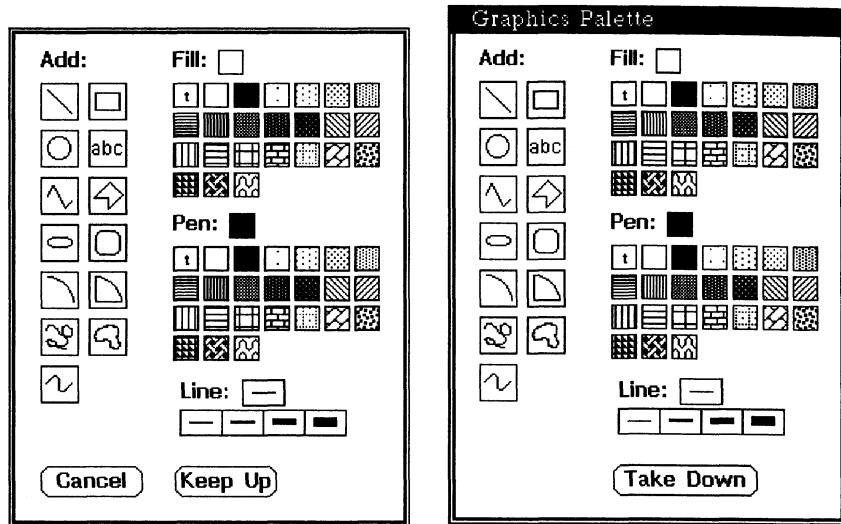
Figure 2-7   *Pop-up and Permanent Dialog Boxes*

LEFT click on the **Keep Up** button removes the dialog from the BBN/Slate window and redisplays it in its own window. The dialog's window initially appears to one side of the BBN/Slate window, but you can move it around the screen using the normal window management commands. When you make a dialog box permanent, the **Keep Up** button is replaced by a **Take Down** button. **LEFT click** on **Take Down** removes the dialog's window from the screen. You can also use the normal window control menu accessed by using **RIGHT hold** while in the border of the window. In particular you can make the dialog box become an icon in the desktop to conserve screen space without taking the dialog down.

It is important to remember that most dialog boxes are associated with a particular media type (text, spreadsheet, and so on). A permanent media-specific dialog box remains on the screen even when you are editing some other media type. You may change field values in a permanent dialog at any time, but command buttons are active only when you are editing an object of the appropriate media type.

2.3.5   Active versus Inactive Fields in Dialog Boxes

Sometimes not all of the items in a dialog box are appropriate in a given context. When a field does not make sense, it is removed from the dialog. Such fields are referred to as *inactive* fields.

For instance, the BBN/Slate image editor's **Scale** command displays the dialog box shown in Figure 2-8. This dialog offers two different options for scaling an image: interactively (by moving it with the mouse), or by a specified factor. If you choose the interactive option, it is not relevant to ask for the scale factor, so the **Scale factor** field is removed from the dialog.

```
┌─────────────────────────────────────────────────┐
│ ┌───────────────────────────────────────────┐   │
│ │ Scaling Mode ─────┐                        │   │
│ │    ◉ Interactive   │                        │   │
│ │    ○ Specified factor │                     │   │
│ │ Constraint ─────────┐                      │   │
│ │    ◉ Same aspect ratio │      ┌────────┐   │   │
│ │    ○ Width only       │      │   OK   │   │   │
│ │    ○ Height only      │      └────────┘   │   │
│ │    ○ Unconstrained    │      ┌────────┐   │   │
│ │                               │ Cancel │   │   │
│ │                               └────────┘   │   │
│ └───────────────────────────────────────────┘   │
└─────────────────────────────────────────────────┘

┌─────────────────────────────────────────────────┐
│ ┌───────────────────────────────────────────┐   │
│ │ Scaling Mode ─────┐                        │   │
│ │    ○ Interactive   │   ┌─────────────────┐ │   │
│ │    ◉ Specified factor │ │Scale factor:    │ │   │
│ │ Constraint ─────────┐  └─────────────────┘ │   │
│ │    ◉ Same aspect ratio │                   │   │
│ │    ○ Width only       │      ┌────────┐    │   │
│ │    ○ Height only      │      │   OK   │    │   │
│ │    ○ Unconstrained    │      └────────┘    │   │
│ │                               ┌────────┐    │   │
│ │                               │ Cancel │    │   │
│ │                               └────────┘    │   │
│ └───────────────────────────────────────────┘   │
└─────────────────────────────────────────────────┘
```
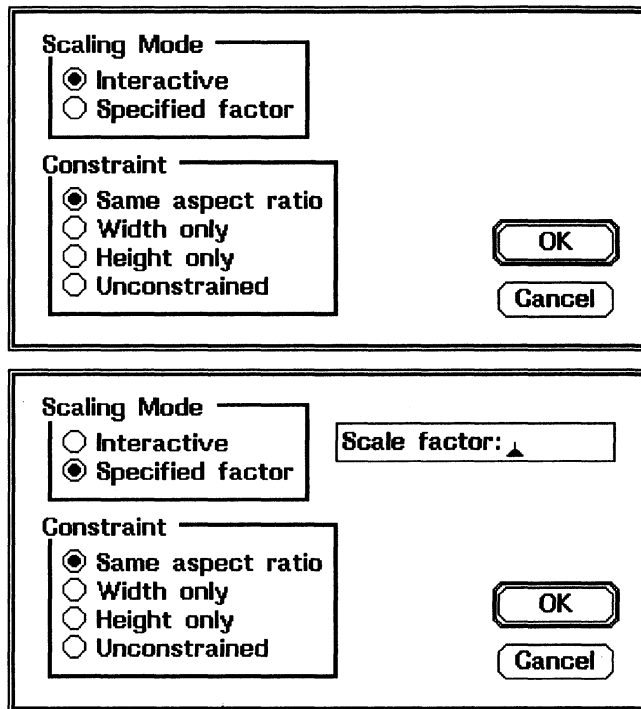
Figure 2-8   *Active versus Inactive Fields*

2.3.6   Name Selection Dialog Boxes

There is one additional type of dialog box that is used in
BBN/Slate, the *name selection* dialog box. Name selection dialog
boxes are used to choose one value from a set of names. It may
be the name of a media type, the name of a text font or formatting
style, or another function or feature name.

Name selection dialog boxes typically contain a list of possible
values in a scrollable window (see Section 2.4 for a description of
scroll bars), a single text field, and two command buttons labeled
OK and **Cancel**. Typically, you can either use the mouse to select
a name (**LEFT click**) or type it into the text field. If you type a
name, you need only type enough to uniquely identify it. (In the

example shown in Figure 2-9, typing **ce** to select **center** would be sufficient, but typing just **c** would not.) Names that are not currently visible may be seen by clicking or holding any one of the mouse buttons while the pointer is over the up or down arrow.

```
┌─────────────────────────────────────────────────────────────┐
│  Select format:                                               │
│                                                               │
│  ┌──────────────────────┬─┐          ╭───────────────╮        │
│  │caption-figure        │↑│          │      OK       │        │
│  │caption-table         │▓│          ╰───────────────╯        │
│  │center                │ │          ╭───────────────╮        │
│  │chapter               │ │          │    Cancel     │        │
│  │example               │ │          ╰───────────────╯        │
│  │itemtag               │↓│  ┌─────────────────────────────┐  │
│  └──────────────────────┴─┘  │ ▲                           │  │
│                              └─────────────────────────────┘  │
└─────────────────────────────────────────────────────────────┘
```
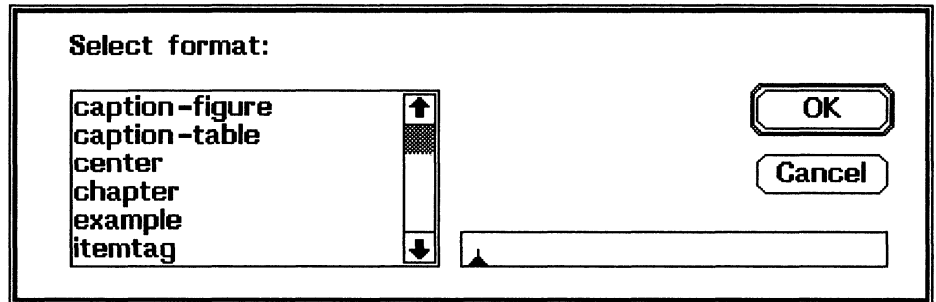
Figure 2-9   *A Name Selection Dialog Box*

The text field has a name completion facility, which means you only have to type in enough characters so that the selection is unique. Typing **Space** completes the name. In addition to **Space**, any key that normally moves the cursor out of a text field (e.g., **Return**, **^n**, or **^p**) completes the name in a name selection dialog box. Clicking on **OK** will also complete the name. In addition, if the name is unique (i.e., only one name matches what was typed so far), **OK** completes the name and then confirms the dialog box.

2.3.7   Review of Dialog Boxes

- BBN/Slate uses *dialog boxes* when it needs more information before executing a command.

- Dialog boxes pop up on the screen when needed. You can make some dialog boxes permanent.

- Dialog boxes may contain *messages, fields*, and *command buttons*.

- Fields may be *on/off fields, text* fields, *cycle button fields, choice fields, or numeric* fields. Fields may be inactive when selecting or editing them would be inappropriate.

- To change the value of an on/off or choice field, move the mouse pointer to the appropriate field and **LEFT click**.

- To change the value of a text or numeric field, move the mouse pointer to that field and **LEFT click**, then edit the value. You can edit text and numeric values using the keyboard editing commands described in Table 2-1.

- To confirm a dialog box, **LEFT click** on **OK**. If there is no **OK** command, **LEFT click** on any command except **Cancel** to invoke that command. To confirm a dialog box from the keyboard, press the **Return** key.

- To cancel a dialog box, **LEFT click** on **Cancel**.

- To get help on any item in a dialog box, move the mouse pointer to that item and **MIDDLE click**.

- To browse through Help on all of the items in a dialog box, use **MIDDLE hold** and move the mouse pointer to each item in turn to display its Help message.

2.4   Using Scroll Bars

You may need to display more information than will fit in the window. For example, the editor may be displaying a long document -- too long to be entirely visible in the window, even if the window is extended to the full height of the screen. In this case, the window displays as much of the document as it can; it provides a *viewport* onto the document (see Figure 2-10). To see parts of the document that are not currently displayed, you move the viewport to bring them into view. Scroll bars provide one way to move the viewport over a document.

Scroll bars work the same in the Document Editor and Document Manager.
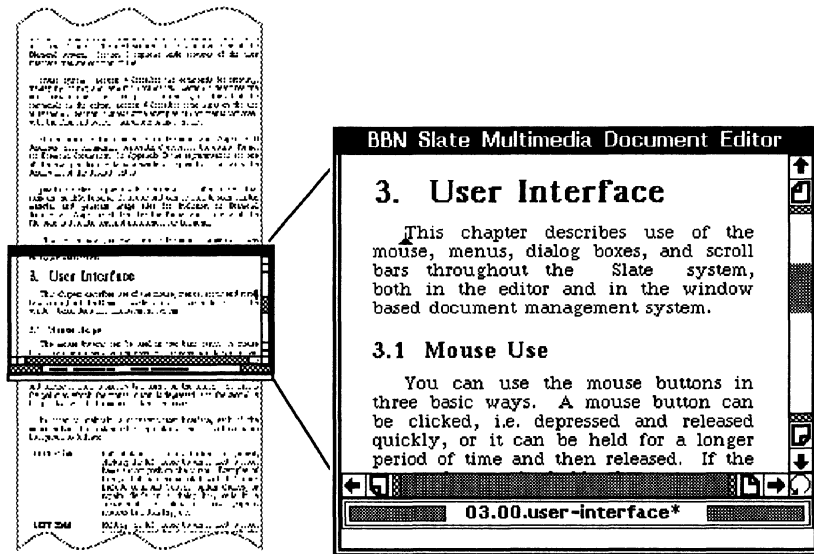
Figure 2-10   The Window as a Viewport onto a Document

Windows may have horizontal scroll bars for scrolling left and
right, vertical scroll bars for scrolling up and down, or both.
Figure 2-10 shows a window with both horizontal and vertical
scroll bars.

2.4.1   Scroll Bar Components

Each scroll bar is composed of nine sections. There are two *scroll
arrows*, two icons that represent *pages*, two crosshatched areas that
represent the *edges* of a document, a *scroll area* (which may be
partially or completely filled by a grey box called the *scroll
bubble*), and a small icon that looks like a curved arrow, called the
redisplay icon. Figure 2-11 shows all these components.

The Components of a Scroll Bar diagram showing:

BBN Slate Multimedia Document Editor

3. User Interface

This chapter describes use of the mouse, menus, dialog boxes, and scroll bars throughout the Slate system, both in the editor and in the window based document management system.

3.1 Mouse Use

You can use the mouse buttons in three basic ways. A mouse button can be clicked, i.e. depressed and released quickly, or it can be held for a longer period of time and then released. If the

03.00.user-interface*

Scroll Area
Scroll Bubble
Bottom Edge
Page Down
Scroll Down
Redisplay
Left Edge
Page Left
Scroll Left
Scroll Right
Page Right
Right Edge

Figure 2-11   *The Components of a Scroll Bar*

2.4.2   Getting Around in a Document

Scroll bars can move the viewport over the document to make different sections of the document visible. Moving the viewport up causes earlier portions of the document to become visible. Moving the viewport down causes later portions to become visible.

Each of the scroll bar components performs a different function. In the Document Editor, many of these functions are also available from the keyboard. In the Document Manager, the scrolling functions are only available through the scroll bar. The functions performed by the various scroll bar components are summarized in the following list.

Scroll Arrows

LEFT click while the mouse pointer is over either scroll arrow in a vertical scroll bar moves the viewport approximately one line down. **RIGHT click** over either arrow moves the viewport one line up.

LEFT click while the mouse pointer is over either scroll arrow in a horizontal scroll bar moves the viewport approximately one character width to the right. **RIGHT click** over either arrow moves the viewport one character width to the left.

If a mouse button is held instead of clicked, the viewport continues to move until the button is released.

Page Icons

Clicking any mouse button while the mouse pointer is over a page icon moves the viewport approximately one screen in the direction indicated by the icon. The viewport actually moves slightly less than one full screen so that you can keep your place in the document.

If a mouse button is held instead of clicked, the viewport continues to move screen-by-screen until the button is released.

Edge Icons

Clicking any mouse button while the mouse pointer is over an edge icon (left, right, top, or bottom) moves the viewport as far as possible in the chosen direction.

Redisplay Icon

Clicking any mouse button while the mouse pointer is over the redisplay icon redraws the contents of the window.

Scroll Bubble

The scroll bubble indicates the area of the document that is currently visible in the window. The length of the bubble indicates how much of the document is visible, and the position of the bubble within the scroll area indicates which part of the document is visible. In Figure 2-11, for example, approximately one-fifth of the document is visible, and the top of the viewport is positioned about half way through the document.

Scroll Area

LEFT click while the mouse pointer is in the scroll area moves the corresponding point in the current viewport to the top of the screen. Thus, clicking the left button while the pointer is half way down the scroll bar moves a line halfway down the current viewport to the top of a new viewport. **RIGHT click** moves it to the bottom of the screen.

MIDDLE click moves the viewport to the area of the object being viewed that corresponds to the fractional position of the pointer within the entire scroll bar. Thus if the pointer is one-third from the top of the scroll bar, then **MIDDLE click** would position the viewport one-third from the beginning of the object being viewed.

2.5   Keyboard Editing Commands

When entering the values in text and numeric fields throughout the BBN/Slate system, you must type using the keyboard. Sometimes when entering this information, you will want to change what you have already typed. To help you edit these fields, BBN/Slate provides some standard keyboard editing commands. These and other keyboard editing commands are available in both the Document Manager and the Document Editor. The keyboard editing commands available in a text or numeric field are in Table 2-1.

Table 2-1   *Keyboard Editing Commands for Text and Numeric Fields*

```
Keystroke  Function

DEL        text-delete-back
ESC-d      text-delete-forward-word
ESC-f      text-forward-word
^A         text-start-of-line
^B         text-backward-character
^D         text-delete-forward
^E         text-end-of-line
^F         text-forward-character
^K         text-kill-line
^N         text-down-line
^P         text-up-line
^Y         text-paste
```

These are the basic commands. In the Document Editor, there are many other keyboard editing commands that can invoke most of the operations of the editor. However, these 12 commands are easy to learn and essential for using the software successfully.

3   Document Manager

You organize, manage, and select BBN/Slate documents with the Document Manager. The Document Manager presents information about two types of objects: documents and folders. A document is a BBN/Slate multimedia document; it is equivalent to a file in the UNIX™ file system. A folder is a collection of documents; it is equivalent to a subdirectory in the UNIX file system. When you specify a folder in the Document Manager, a summary of all documents within that folder are displayed.

The names of your folders are shown in a small scrollable list within the Document Manager. You can change the currently viewed folder as well as select documents and perform operations on them. Operations that you can perform from Document Manager command buttons include:

Viewing:	show, next, print, sort, select
Filing:	save, move, delete
Mail:	compose, reply, forward, send, cancel, new mail
Folders:	folder, save
Conferencing:	conf
Integration:	filter

The BBN/Slate Document Manager interacts with the BBN/Slate Document Editor, causing the Document Editor to read new documents and delete copies of documents currently in the editor's buffers.

This chapter describes:

- the Document Manager and how it interacts with the Document Editor (Section 3.1)
- the Document Manager's upper pane: the Document Summary Pane (Section 3.2)
- the Document Manager's lower pane: Command Button and Folder Display Pane (Section 3.3)
- information on working with folders (Section 3.4)
- mouse interaction within the Document Manager (Section 3.5)

3.1 Document Manager and Document Editor Display

To enter the BBN/Slate environment, type **slate** at the UNIX prompt in a UNIX window. This command opens two new windows (see Figure 3-1). The first window is a two-pane Document Manager window described in this chapter. The second window is the BBN/Slate Document Editor window described in Chapter 4.

1:        4 Apr 90   BBN   Welcome to BBN/Slate Release 1.1

Document Manager

(show) (compose)(send)(cancel)   (done)   +Mailbox
(forward)   (new mail) +customize
                                                      +ellis
(print)   (filter)   +getstart
(sort)
(select)   Folder: ∟
(conf)   (next)(reply)(delete)   (folder) (save)

BBN/Slate Multimedia Document Editor

▦   Add   Edit   File   Mail   Print   Classify   Document   Editor   Keycaps   Exit

BBN /

Slate™

Document Editor

Release 1.1
Used under license from
BBN Software Products Corporation
Copyright (c) 1990 by
BBN Systems and Technologies Corporation
All rights reserved.

Buffer: main   File: [none]

Figure 3-1   *Document Manager and Document Editor Windows*

The Document Manager window has a top pane: the Document
Summary Pane, and a bottom pane: the Command Button and
Folder Display Pane (see Figure 3-2). When you first open this
window, the top Document Summary pane displays a list of any
documents in your incoming mail folder (if you have one).

The Command Button and Folder Display Pane provides several
command *buttons* (e.g., the **show** button) and a list of all your
BBN/Slate folders. A plus sign (+) precedes the folder name.
From the Document Manager window you can list, print, file,
delete, and mail documents.

When you want to create or edit BBN/Slate documents, you do so
by activating BBN/Slate Document Editor from the Document
Manager window.
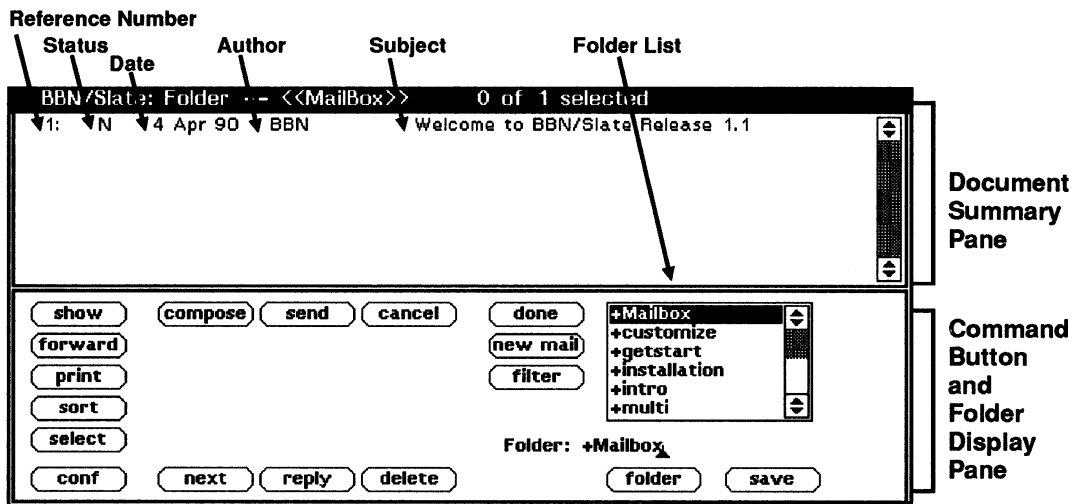
Figure 3-2   *Document Manager Display*

3.2   Document Summary Pane

A document summary, in the Document Manager's top pane, lists information for each document (see Figure 3-2). It consists of five fields, described here.

Reference Number

Indicates how many documents are in a folder and where a document exists in the folder.

Documents in a folder are numbered sequentially, beginning with 1. When you remove documents from a folder, or add new ones, the numbers are regenerated.

Document Status

Possible entries in this field are:

N   (New) Document has not been seen before by the Document Manager.

U   (Unseen) Document has not yet been displayed in the Document Editor or printed.

R   (Replied To) Document is a mail message that has been answered.

If none of these entries apply, this field is left blank. This indicates that the document has been viewed or printed already.

Date

If a document has been sent or received as an electronic mail message, its date is the date on which it was mailed. If the document has never been sent or received as a mail message, its date is the date on which the document was last modified.

Author

If a document contains document headers, the author is the person listed in the header's **From** field. If a document does not contain headers, the author is the owner of the file in which the document is stored.

Subject

If a document contains document headers, the subject is specified by the header's **Subject** field. If a document does not contain headers, the subject is the name of the file in which the document is stored.

At any given time, one or more document summaries may be selected. Selected documents are highlighted in reverse video (shown in Figure 3-3).

```
BBN/Slate: Folder -- +refman        1 of 16 selected
  2:          09 Feb 90   kulrich     00.preface
  1:   N      12 Apr 90   kellis      01.introduction
 15:   N      03 Apr 90   docacct     02.user.interface.new
 16:          12 Apr 90   docacct     03.doc-mgr
 14:   N      03 Apr 90   docacct     04.document-editor.new
  3:   U      23 Feb 90   unknown     05.text
  4:          21 Feb 90   kulrich     06.graphics
 12:   N      03 Apr 90   docacct     07.images.new
```

```
 ( show )    ( compose )( send )( cancel )   ( done )     +getstart
                                                          +installation
 ( forward )                                ( new mail )  +intro
                                                          +multi
 ( print )                                  ( filter )    +new
                                                          +refman
 ( sort )
                     ( conf )
 ( select )                                  Folder: +refman

 ( conf )    ( next )( reply )( delete )              ( folder )( save )
```

Figure 3-3   *Document Selected in the Document Manager*

Document management command buttons, described in the next section, generally affect only the selected documents.

You can use the mouse to select and deselect documents in the Document Summary Pane. (Mouse conventions are described in Chapter 2.) Alternatively, you can select documents by invoking command buttons from the Command Button and Folder Display Pane. This is described in detail in the next section.

3.3　　　　　Document Manager Buttons

The Document Manager's bottom pane, the Command Button and Folder Display Pane, provides several command buttons and displays a list of all your folders. These folders and command buttons provide a uniform way of handling your BBN/Slate documents.

To execute a command button:
LEFT click with your pointer over the button. For example, using **LEFT click** on the **show** button opens a document you selected in the Document Manager's top panel and displays it in the Document Editor.

To execute a command button's alternate choice:
1. **RIGHT hold** with your pointer over the button.

2. The menu of alternative choices is shown. The topmost alternative is the default choice.

3. To choose an alternative, slide the mouse pointer over the alternative and **RIGHT release**.

Most command buttons have additional choices. (Figure 3-4 shows the **delete** button's alternate choices.)

```
BBN Slate: Folder -- /usr/slate/demo      0 of 8 selected   [New Mail]
 1:        23 Dec 88   root      slate-brochure-sec-toc              ⬆
 2:        23 Dec 88   root      slate-brochure
 3:        23 Dec 88   root      bbn-fin-report
 4:        23 Dec 88   root      eagle
 5:        23 Dec 88   root      hell
 6:        23 Dec 88   root      demo-images
 7:        23 Dec 88   root      org-chart
 8:        23 Dec 88   root      United States Outline Maps          ⬇

   ( show )   (compose) ( send ) ( cancel )   ( done )  +slate              ⬆
  (forward)                               (new mail)  +slate-agreement
   ( print )                                          +slate-bbn
   ( sort )                              Delete, Show Next
  ( select )                            Delete
                                        Undelete Last Message
   ( conf )    ( next ) ( reply ) delete Undelete All Messages
                                        Expunge All Deleted Messages
```
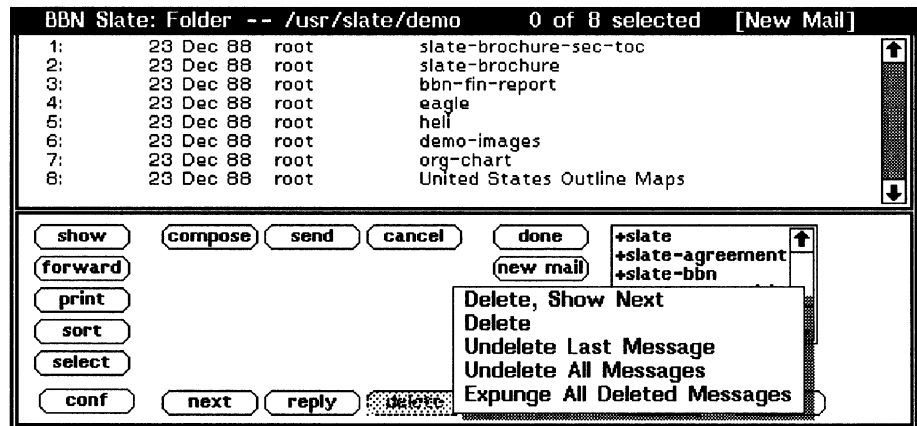
Figure 3-4　　　　*Command Button Alternate Choices*

Most of the rest of the chapter describes command buttons and their function in the Document Manager. Additional tips on working with folders are presented after the command button definitions.

Command Button Descriptions

show

The **show** button opens documents that were selected in the Document Manager's top panel and displays them in the Document Editor.

Note: You can also **double-click** on a document name to show the document in the Document Editor.

If you want to show multiple documents, when the first one appears in the Document Editor, you can use the Document Manager's **next** button to move back and forth among the documents.

There is no need to exit the Document Editor to return to the Document Manager window; both programs remain active. For example, you can select some documents and display them with the **show** button, switch to another folder in the Document Manager, select some new documents, and display them with **show**. Normally the **show** button orders the Document Editor to discard the previously displayed document (if it is unmodified).

The **show** button has two alternate choices when you **RIGHT hold** with your pointer over the button. The options are:

Show Document with Previous Document

Opens a new document, without deleting the previous buffer, in addition to the documents that are already open in buffers.

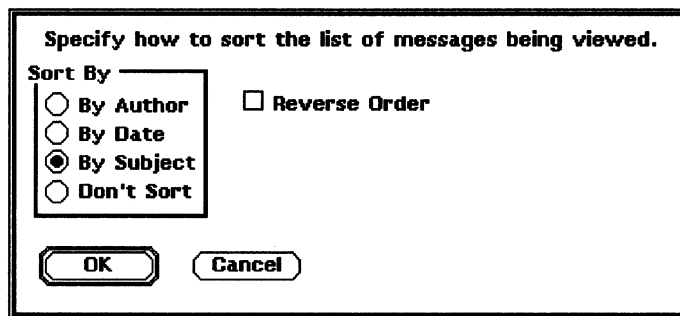|	
Insert Document	Inserts the selected document into the document currently displayed in the Document Editor window, immediately following the cursor.
forward	The **forward** button opens the document that was selected in the Document Manager window so that it can be forwarded to other people using the BBN/Slate electronic mail facility. It places "Begin Forwarded Message" at the document's beginning and "End Forwarded Message" at the document's end. It also adds a header in which to name those who will receive the document, and the subject to label the forwarded document. When you have completed the header and entered any introductory material, use the **send** button to send the forwarded message.
print	This button prints the selected documents.
sort	The **sort** button displays a dialog box that lets you sort the document summaries in the Document Summary Pane by author, date, or subject (Figure 3-5). You can also sort this summary in reverse order.

```
┌─────────────────────────────────────────────────────────┐
│                                                         │
│   Specify how to sort the list of messages being viewed. │
│   ┌ Sort By ──────────┐                                  │
│   │  ○ By Author      │   □ Reverse Order                │
│   │  ○ By Date        │                                  │
│   │  ◉ By Subject     │                                  │
│   │  ○ Don't Sort     │                                  │
│   └───────────────────┘                                  │
│                                                         │
│     (   OK   )    ( Cancel )                              │
│                                                         │
└─────────────────────────────────────────────────────────┘
```

Figure 3-5	*The Sort Button Dialog Box*
select	The **select** button displays a dialog box (Figure 3-6) that lets you select documents based on values in their document headers. You

can also select documents whose contents include a specific sequence of letters, words, or a phrase (referred to as a string). Using **select** finds documents that match the criteria you specify in the dialog box.

Depending on how you respond to the dialog box's **Action** section, selected documents will either replace or be added to the currently selected set of documents.

```
 Specify the criteria for selecting a set of messages.

 Field Value ─────────────────────────────────────────────
   From: ⊥
   Subject:
   Other:                        Content:
   Before Date:                  After Date:

 Status ──────────────────────────────────────────────
   ○ Deleted      ○ Not Deleted     ◉ Don't Care
   ○ New          ○ Old             ◉ Don't Care
   ○ Seen         ○ Unseen          ◉ Don't Care
   ○ Replied To   ○ Not Replied To  ◉ Don't Care

 Content ─────────────────────────────────────────────
   String:

 Action ──────────────────
   ◉ Replace selected set     ☐ Only View Selected
   ○ Add to selected set

   ▢ OK ▢      ( Cancel )
```

Figure 3-6   The Select Dialog Box

The **select** dialog box contains three criteria for selecting documents. If you specify multiple selection specifications involving more than one criterion, then all of the specifications must be met.

Use the dialog's **Action** box to control whether the selected documents replace or are added to the set of currently selected documents. You can also **LEFT click** on **Only View Selected** to have Document Manager list only the selected document(s).

Descriptions of the three criteria, **Field Value**, **Status**, and **Content** follow.

Field Value

Select documents based on the contents of strings header fields. You can select documents based upon the following header field criteria:

From

Select documents based on the contents of the document summary's *author* component.

Subject

Select documents based on the contents of the document summary's *subject* component.

Other and Content

Select documents based on the *specified header field's contents*. Enter the field's name in the area named **Other:**, and the field's contents in the **Content** area. For example, to select the documents you mailed to a specific user, enter **To** in the **Other:** area and *username* in the **Content** area.

Date

Select documents based on the document summary's date component. You can specify a date before or after which documents will be selected.

Status

Select documents based on their document status. Select the desired status from the following choices:

Deleted/Not Deleted

Select documents marked as deleted.

New/Old	Select documents with **New/Old** flag set.
Seen/Unseen	Select all documents that have been seen before (i.e., that do not have the **Unseen** flag set) or select all documents that have either the **New** or **Unseen** flags set.
Replied To/Not Replied To	Select all documents that have or have not been replied to.
Content	Select documents containing a specific character string.

The **select** button has two alternate choices when you **RIGHT hold** with your pointer over the button. The options are:

Restrict View	A document selected with this flag set is the only one shown in the folder pane.
Unrestrict View	Displays all documents in the folder, undoing the **Restrict View** operation's effect.

conf When you use the **conf** button to confer over documents, each person in the conference sees a copy of the document in the Document Editor. Conferees can take turns changing or commenting on the document.

Once the initial conferencing setup (such as a telephone connection or Discussion Window) has been arranged, you begin a conference session by selecting a document. To begin conferencing, highlight a document and **LEFT click** on the **conf** button.

Conferencing and its menu choices are discussed in detail in Chapter 13.

compose

When you use the **compose** button to compose a new document, a new document is created in the Document Editor and is initialized to the default document type. The default, **compose-Message**, composes an electronic mail message (Figure 3-7) that adds a header element for you to fill in. Note that the document format for your messages is your default document template (the *Customizing Manual* contains information on setting your default document template). After composing the message, you can use the **send** button.

You can also compose a new document based on an existing template document:

- Use **From User Template** to choose the template from a set of templates you previously created yourself.
- Use **From System Template** to compose a new document from a standard set of templates that comes with BBN/Slate.
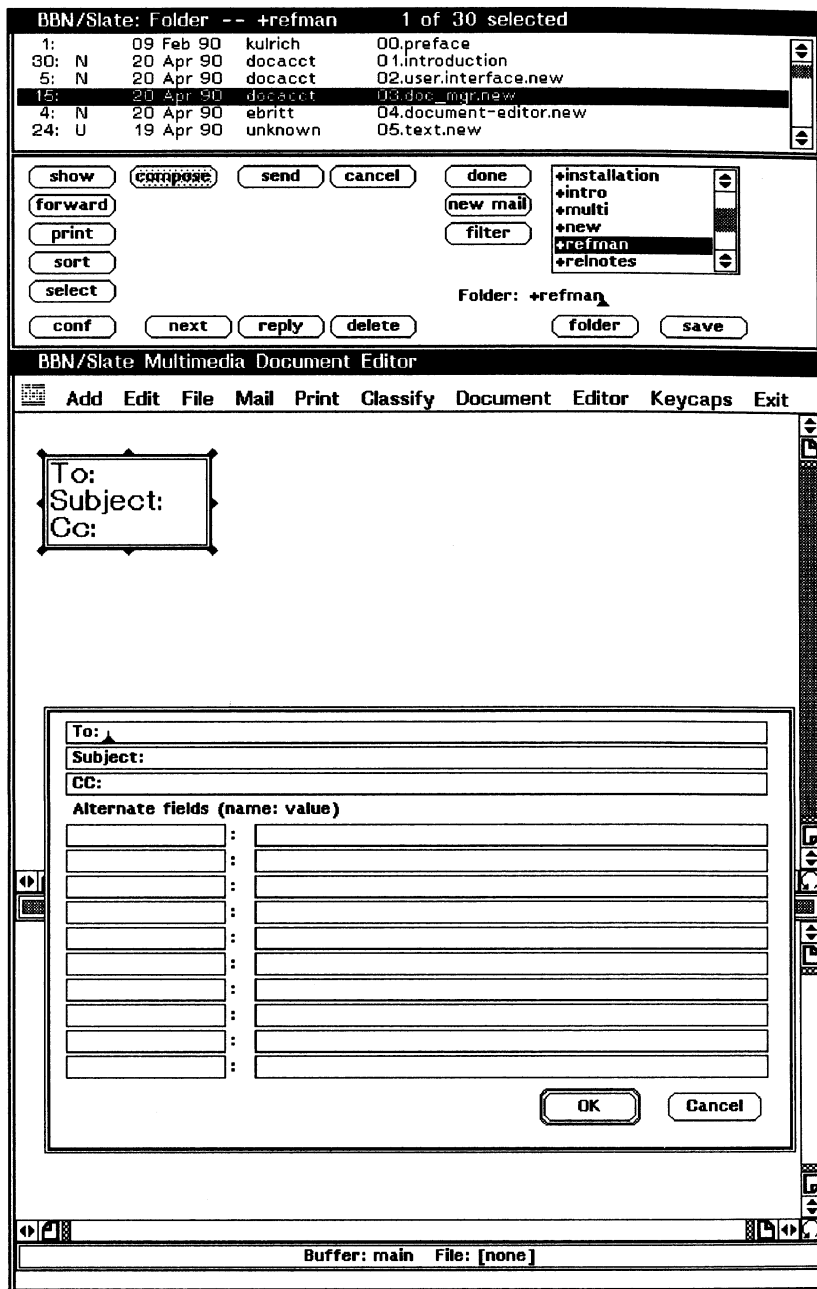
Chapter 4 describes templates in more detail.

1:		09 Feb 90	kulrich	00.preface
30:	N	20 Apr 90	docacct	01.introduction
5:	N	20 Apr 90	docacct	02.user.interface.new
15:		20 Apr 90	docacct	03.doc_mgr.new
4:	N	20 Apr 90	ebritt	04.document-editor.new
24:	U	19 Apr 90	unknown	05.text.new

show   compose   send   cancel   done   +installation
forward   new mail   +intro
print   filter   +multi
sort   +new
select   +refman
+relnotes

Folder: +refman

conf   next   reply   delete   folder   save

BBN/Slate Multimedia Document Editor

Add   Edit   File   Mail   Print   Classify   Document   Editor   Keycaps   Exit

To:
Subject:
Cc:

To:
Subject:
CC:
Alternate fields (name: value)

	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	

OK   Cancel

Buffer: main   File: [none]

Figure 3-7   *Response to the Compose Button*

send

The **send** button sends the currently active document in the Document Editor to the people listed in the header's **To:** and **CC:** fields. For each recipient, **send** decides whether to send the message as multimedia or as text by consulting a list of people in a file named `.slate_mail.addrs` in your home directory. As you receive multimedia mail from other BBN/Slate users, you are asked whether or not you want to add their names to your list of known BBN/Slate users. This button's alternative choices, **Send Multimedia Message** and **Send Text**, let you send a document as a multimedia message or as a text message.

cancel

This button stops composing the message currently being composed.

next

The **next** button shows the next document immediately after the first document in the currently selected set. This button's alternate choice, **Previous Document**, shows the preceding document.

reply

This button shows the selected document in one Document Editor pane and composes a reply to the sender of that document in another pane. The **reply** button's **Subject:** header field will be based on the originally selected document's subject field. This button's alternate choices are: **Reply**; **Reply, Include**; **Reply to All**; and **Reply to all, Include**. The **Include** alternate commands include a copy of the original message in the reply. Use the **send** button to mail the reply to its recipients.

delete

The **delete** button marks the selected documents for deletion and removes them from the document summary display. When you change folders or ask to see new mail, documents marked for deletion are actually removed from the file system; up to that point you have the option to restore (undelete) documents. This button's alternative choices are: **Delete, Show Next**; **Delete**; **Undelete Last Message**; **Undelete All Messages**; and **Expunge All Deleted Messages**.

folder

You delete, link, rename, and set permissions of folders by using **RIGHT hold** on the **folder** button; then **RIGHT drag** to highlight the option you want. (Note that more information on folder management is presented in Section 3.4.)

Figure 3-8 shows the highlighted **folder** button and its alternate choices.
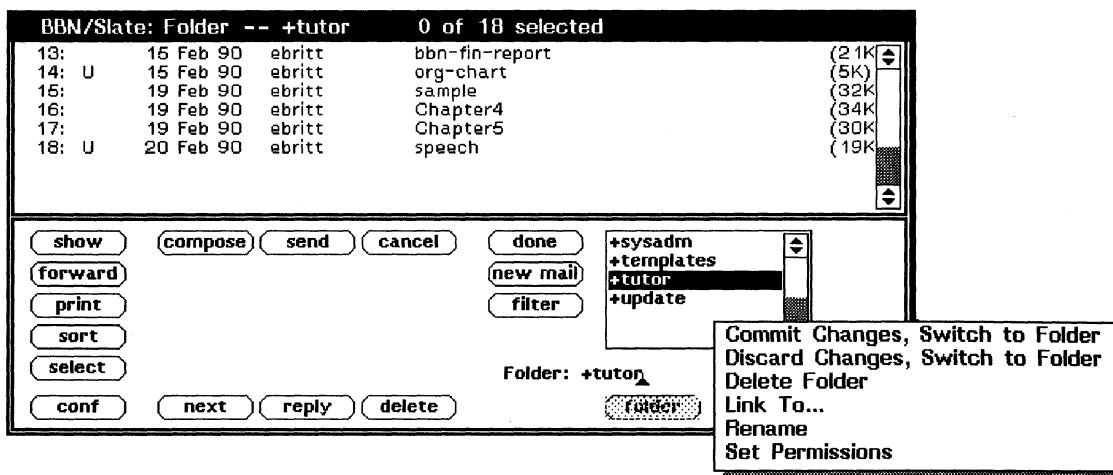

BBN/Slate: Folder -- +tutor	0 of 18 selected

```
13:        15 Feb 90    ebritt      bbn-fin-report          (21K)
14:  U     15 Feb 90    ebritt      org-chart               (5K)
15:        19 Feb 90    ebritt      sample                  (32K)
16:        19 Feb 90    ebritt      Chapter4                (34K)
17:        19 Feb 90    ebritt      Chapter5                (30K)
18:  U     20 Feb 90    ebritt      speech                  (19K)
```

show   compose   send   cancel   done   +sysadm
forward   new mail   +templates
print   filter   +tutor
sort   +update
select   Folder: +tutor
conf   next   reply   delete   folder

Commit Changes, Switch to Folder
Discard Changes, Switch to Folder
Delete Folder
Link To...
Rename
Set Permissions

Figure 3-8   *Using the Folder Button*

To view folder contents in the Document Summary Pane:

1. **LEFT click** on an existing folder name to highlight it.
2. **LEFT click** on the **folder** button.

To select another folder contents:

1. Either (a) **LEFT click** to highlight one of your folders in the list of folders or (b) delete the **Folder:** field's current contents and type the name of a new folder. (See Section 3.4 for more information on the **Folder:** field.)
2. Press **Return** or **LEFT click** on the **folder** button to view the folder's contents.

The **folder** button's alternate choices shown in Figure 3-8 are described here.

Commit Changes, Switch to Folder (The default when you **LEFT click** on the **folder** button.) When you enter a folder name in the **folder:** field and **LEFT click** on the **folder** button, your current folder is updated with any changes you just made and you are switched to the folder specified in the **folder:** field.

Discard Changes, Switch to Folder When you enter a folder name in the **folder:** field and **LEFT drag** on the **folder** button to select this item, changes you made to your current folder are discarded and you are switched to the folder specified in the **folder:** field.

Delete Folder To delete a folder, enter the folder name in the **folder:** field and **LEFT drag** on the **folder** button to select this item. If the folder is not empty, you see the prompt: "The folder is not empty. Delete it anyway?" **LEFT click** on **OK** to remove the folder.

Link To... By default, the folders you create are subdirectories of your BBN/Slate directory within your UNIX home directory. In addition, you can link a folder to another directory where you want to work.

To link a folder to a UNIX directory:

1. Type the name of the new folder into the Document Manager's **Folder:** field (for example **+sales**).

2. **RIGHT hold** on the **folder** button and **drag RIGHT** to select the **Link To...** option (shown in Figure 3-8).

3. Specify the existing directory name in the dialog box that appears and **LEFT click** on the **OK** button.

The specified folder will now be linked to the specified UNIX directory.

Rename   Highlight the name of the folder you want to rename.   **RIGHT hold** on the **folder** button and **drag RIGHT** to select the **Rename** option. When prompted for a name, position your cursor in the dialog box and type in the new name. If the name already exists, you are asked for another name.

Set   You can control who can read and alter your
Permissions documents by setting directory access permissions for specific users and for groups of users.

To set permissions for a folder, follow these steps:

1. Highlight the name of the folder.

2. **RIGHT hold** on the **folder** button and **drag RIGHT** to select the **Permissions** option. **Release.** The dialog box in Figure 3-9 appears, asking you for the new permissions.

3. To specify a **Read** or **Write** permission, **LEFT click** on the button next to **User**, **Group**, or **All**.

4. To specify the group owner, **LEFT click** on the cycle button next to **Group**.

```
┌─────────────────────────────────────────────┐
│  ┌───────────────────────────────────────┐  │
│  │  Specify the permissions for this folder. │  │
│  │  ┌ Permissions ───────────────────────┐ │  │
│  │  │ User:    ◉ Read   ◉ Write          │ │  │
│  │  │ Group:   ◉ Read   ◉ Write          │ │  │
│  │  │ All:     ◉ Read   ◉ Write          │ │  │
│  │  └────────────────────────────────────┘ │  │
│  │  Specify the group owner for this folder. │  │
│  │  Group ↻ other                        │  │
│  │  ┌─────────┐    ┌─────────┐            │  │
│  │  │   OK    │    │ Cancel  │            │  │
│  │  └─────────┘    └─────────┘            │  │
│  └───────────────────────────────────────┘  │
└─────────────────────────────────────────────┘
```
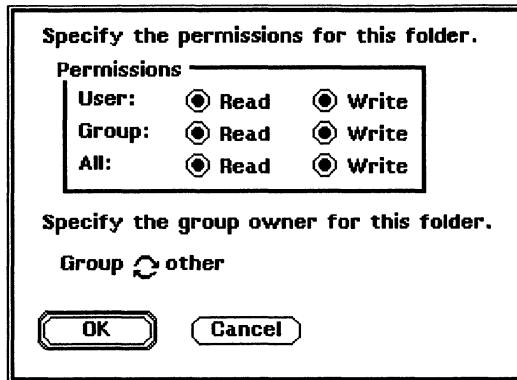
Figure 3-9   *Setting Folder Permissions Dialog Box*

save

The **save** button lets you save currently selected document(s) in the folder named in the Document Manager's **Folder:** field. When you **LEFT click** on the **save** button, the currently selected documents are moved (or saved) from their present folder to the currently selected folder. **Move Selected Documents to Folder** is the default choice. This button's alternate choice, **Copy Selected Documents to Folder**, copies the selected documents to the currently selected folder.

filter

The **filter** program should take input on standard input (Figure 3-10). **LEFT click** on **Text** to first convert the document to a text-only document before it is passed on standard input to the filter command. **LEFT click** on **Multimedia**, to send a complete BBN/Slate multimedia document to the filter program.

```
┌─────────────────────────────────────────────────────────────┐
│ ┌─────────────────────────────────────────────────────────┐ │
│ │  Filter the selected messages through a shell command.  │ │
│ │  What to Filter ┐                                       │ │
│ │  ┌──────────────┐                                       │ │
│ │  │ ◉ Text       │                                       │ │
│ │  │ ○ Multimedia │                                       │ │
│ │  └──────────────┘                                       │ │
│ │                                                         │ │
│ │  ┌────────────────────────────────────────────────────┐│ │
│ │  │ Filter Command: ▲                                  ││ │
│ │  └────────────────────────────────────────────────────┘│ │
│ │                                                         │ │
│ │  ┌──────────────┐   ┌───────────┐                      │ │
│ │  │     OK       │   │  Cancel   │                      │ │
│ │  └──────────────┘   └───────────┘                      │ │
│ └─────────────────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────────────────┘
```
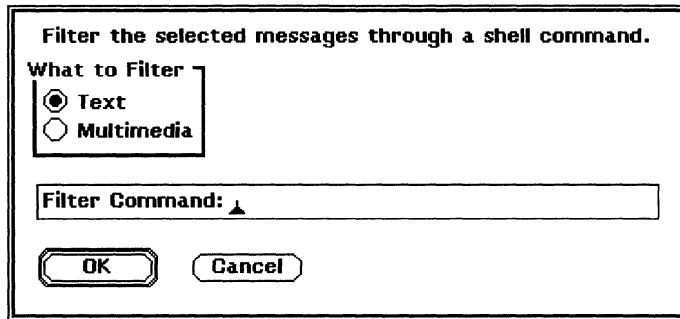
Figure 3-10   *The Filter Button Dialog Box*

new mail   The **new mail** button switches to your BBN/Slate mailbox and
                    scans it for new mail. Selecting the **new mail** button is equivalent
                    to selecting the +Mailbox folder and then the **folder** button.

                    Commit Changes, Load New Mail is the default choice. If you
                    have modified your document in the Document Editor but not
                    saved it, a dialog box asks you if you want to delete the document
                    and throw away the changes. The Document Manager then lists
                    your new mail messages and displays the first new message in the
                    Document Editor.

                    Use this button's alternate choice, **Discard Changes, Load New
                    Mail**, to discard any changes made to the folder.

done   The **done** button closes the BBN/Slate Document Manager and
                    Document Editor windows and returns them to icon form.
                    Commit Changes, Close Window is the default choice. It
                    expunges all deleted messages and iconifies the windows.

                    The **done** button has these three alternate choices when you
                    RIGHT hold with your pointer over the button:

Commit Changes	Saves any changes to the folder and expunges deleted messages.
Commit Changes, Quit	Saves any changes to the folder and quits.
Throw Away Changes, Quit	Quits without saving the chagnes to the current folder.

3.4   Working with Folders

Folders in BBN/Slate are specially named directories in the UNIX file system. You can organize collections of related documents simply by keeping them in the same folder. Although BBN/Slate document management tools provide an easy way to access documents in folders by grouping those folders in one place, you can store BBN/Slate documents in any UNIX directory and direct the Document Manager to examine that directory for BBN/Slate documents.

For example, Figure 3-11 shows the UNIX directory `/usr/slate/demo` used in the **Folder:** field instead of the standard "+" folder notation.
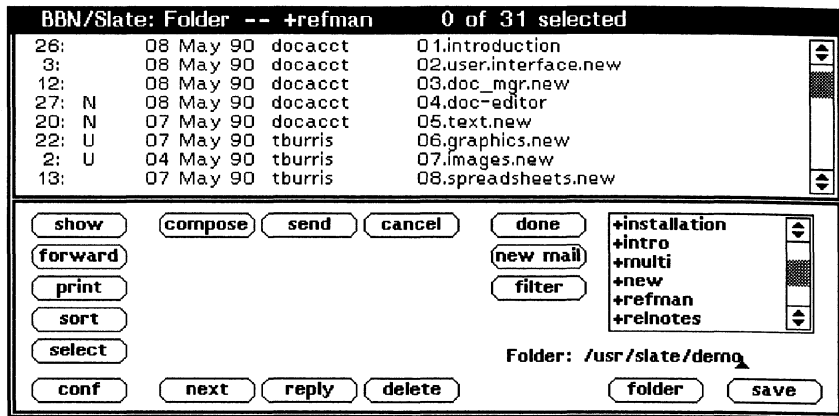
Figure 3-11   *Document Manager Folder: Field*

The two differences between folders and other directories are:

- There is a special naming convention for folders.
  Folder names always begin with a plus sign (+). The name
  +wishlist, for example, refers to the folder whose name is
  wishlist, and not to a file or directory named +wishlist.

- Folders are maintained in a well-known location.
  By default, all of your folders are subdirectories of a directory
  named Slate in your home directory. When the Document
  Manager sees a name like +wishlist, it interprets the name
  as a folder specification and substitutes the directory
  $HOME/Slate/wishlist (where $HOME refers to the user's
  home directory).

You can create or reference documents that are not mail messages
from within the editor by appending the document name after the
folder name. Thus +wishlist/new-features would
reference a document named new-features in the +wishlist
folder.

Folders let you organize documents and mail messages simply by saying "move this document to the +wishlist folder." There is no need to be concerned about where that folder is really located, or to remember and type long pathnames when referring to documents or collections of documents.

3.4.1   Creating Folders

A folder is created when you use its name in response to a request for a file name in either the Document Manager or the Document Editor. Thus, if you type +newfolder in the Document Manager's **Folder:** field, +newfolder is created if it does not exist.

Likewise, within the Document Editor, you can select the menu bar command **File-Write-New File...** and type +newfolder/newdoc in the dialog box that appears. If +newfolder does not exist, it is created and a new document named newdoc.slt is written to that folder.

3.4.2   Special Folders: +Mailbox and +templates

Incoming mail is deposited in a folder named +Mailbox. When you press the **new mail** button, the +Mailbox folder is scanned for new documents. If there are any, the first new document is displayed in the Document Editor.

Using the Document Editor, you can create a document that will serve as a template for other documents (discussed further in Chapter 4). These personal templates are stored in a folder named +templates. You can also examine the contents of this folder using the Document Manager's standard operations.

3.4.3 Showing Contents of Folders

As an alternative to selecting a folder and clicking on the **show** button, you can show the contents of a folder by double-clicking on its name. To show the contents of a folder, **LEFT double-click** on the folder name. The name of the folder appears below the folder window and the contents of the folder appear in the Document Summary Pane.

3.4.4 Keeping Track of Current Folders

To show the names of the folders you have most recently worked on, **RIGHT hold** on the folder list. A pop-up menu with the ten most recent folders appears. If you have fewer than 10 folders, you will see only the number you have visited.

You can use this window to help you manage files and folders. For example, to show a folder name, **RIGHT hold** to highlight the name within this window and release. The name appears below the folder listing, as shown in Figure 3-12.
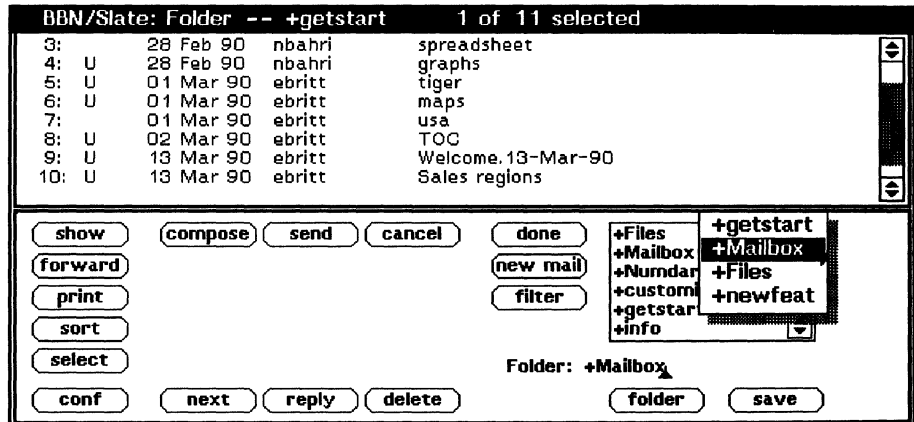
| Figure 3-12 | Keeping Track of Folders |

3.5　Mouse Usage

Mouse conventions in the Document Manager's Document Summary Pane are as follows.

LEFT click

Selects the document whose summary is pointed to by the pointer. Any previously selected documents are deselected.

shift LEFT click

Holding down the shift key while pointing to a document summary and clicking the left mouse button adds the document whose summary is pointed to by the pointer to the set of selected documents, without deselecting other documents.

LEFT hold

When you hold down the left button, all previously selected documents are deselected and the document whose summary is pointed to by the pointer is selected. As you move the mouse, the selected set expands and contracts to include all summaries between the point at which the button was pressed and the current pointer location. When you release the button, all documents whose summaries are enclosed by the box are selected. Any previously selected documents are deselected.

shift LEFT hold

Defines a group of document summaries as described above, but adds them to the set of selected documents, without deselecting other documents.

MIDDLE click

Deselects all documents.

shift MIDDLE click

Deselects one document.

Mouse conventions in the Document Manager's Command Button and Folder Display Pane are as follows.

LEFT click

Executes the primary command associated with the button.

RIGHT hold   Displays a menu of commands associated with a command button. The primary command is the first listed; other commands are alternates to the primary command.

RIGHT release   Executes the command the mouse pointer indicates.

4   Document Editor

The BBN/Slate Document Editor is a *multimedia* document editor.
A multimedia document editor incorporates a number of usually
separate computer applications into a single editor. For example,
BBN/Slate enables you to create and edit a single report that
contains text, spreadsheets, and illustrations, all without leaving the
BBN/Slate environment. It is helpful to view a BBN/Slate
document as a sequence of elements, each selected by you. You
can prepare a document with a single medium, such as a
spreadsheet, or combine a sequence of media elements into a single
document.

When editing a document, you edit the media types that may
appear in a document: headers, text, graphics, images, spreadsheets
and associated charts, speech, and enclosures. You use these
media-specific commands and menus to edit your document and
components: **Text**, **Graphics**, **Image**, **Spreadsheet**, **Speech**,
Enclosure, and **Header**.

The BBN/Slate Document Editor has functions that affect your
entire document (*editor-level* commands) and functions that affect
only a specific media type within your document (*media-specific*
commands).

Editor-level menu commands are listed horizontally along the top
of the Document Editor window. You can also access the
editor-level menu by using **control RIGHT hold** anywhere in a
document.

Media-specific commands are commands you use to edit a specific
media type (or "object") within a document. Position your mouse

pointer over the element you want to edit and **RIGHT hold**. The appropriate media menu appears, and you can then invoke a command from the menu by sliding the mouse to the command and releasing the button.

You can invoke many commands, both media-specific and editor-level, by typing keyboard commands instead of using the menus and the mouse. This is discussed in Section 4.6.

The first several sections of this chapter describe the following general editor concepts:

- files, documents, buffers, checkpointing, and backups (Section 4.1)
- displaying documents (Section 4.2)

The remaining sections describe the editor-level commands for editing the document as a whole:

- an overview of basic editing operations (Section 4.3)
- using the menu bar and menu commands (e.g., **BBN**, **Add**, **Edit**, **File**, **Mail**, **Print**, **Classify**, **Document**, **Editor**, **Keycaps**, **Exit** menus (Section 4.4)
- mouse usage and keyboard commands (Sections 4.5 and 4.6)

Subsequent chapters describe the commands for editing each of the various media types.

4.1   Files, Documents, Buffers, Checkpointing, and Backups

BBN/Slate makes use of the UNIX file system. For that reason, BBN/Slate users need to know a little bit about the file system. The UNIX file system consists of an upside down tree of directories (see Figure 4-1). At each level of the hierarchy,

directories may contain files or additional directories. This
hierarchy lets you organize your files by storing related files in a
directory. For example, when you begin a new project, you might
use the appropriate UNIX command to create a new directory with
the same name as the project, and then store all files you create
for that project in that directory. Your system administrator will
have already created a directory within the UNIX file system for
your use (called your home directory). Typically, the name of this
directory is the same as your user name.
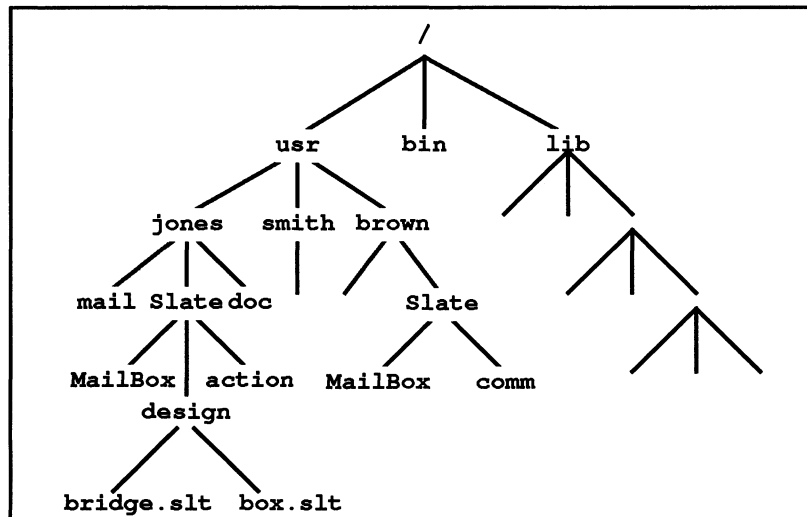
Directory Tree

A BBN/Slate document is stored in a single UNIX file. Thus, this
manual often uses the terms document and file interchangeably.
Documents created by the editor are stored in files with the
extension .slt (e.g., plan.slt). When the editor reads a file,
if it does not find a file with the supplied name, it automatically
searches for the file name with the .slt extension appended.
Likewise when the editor writes out a new file, it automatically
appends the .slt extension unless another one has been supplied.
Thus, you need not specify the .slt extension when specifying a
file name to the editor, unless you want to override this default
extension.

If you were to use the UNIX `ls` command to view the contents of a directory that contained BBN/Slate documents, you would see the `.slt` extension on the BBN/Slate files, as shown in Figure 4-2.

```
% ls *.slt

addon.slt
agenda-short.slt      novice-right-template.slt
agenda.slt            progress-report.slt
keyboard.slt          sales-prospects.slt
menus.slt             schematic.slt
slate-topics.slt      slate.slt
```

Figure 4-2   Output of `ls` Command

When you edit a document, the Document Editor reads the file into a *buffer,* a temporary storage area. The editor can manage multiple buffers at a time, each containing a different document. Menu commands let you read a file into a buffer, display a specified buffer, switch between buffers, write a buffer to a file, and obtain a list of all the buffers currently being managed by the editor. (You can even divide your Document Editor window into two or more panes and display a different buffer in each pane.) A document in a buffer has not been permanently changed until it is written out to a file.

Because you are working in a buffer and not in the stored file, you must explicitly save the buffer to a file when you finish an editing session. In the event that you decide against the changes you make during an editing session, you also have the option of exiting from an editing session without saving the work you did that session. When you exit from the Document Editor without explicitly saving your work to a file, the system displays a dialog box to give you an opportunity to save your work before exiting.

While you are editing a buffer, BBN/Slate periodically *checkpoints* the file. It writes a copy of the buffer to a file with a .CKP extension (e.g., plan.slt.CKP). This is done to protect you from losing several hours of work if the system crashes before you get a chance to save the buffer to a file. Unless your system crashes or you mistakenly exit without saving your work, you can ignore the checkpoint files. To control the checkpointing frequency see the *Customizing Manual*.

Another safeguard provided by the Document Editor is backup files. Backup files are distinguished by the .BAK extension and are produced the first time you write a modified buffer to a file. If, after writing your edits from a buffer into a file, you decide that the earlier version is what you really want, then you can go back to that version of the file. Backup files are never removed by the BBN/Slate system. To turn the backup feature on or off, see the *Customizing Manual*.

4.2   Displaying a Document

When you start BBN/Slate, the Document Editor initially appears as a blank window. If you then go to the Document Manager, select a document, and **LEFT click** on the **show** button, the selected file is brought into the Document Editor for viewing or editing. Note that if you **LEFT double-click** on the selected document, the file is also brought into the Document Editor. Figure 4-3 illustrates one such display. On the screen, a BBN/Slate document is a continuous vertical "galley" of text and figures laid out horizontally between default left and right margins.

A document appears in a window, bordered on the right by a vertical scroll bar. At the bottom of the window, there are three important informational items: a horizontal scroll bar; a buffer/file status line that shows the name of the document being displayed;

and a line in which user prompts, status, and error messages appear. The document display area provides a viewport on the entire document. You can use the scroll bars to display different document sections; use of the scroll bars is explained in Chapter 2.

Scroll
Bar
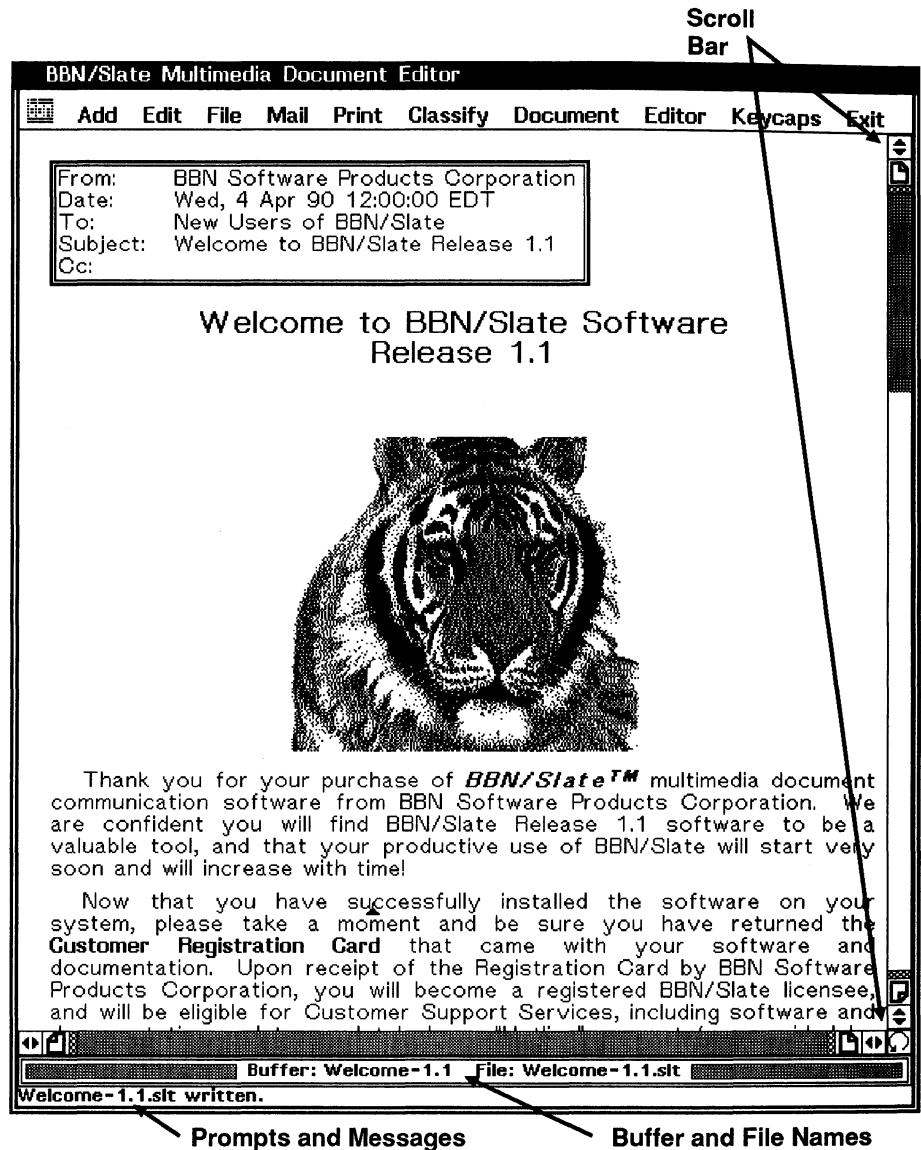
Figure 4-3   Document Editor Displaying a Document

4.2.1   Panes

You can divide the window in which a document is displayed into multiple panes. Initially, the window contains one pane. You can divide the window both horizontally and vertically to produce new panes using the **Editor-Window-Split Across** and **-Split Down** commands (see Section 4.4 for more information). The editor will work in one pane at a time. The currently active pane is shown by a grey background in the buffer and file line. When the window is divided into multiple horizontal panes, you can use the mouse to adjust the size of each pane. To change the size of a pane, position the mouse pointer over the pane's buffer/file status line, then **LEFT drag** the mode line up or down until the pane reaches the desired size, and **release**. You can delete a pane or make the current pane the only pane in the display.

You can display a different document or different sections of the same document in each pane (Figure 4-4). If you display a document in more than one pane, the changes you make in one pane appear in all the other panes in which that document is displayed. Position the pointer over a pane's buffer/file status line and **RIGHT hold** to display a menu listing all documents that have been loaded into the editor. Selecting a document from this menu causes it to be displayed in the pane. (Refer to Chapter 2 for more information about menus, and Section 4.1 for information about documents and buffers.)

Display Area Panes

(Secret) BBN/Slate Multimedia Document Editor

Add | Edit | File | Mail | Print | Classify | Document | Editor | Keycaps | Exit

Enclosures
Arbitrary files of data

Data: BBN/Slate Draw Icon [1933 bytes]

Multilingual Text
If you have purchased the Multilingual Option and have installed your purchased BBN/Slate Language Packages, you can also include multiple languages in a document. (You will see a blank on the right side if you have *not* purchased the Multilingual Option.)

Russian   Епшы шы фи учтфзлу щё ыщтуепшиа ши Кгыышфи
Korean (Hangul)   어나디의 이너안머 마니미늬의 너얼 내메

Buffer: Welcome-1.1   File: Welcome-1.1.slt

Buffer: kellis2   (Secret) File: /home/spcsun7/docacct/kellis2.slt

Prompts and Messages   **Buffer and File Names**

Figure 4-4   *Multiple Panes within the Document Editor Window*

4.2.2   Elements, Viewports, and Handles

Just as the document display area is a viewport on the entire document, each element other than text has a rectangular area that acts as a viewport on that element. You can alter the portion of an element that is displayed by changing the viewport's size. When you select an element (by clicking any mouse button in the element), an outline appears around this viewport with *handles* on the corners and sides. You can change the outline's size by using **LEFT drag** on one of these handles to the desired position, and **releasing**. Figure 4-5 shows a graphics element, its outline, and the handles on the outline.
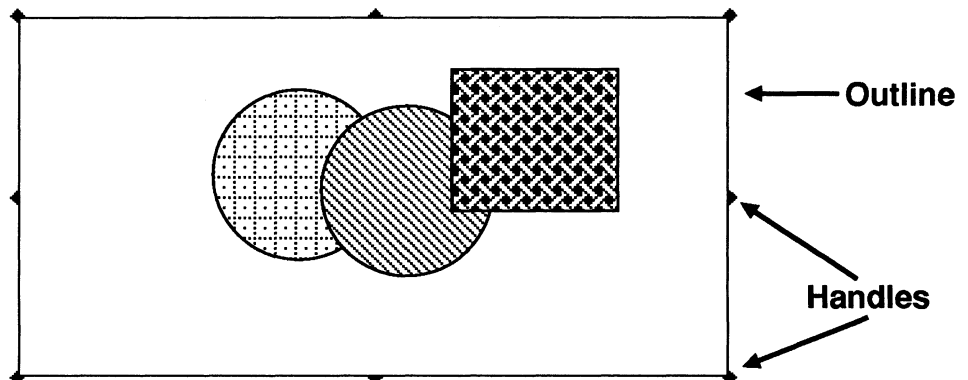
Figure 4-5   *Element Display*

Figure 4-6 shows two viewports on the same graphics element. The top viewport is large enough for you to see the entire element, while the lower viewport is smaller and the element is only partially visible.
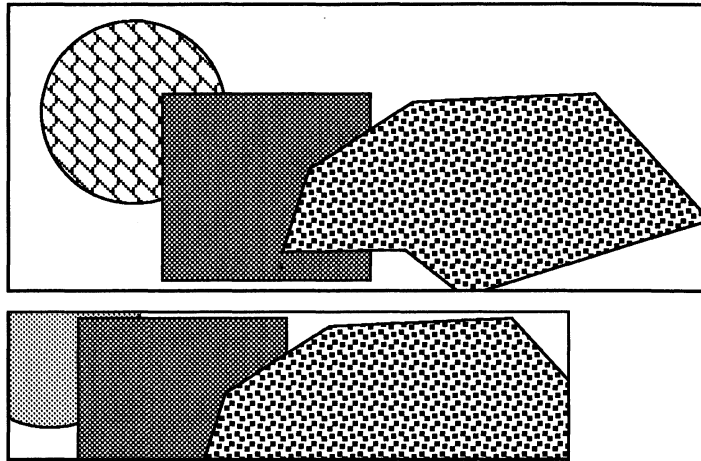
Figure 4-6   Viewports

Initially you position media types in your document in horizontal bands. You add each new element at the current pointer position, i.e., just above the element that the pointer is in. If you use **LEFT hold** to grab a non-text element on its edge between the handles, you can slide it back and forth horizontally between the document's margins.

4.2.3   The Selected Region of a Document

The *selected region* is a portion of the document that is explicitly selected for editing. The primary reason for selecting a region is for cutting and pasting operations. In text, the region is highlighted by displaying the text in reverse. When the selected region spans non-text elements, those elements have handles on the surrounding box, as shown in Figure 4-7.

BBN/Slate Multimedia Document Editor

Add   Edit   File   Mail   Print   Classify   Document   Editor   Keycaps   Exit

The following spreadsheet illustrates this situation.

Spreadsheet

x	Sin(x)	Cos(x)
0.0000	0.0000	1.0000
0.3142	0.3090	0.9511
0.6283	0.5878	0.8090
0.9425	0.8090	0.5878
1.2566	0.9511	0.3090
1.5708	1.0000	0.0000

It is also possible to plot the numbers in this spreadsheet.

Trig Functions

Func(X)

Buffer: 01.introduction* File: /home/spcsun7/docacct/Slate/refman/01.introduction.slt

Figure 4-7   Selected Region

There are several ways to select the region. When the region
starts in text, the simplest way is to use **LEFT drag** from the start
to the end of the region. Another way is to first set the mark
explicitly at the starting point in text with **control spacebar** and

then use the mouse or the cursor-moving commands (e.g., the arrow keys) to move the cursor to define the end of the region. To select a region containing a single non-text element, just position the mouse over the element and **click** any mouse button.

If the selected region contains text, it can be deselected by **MIDDLE click** or by **Esc-@**. If there is no text in the selected region, it can be deselected by **LEFT** or **MIDDLE click** while the mouse is positioned over a non-selected or empty area of the document (e.g., the left or right margin).

4.3　Overview of Basic Editing Operations

You edit documents by adding new media types and then editing their *contents*. For example, you can add a graphical element and then proceed to edit the contents by adding individual features such as circles, boxes, and lines. Each of the different media editors has specific ways of editing the contents of an object of that type. However, all editors make consistent use of menus, dialog boxes, the mouse, and the keyboard for invoking editing operations.

In addition to the editing commands available in each media editor, a few editing commands, namely **cut**, **copy**, and **paste**, can be used on the entire document. With these commands, you can cut or copy a selected fragment of a document and paste that fragment into another part of the same document or another document. A document fragment to be cut or copied may contain multiple contiguous elements and text passages.

However, it cannot contain part of an element for media other than text. (There are media-specific **cut**, **copy**, and **paste** commands; for descriptions of these commands, see the sections on the individual media editors.)

Once you have cut or copied a fragment of a document, you can paste it between, before, or after elements in the document, into the document's text portion, or into a non-text element. However, if you paste a document fragment containing multiple elements into another non-text object, only the first element in the fragment to be pasted is actually pasted.

You can cut, copy, and paste between different media types. Table 4-1 indicates the media between which the cut, copy, and paste operations are supported (marked by X).

Table 4-1   *Cut, Copy, and Paste Operations*

Cut From	Paste To					
	Text	Graphics	Images	Rasterfile	Spreadsheet	Speech
Text	X					
Graphics		X	X			
Image		X	X			X (icon)
Rasterfile		X	X	X		
Spreadsheet					X	
Speech						X

Cut or copied fragments of a document reside in an area called a *clipboard*. Both the editor-level and media-specific **cut**, **copy**, and **paste** commands use the same clipboard. The clipboard can accommodate only one fragment of a document at a time.

4.4   Using the Menu Bar and Menu Commands

A set of commands controls the Document Editor and all the documents being edited. These *editor-level* commands are distinct from *media-specific* commands.

By using the menus on the Document Editor's horizontal menu bar, you can manage files, use electronic mail, work with windows, and perform other editor-level operations. You can also control the overall content and structure of the document currently in the editor by using these menus.

When you enter the Document Editor, the menu bar appears across the top of the Document Editor window, as shown in Figure 4-8.

BBN/Slate Multimedia Document Editor

▦ Add Edit File Mail Print Classify Document Editor Keycaps Exit

Figure 4-8   *Document Editor Menu Bar*

You can also access the editor-level commands by pressing **control RIGHT hold** when your pointer is in the display area of the Document Editor. The editor-level menu, titled **Editor**, appears as shown in Figure 4-9.

Editor
Add   ⇒
Edit   ⇒
File   ⇒
Mail   ⇒
Print   ⇒
Classify   ⇒
Document   ⇒
Editor   ⇒
Keycaps
Exit
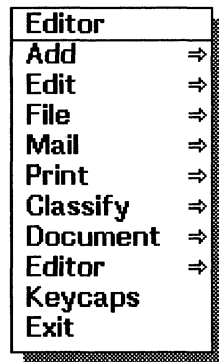
Figure 4-9   *Document Editor "Editor" Menu*

The first thing that appears on the Document Editor menu bar is the BBN logo. It contains a special command menu that is discussed at the end of this chapter. Thorough descriptions of the basic commands are presented first.

Commands are grouped on the menu, according to the operations they implement, as follows.

BBN This command menu includes a number of utility operations and help features. It is described after the basic menu bar commands. (Section 4.4.14)

Add Addition of new media elements. (Section 4.4.1)

Edit Editing operations, including Cut, Paste, Clear. (Section 4.4.2)

File Filing operations, including Read, Write, Insert. (Sections 4.4.3 through 4.4.6)

Mail Electronic mail operations, including Send, Reply, Forward. (Section 4.4.7)

Print Printing, Previewing, and Table of Contents operations. (Section 4.4.8)

Classify Classification markings operations on documents. (Section 4.4.9)

Document Document font selection, searching, and spelling checker operations. (Section 4.4.10)

Editor Buffer selection, window/pane control, and directory selection operations. (Section 4.4.11)

Keycaps Display of characters on keyboard choices. Most useful with BBN/Slate Multilingual Option (Section 4.4.12)

  (Multilingual operations are not part of basic BBN/Slate. If the Multilingual Option is installed on your system, refer to *Multilingual Documents*.)

Exit Exit from the Document Editor and terminate editor operations. (Section 4.4.13)

Note: The following instructions assume that you are using pop-up menus. If you are using stay-up menus, you can keep the menus up either by clicking or by holding down the mouse button.

4.4.1 Add Menu

```
┌─────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor     │
└─────────────────────────────────────────┘
  ▦    Add    Edit    File    Mail    Print
      ┌──────────────┐
      │ Text       ⇒ │
      │ Graphics     │
      │ Image      ⇒ │
      │ Spreadsheet  │
      │ Speech       │
      │ Enclosure... │
      │ Header...    │
      └──────────────┘
```
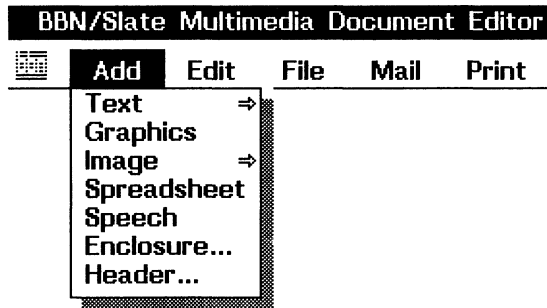
When you start with a blank BBN/Slate document, you add new elements by using the **Add** command. **Add** has a submenu of media types to add: **Text**, **Graphics**, **Image**, **Spreadsheet**, **Speech**, **Enclosure**, and **Header**. Typically you will start out by adding a text element to the document (either through the **Add** menu or by just typing on the keyboard). Each text element is formatted according to a specified style.

To expedite adding text into a document, when you type **Line Feed** (or **Return,** for word-wrapped text styles), a new element is added into your document. The new element is of the type specified in the **Next Style** field of the current formatting style. If that field is blank (the normal case), then a new instance of the formatting style you are currently in is added.

To add a non-text item, use the **Add** menu to select the new media type, as shown in the menu above.

The new item appears within the document according to the following rules:

- If a text element is selected for editing and the pointer is visible, the new element appears at the cursor position. This may split the text element into two parts.

- If a non-text element is selected for editing, the new element is added immediately before the currently selected element.

- If neither of these is true, the new element is added wherever the pointer is located when the **Add** command is issued.

Elements can be added in the middle of text passages, but not in the middle of elements of other media, such as drawings or spreadsheets. Chapter 5 contains more information about the additional text styles supported by BBN/Slate.

The **Add-Text** command also lets you choose the text formatting style to insert. To do this, **RIGHT drag** for a menu of text styles. If you **RIGHT release** on the **Text** command, the default text format (paragraph) will be added. You can change the default style by setting the editor variable `text-default-format` to the name of the desired style.

4.4.2 Edit Menu

```
BBN/Slate Multimedia Document Editor

     Add   Edit   File   Mail   Print   Classify
           Cut
           Copy
           Clear
           Paste
           Change Attributes...
```
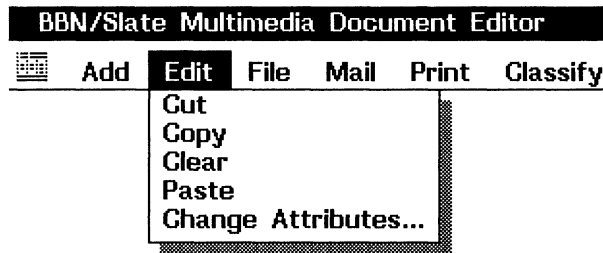
Edit menu commands and operations are as follows:

Cut   Remove a fragment of a document, the selected region, and put it on the clipboard.

Copy	Copy a fragment of the document, the selected region, onto the clipboard.
Clear	Remove a fragment of a document, the selected region, *but do not put it on the clipboard.* Use this only if you are sure you are not going to need that fragment again.
Paste	Paste from the clipboard at the current position in the document. When you select **Paste**, the current paste position is the cursor's position. If the cursor is not visible, the mouse pointer's position is the paste position.
Change Attributes	Document components have several attributes that affect how they are displayed and printed. For non-text items, you can use the **Change Attributes** command to adjust these attributes. (For text elements, the attributes are associated with formatting styles, and can be altered using the **Text-Styles-Local Change** command described in Chapter 5.) Figure 4-10 shows the dialog box that pops up in response to the **Change Attributes** command.

```
Outline          ○ On
Justification    ○ None
Break Page       ○ None
Keep with Next   ○ No
Printed Size     ○ As On Screen
Classification   ○ <none>

( OK )   ( Cancel )
```
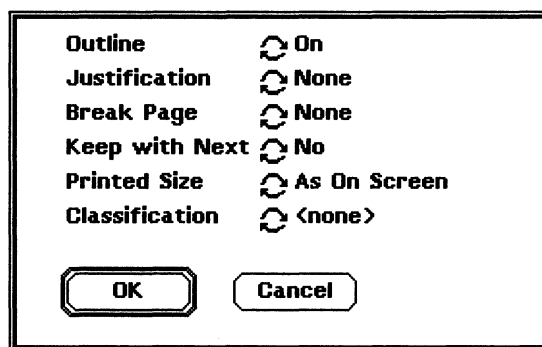
Figure 4-10   *Change Attributes Dialog Box*

The attributes you can set are as follows:

Outline   If **On,** surround the element with a outline box.

Justification   The position of the item between the document's left and right margins. Possible values are **None, Left, Right**, and **Center**.

Break Page   When the document is printed, should this element cause a new page to be started. Possible values are **None, Either, Break to Even**, and **Break to Odd**.

Keep with Next   If **Yes**, when the document is printed, insure that this element and the next one appear on the same page.

Printed Size   When the document is printed, print this element a specified percentage of its size on the screen. This is particularly useful for printing images that have been scanned at resolutions higher than the resolution of the workstation display. Possible values include: **As on Screen, 1/2 Screen, 1/4 Screen**, and **Specify:**. For example, an image scanned at 150 dots per inch will appear twice as large as normal on an 75 dot per inch workstation display. If you print this image at **1/2 Screen**, it will print at a normal size on a laser printer with the full 150 dots per inch resolution.

Classification   Associate a classification marking with the element. The default set of markings are the military classifications (**Unclassified, Confidential, Secret**, and **Top Secret**), although it is possible to define other markings as the

standard ways of marking elements. For example, you could initialize the marking choices with **Needs More Work** and **Verify Data**. For more information, see the *Customizing Manual*.

4.4.3   File Menu

```
BBN/Slate Multimedia Document Editor
▦   Add    Edit   File   Mail   Print   Classify
                  New    ⇒
                  Read   ⇒
                  Write  ⇒
                  Insert ⇒
```
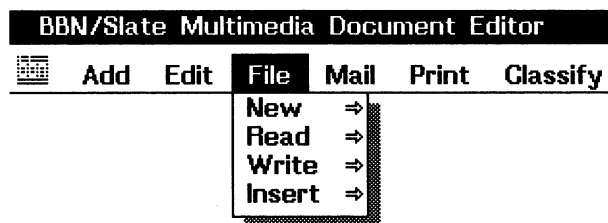
File menu commands let you store and retrieve documents from BBN/Slate folders as well as files in the UNIX file system. Files are named in one of two ways: by BBN/Slate folder naming mechanism, or, by the standard UNIX file system names.

UNIX File System Conventions
Whenever you are prompted for a file name, you can specify the name using the BBN/Slate folder syntax. For example, all the following names are valid names of BBN/Slate documents using the folder notation:

```
+inventory/march.slt
+admin/review
+requests/890221
```

The plus sign (+) stands for $HOME/Slate/ where $HOME is your home directory.

Using the UNIX file system approach, when prompted for a file name, you specify a sequence of directories separated by the slash (/) character, ending in the name of the file holding the document. For example, all of the following are legitimate names of BBN/Slate documents:

```
myfile
/usr/jones/docs/resumes/mine.slt
/usr/jones/todo-list
docs/action-items
```

The first name is a simple name in the current directory. The
second name is a fully qualified path name with the `.slt`
extension. In the third name, the extension is omitted and will be
provided by the Document Editor. The fourth name is a name that
is interpreted relative to the current working directory.

Several **File** commands require a file name or buffer name. When
you select one of these commands, a dialog box helps you specify
the appropriate name.

When you specify the name of a file in which to write a docu-
ment, BBN/Slate automatically appends the extension, `.slt`.
Similarly, when you specify the name of a file from which to read
the document, the editor searches first for the file name as you
specify it. If it does not find the specified file name, BBN/Slate
searches for the file name with the extension `.slt` appended.

4.4.4 Moving Through the Directory Structure of Files

BBN/Slate has two ways of helping you specify, select, or "get"
files: a **List** button that lets you move through the directory
structure, and a feature that completes file and directory names for
you.

Using the List Button
Whenever you need to provide the name of a file, BBN/Slate
displays a dialog box (Figure 4-11). You can either type in the
name, including the full pathname if it is not in the current folder,
or you can display a list of files by using **LEFT click** on the **List**
button.
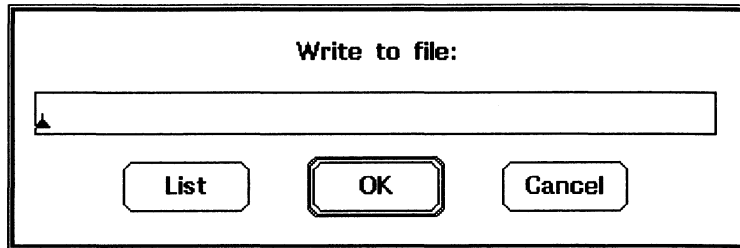
Figure 4-11   *Write to File Dialog Box*

When you use the **List** button, BBN/Slate displays the directories and subdirectories in your file system, starting at the top of the directory tree (Figure 4-12). You can identify directories by the / character following their names.
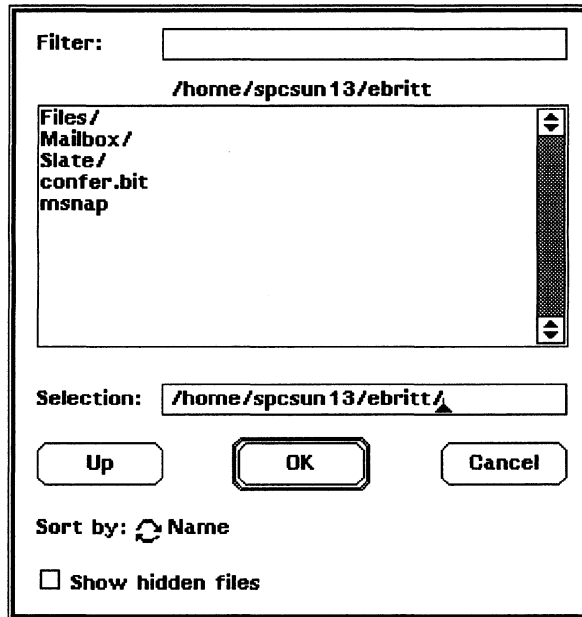
Figure 4-12   *Listing Directories and Files Dialog Box*

Moving Through the Directory Structure

To move down through the directory structure, **LEFT double-click** on the directories you want to enter. As you double-click on a directory name, it appears in the dialog box's **Selection:** region.

Using the Selection: Region

You can also use this dialog box's **Selection:** region to type in any parts of the directory path. By default, BBN/Slate shows the directory listing by name. You can use the **Sort by:** cycle button to have the listing appear by **Name, Type,** or **Extension. LEFT click** on the box **Show hidden files** shows all files, including UNIX files that begin with dot (.), such as `.slate_editor.init`.

Using the Filter: Region

With the dialog box's **Filter:** region, you can select and list portions of directories and files that contain specific characters or sequences of characters. Put your cursor in the **Filter:** region and enter the sequence of letters common to all the directories or files you want to list. For example, to list all BBN/Slate files, enter ***.slt** in the **Filter:** region and press **Return** (shown in the left side of Figure 4-13). The * tells the file system to list all files or directories with the extension, regardless of the file name.

Similarly, to list all public profile files (also known as sitewide initialization files) enter **.*.init** in the **Filter:** region (shown on the right side of Figure 4-13).

```
┌─────────────────────────────────────┐   ┌─────────────────────────────────────┐
│ Filter:      *.slt▗                  │   │ Filter:      .*.init                 │
│                                      │   │                                      │
│       /nfs/spcsun1/home/spcsun13/ebritt   │       /home/spcsun13/ebritt          │
│ ┌─────────────────────────────┬─┐   │   │ ┌─────────────────────────────┬─┐   │
│ │5_a24158.slt               ▲│   │   │ │.OLDslate_editor.init       ▲│   │
│ │Outline.slt                  │   │   │ │.pen.init                     │   │
│ │ReadMe.slt                   │   │   │ │.slate_editor.init            │   │
│ │Salestemp.slt                │   │   │ │.slate_tool.init              │   │
│ │Saturn.slt                   │   │   │ │                              │   │
│ │TOC.17-Apr-90.slt            │   │   │ │                              │   │
│ │maps.slt                     │   │   │ │                              │   │
│ │signature.slt                │   │   │ │                              │   │
│ │speech.slt                   │   │   │ │                              │   │
│ │tiger.slt                    │   │   │ │                              │   │
│ │usa.slt                    ▼│   │   │ │                            ▼│   │
│ └─────────────────────────────┴─┘   │   │ └─────────────────────────────┴─┘   │
│                                      │   │                                      │
│ Selection:  /nfs/spcsun1/home/spcsun13/ebri·│ Selection:  /home/spcsun13/ebritt▗  │
│                                      │   │                                      │
│  ┌─────┐  ┌────────┐  ┌────────┐     │   │  ┌─────┐  ┌────────┐  ┌────────┐     │
│  │ Up  │  │   OK   │  │ Cancel │     │   │  │ Up  │  │   OK   │  │ Cancel │     │
│  └─────┘  └────────┘  └────────┘     │   │  └─────┘  └────────┘  └────────┘     │
│                                      │   │                                      │
│ Sort by: ◌ Extension                 │   │ Sort by: ◌ Extension                 │
│                                      │   │                                      │
│ ☑ Show hidden files                  │   │ ☑ Show hidden files                  │
└─────────────────────────────────────┘   └─────────────────────────────────────┘
```

Figure 4-13   *Two Examples of Using the Filter Option*

4.4.5   Completing File and Directory Names

When you are working with dialog boxes that prompt you for
directory or file names, BBN/Slate helps you complete the names
so that you do not have to type in each letter. To use this feature,
you type in enough letters in the **Selection:** region to uniquely
identify the directory or file you want and press the space bar or
Return key. BBN/Slate completes the name for you.

Using the Selection: Region
For example, on the left side of Figure 4-14, if you want to go to
the installation directory, type in **ins** in the **Selection:** region
to distinguish that directory from all the others beginning with **in**
in this path.

Press the space bar, and BBN/Slates finishes the name for you to **installation** and takes you to that directory (as shown on the right side of Figure 4-14).

Filter:			Filter:		
/nfs/spcsun1/home/spcsun7/kellis/Slate			.../home/spcsun7/kellis/Slate/installation		
Mailbox/ customize/ installation/ intro/ multi/ refman/ relnotes/ sysadm/ tutor/ update/			Makefile pprint 01.basic.new.slt.BAK 04.multilingual.new.slt.BAK AppB.remtape.new.slt.BAK betadoc.slt.BAK 02.email.new.slt.BAK AppA.reminstall.new.slt.BAK 06.mmscan.new.slt.BAK 03.conference.new.slt.BAK ddi.new.slt.BAK		
Selection:	)csun1/home/spcsun7/kellis/Slate/		Selection:	e/spcsun7/kellis/Slate/installation/	
Up	OK	Cancel	Up	OK	Cancel
Sort by: ⟳ Extension			Sort by: ⟳ Extension		
☑ Show hidden files			☑ Show hidden files		

Figure 4-14   *Using File/Directory Name Completion*

4.4.6   File Menu
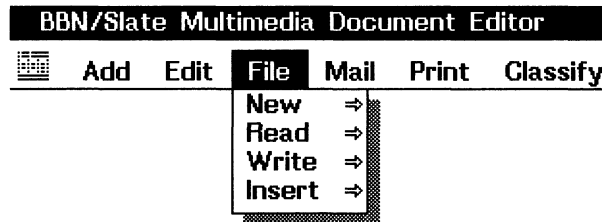
The **File** menu and its choices help you create, save, and insert new documents in the Document Editor. Descriptions of **File** menu choices follow.

New

Create a new document in the style of the default no document template. The Document Editor accommodates a series of templates that contain various formatting styles. The available templates (user-specific and system-specific) are stored in two separate folders: **From User Template** and **From System Template**.

```
▌BBN/Slate Multimedia Document Editor
▦   Add   Edit  │File│  Mail   Print   Classify   Document
              │New  │ From User Template      ⇒│
              │Read │ From System Template    ⇒│
              │Write│▀
              │Insert ⇒│
```
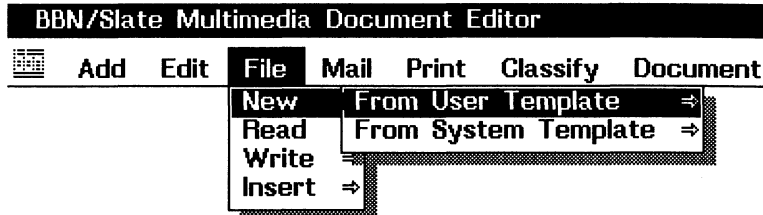
From User Template

Create a new document from one of the templates in the user's +templates folder. You can create your own templates for generating new documents. The **File-Write-As Template** command will put a document into your +templates folder so that you can use that document as a template for future new documents.

From System Template

Create a new document from one of the templates available to all BBN/Slate system users. If you **RIGHT release** from **File-New** without choosing a subcommand, you are prompted for the name for a new document. The template used will be the default document template.

Read

This command (and subcommands) read or retrieve multimedia documents. The submenu for this command follows.

```
┌─────────────────────────────────────────────┐
│  BBN/Slate Multimedia Document Editor        │
├─────────────────────────────────────────────┤
│ ▦  Add   Edit  │File│ Mail  Print  Classify  │
│              ┌──────────────────────────┐    │
│              │ New     ⇒▦               │    │
│              │ Read  │ In New Buffer...│ │    │
│              │ Write │ In This Buffer...│ │   │
│              │ Insert ▦                 │    │
│              └──────────────────────────┘    │
└─────────────────────────────────────────────┘
```
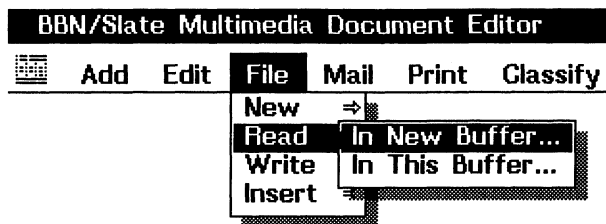
**In New
Buffer**

Read a document from a file. If the file is
already in a buffer, the editor switches to the
buffer *without* re-reading the file's contents. If
the document is not in a buffer, the editor reads it
into a new buffer and displays it. The buffer's
name is the name of the file without the file
extension.

**In This
Buffer**

Read a file into the current buffer, overwriting the
document currently in the buffer.

The default **Read** command is **In New Buffer**.

Write

This command and its subcommands help you write or save
documents. This command's submenu follows.

```
┌─────────────────────────────────────────────┐
│  BBN/Slate Multimedia Document Editor        │
├─────────────────────────────────────────────┤
│ ▦  Add   Edit  │File│ Mail  Print  Classify  │
│              ┌────────────────────────────┐  │
│              │ New     ⇒▦                │  │
│              │ Read    ⇒▦                │  │
│              │ Write │ Same File        │  │
│              │ Insert│ New File...      │  │
│              └───────│ As Text...       │  │
│                      │ As Template...   │  │
│                      │ To Program...    │  │
│                      └──────────────────┘  │
└─────────────────────────────────────────────┘
```
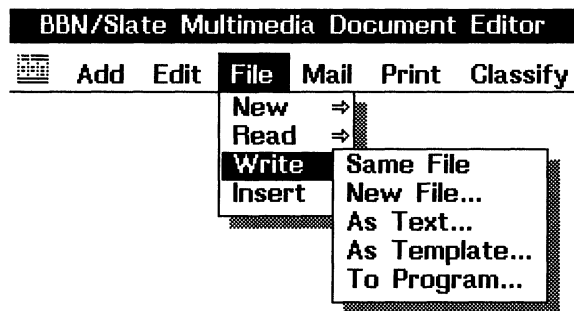
Same File

Save the document in the file from which it was
read. If there is no file associated with the
document, the editor asks you for the name of a
file.

New File   Write the current buffer's content to a file you specify. That file is associated with the buffer and becomes the file used by the **Same File** command.

As Text   Write a formatted ASCII text-only version of the file.

As Template   Copy the current document into your +templates folder. You will be prompted for the template's name. You can then use the **File-New-From User Template** command to create new documents based on this one.

To Program   Send the selected region of the document to an external program. The fragment of the document sent to the external program is a complete BBN/Slate document. The program reads a multimedia document on its standard input, or from a file. If the program reads from a file, you can include %s in the program name, and it will be replaced by the name of a file containing the multimedia document.

For example, you are prompted for the program name where you want to send the region. If you respond with:

```
cat %s > /tmp/doc.slt
```

/tmp/doc.slt will be a document that only contains the selected region's contents. You can examine this file with the Document Editor.

The default **Write** command is **Same File.**

Insert

Use the **Insert** commands to include an entire multimedia or text document within another document. The submenu for this command follows.

```
BBN/Slate Multimedia Document Editor
▦   Add   Edit   File   Mail   Print   Classify   Document
                  New    ⇒
                  Read   ⇒
                  Write  ⇒
                  Insert   Multimedia Document...
                           Text File...
```
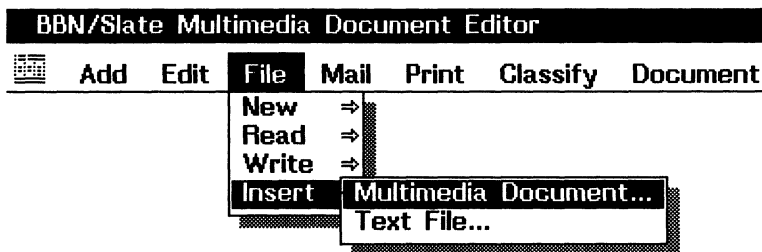
Multimedia Document

Insert a multimedia document at the current position. (The default **Insert** command.)

Text File

Insert a plain ASCII text file at the current position. The editor imports the text as verbatim paragraphs.

4.4.7   **Mail Menu**

```
BBN/Slate Multimedia Document Editor
▦   Add   Edit   File   Mail   Print   Classify
                         Send    ⇒
                         Reply   ⇒
                         Forward
                         Cancel
```
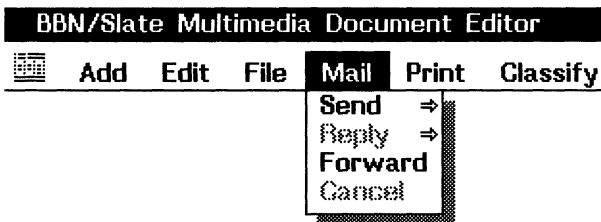
The commands on the basic **Mail** menu and on its submenus are explained below. For more information on Electronic Mail, see Chapter 12.

To *read* a multimedia document that you have received as mail, you normally use the Document Manager. However, when you want to *send* a document as mail, you insert a mail header into the document and then use one of the **Mail** commands. Mail commands and their descriptions are as follows:

Send

Send the document using the electronic mail system to the recipients on the **To:** and **CC:** fields of the document's header. If the document does not have a header, a header will be added and you will be prompted for the values of the fields. Several options for mailing a document are shown in the following submenu.
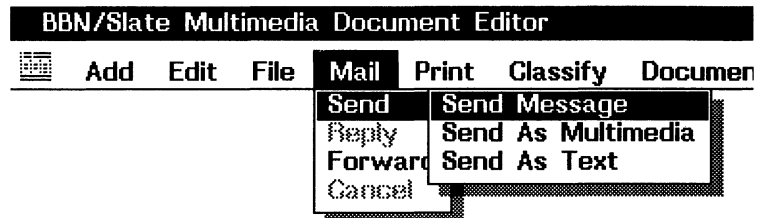
BBN/Slate Multimedia Document Editor

	Add	Edit	File	Mail	Print	Classify	Documen

Send | Send Message
Reply | Send As Multimedia
Forward | Send As Text
Cancel

Send Message

Send the document, selecting the format of the mail -- text or multimedia -- based on the identity of each recipient. As you receive multimedia mail from others, you are asked by the Document Manager whether you want to add the senders of those messages to your list of people who can receive multimedia mail.

When you choose the **Send Message** command, the mailing system will either send the document as a multimedia document or translate it into a text-only form, depending on whether the recipients (in the header's **To:** or **CC:** field) are in your list of people who can receive multimedia mail.

Send As   Send the document in multimedia format to all
Multimedia   recipients whose names appear in the document
                     header's **To:** or **CC:** fields. Use this command to
                     override the settings in your list of multimedia
                     mail recipients.

Send As   Send the document formatted as text-only mail.
Text   The presence of graphics, images, and speech
                     elements are indicated in the text-only message.

Reply   Compose a document that is a reply to the current document. The
                     headers will be derived from the headers in the current document.
                     Options within this command are shown in the following submenu.

```
BBN/Slate Multimedia Document Editor
▦    Add    Edit    File    Mail    Print    Classify    Document
                           Send   ⇒▓
                           Reply    To  Sender
                           Forwar   To  Sender, Include  Copy
                           Cancel   To  All
                                    To  All, Include  Copy
```

To Sender   Reply to the sender of a document. The received
                     document appears in one pane, and a new buffer
                     appears in another to let you compose a reply.
                     There is no default keybinding for this command.

To Sender,   Same as above, except include a copy of the
Include   received document in the reply. There is no
Copy   default keybinding for this command.

To All   Reply to the document's sender and all recipients
                     (i.e., all names in the **To:** and **CC:** fields). The

current document appears in one pane, and a new buffer appears in another to let you compose a reply. There is no default keybinding for this command.

To All,
Include
Copy

Same as above, except include a copy of the message in the reply. There is no default keybinding for this command.

When you finish composing the reply, use the **Send** command to actually send the document.

Forward

Forward the document to someone else. A new buffer is created containing the document contents and an empty header, which can be edited to specify the recipients of this message. There is no default keybinding for this command.

After editing the empty header, use the **Send** command to forward the document.

Cancel

Cancel a **Forward** or **Reply** operation. BBN/Slate deletes the associated buffer. There is no default keybinding for this command.

See Chapter 12 for more information about using BBN/Slate's electronic mail capabilities.

4.4.8   **Print Menu**

> **BBN/Slate Multimedia Document Editor**
>
> ▦   Add   Edit   File   Mail   **Print**   Classify   Document
>
> Preview / Print...
> Preview Now
> Print Now
> Define Tables...
> Generate Tables
> Repaginate
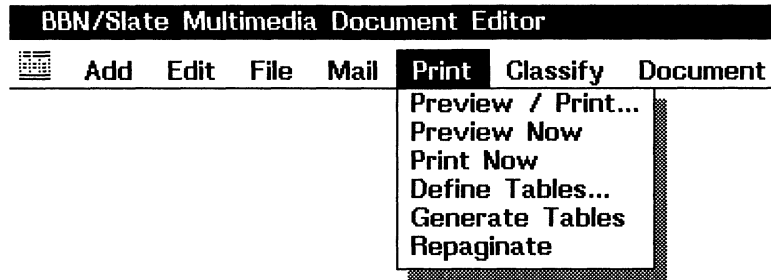
BBN/Slate supports printing to PostScript® capable printers. A
preview function is also available to assist in production of
high-quality hard copy output. In addition, you can automatically
generate a table of contents for a document as part of a printing
operation.

Print menu command functions are briefly described below. For a
full description of BBN/Slate printing and previewing capabilities,
see Chapter 11.

Preview/Print   Put up the print style-setting dialog box. You can alter the
printing parameters of a document and then select a print-spooling
operation. Documents are printed using the PostScript page
description language.

Print Now   Print a copy of the document with the current settings.

Preview Now   Preview a copy of the document with the current settings.

Define Tables   Define tables of contents that are associated with the current
document.

Generate Tables   Generate any tables of contents that are defined for the current
document.

Repaginate   Determine where page breaks occur in the current document and
update page number references in the text.

4.4.9   **Classify Menu**

```
┌─────────────────────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor                     │
└─────────────────────────────────────────────────────────┘
  ▦   Add    Edit   File   Mail   Print   Classify   Document
                                        ┌──────────────┐
                                        │ <none>       ▓│
                                        │ (Unclassified)▓│
                                        │ (Confidential)▓│
                                        │ (Secret)     ▓│
                                        │ (Top Secret) ▓│
                                        └──────────────┘
```
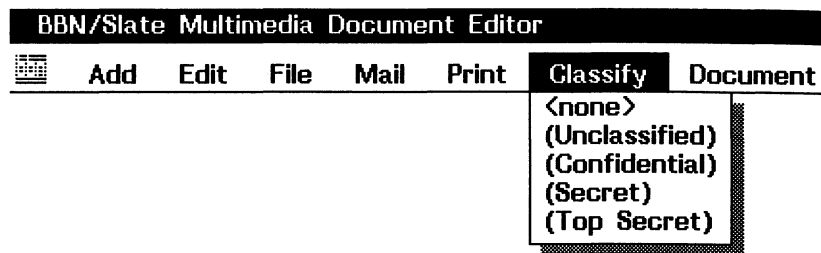
BBN/Slate has the ability to designate document elements with particular security classification markings.

You will see a **Classify** menu only if your copy of BBN/Slate has been installed to show the menu by sitewide default, or if you set the `display-classify-menu` variable to 1 in your `.slate_editor.init` file. See the *Customizing Manual* for more information.

If the classification capability is enabled, you can associate markings with individual elements of your documents. Although these markings are motivated by the requirements of military classified documents, you can customize the classification markings simply by changing the value of the `classify-names` variable. (Refer to the *Customizing Manual* for more information on changing the value of variables.) Possible alternative markings include "Needs more work" or "Company private."

The marking system included in this version of BBN/Slate is a partial implementation of the full classified marking discipline as specified in Section II subsection 11 (pages 52-63) of DoD 5220.22-M, "Industrial Security Manual for Safeguarding Classified Information." This subsection is entitled "Handling of Classified Information: Marking."

When a document that has elements with classification markings is printed, the document's first page is labeled with the highest marking in the entire document, and each page is marked with the highest marking on that page, as shown in Figure 4-15. The marking at the top of the first page shows that somewhere in the document (on neither of these two pages) there is something marked (Confidential).
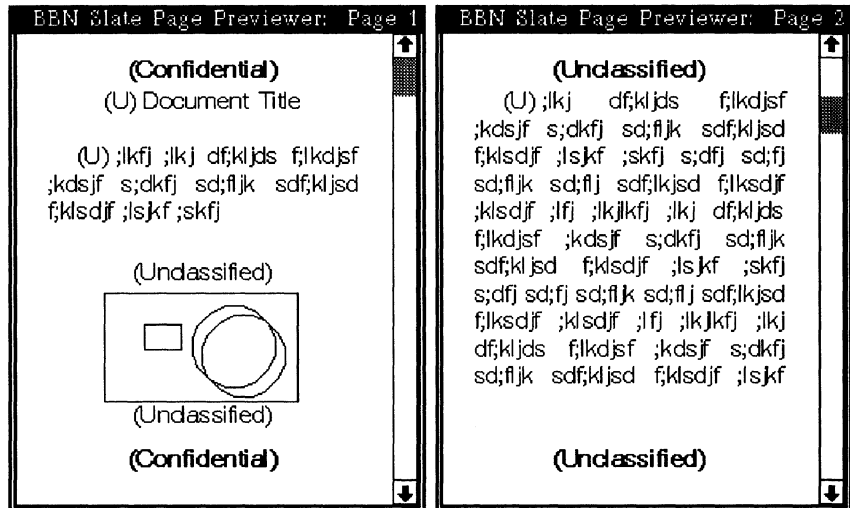
Figure 4-15   *Page Preview of Classified Document*

Classification Markings
The primary style of classified documents that BBN/Slate supports are ones that contain components of one of these four classifications (in long and short forms):

• (Unclassified) - (U)

• (Confidential) - (C)

- (Secret) - (S)
- (Top Secret) - (TS)

When a mixture of elements marked with these four labels is considered as one unit, a single marking must be assigned to the unit. The *high water mark* algorithm determines how the document is marked. The highest marking of the components is assigned to the collection: the lowest marking is (Unclassified), and the highest marking is (Top Secret).

There are capabilities for recording and displaying classification markings in the following areas:

1. **Overall document classification marking.** When a document is printed, the long form of the highest classification marking found in the entire document is printed on the document's first page.

2. **Page marking.** When a document is printed, the long form of the highest classification marking found on the paragraphs and illustrations on each page is printed at the top and bottom of the document.

3. **Component marking.** When printed and displayed in the editor, each major document component (i.e., chapter, appendix) is marked with the long form of the highest classification marking found within it.

4. **Portion marking.** When printed and displayed in the editor, each paragraph, illustration (figure, table, image, spreadsheet, chart, speech), and caption is labeled with either the short form of classifications described above for text material or the long form for illustrations.

5. **Current display screen document marking.** The long form of the classification of the highest portion marking currently displayed on the screen is displayed in the top banner and in the buffer line of the window displaying the document.

6. **Entire folder marking**. The Document Manager displays the classification of the highest overall document classification found on any documents contained anywhere in the folder currently being viewed.

7. **Current display screen folder marking**. The Document Manager will display the classification of the highest overall document classification found on documents whose summaries are currently in view on the display.

Marking Document Elements

For each of the media types in BBN/Slate documents, DoD 5220.22-M, "Industrial Security Manual for Safeguarding Classified Information," specifies how it should be marked. To set or change the marking of a text element, put the cursor in that element and use the **Classify** menu selections to choose the appropriate marking. The marking is not part of the text element and cannot be edited using normal text editing commands. New elements added will be labeled with the same classification marking as the previous element. You can use the **Classify** commands to select a new marking or no marking at all. Figure 4-16 illustrates a document in the editor with elements labeled. Each buffer is labeled with the classification of the element with the highest classification currently on the display. Also, the Document Editor window's top banner is labeled with the classification of the element with the highest classification in any buffer currently on the screen.

(Secret) BBN/Slate Multimedia Document Editor

Add   Edit   File   Mail   Print   Classify   Document   Editor   Keycaps   Exit

(Unclassified)

(U) **Figure 2: Geometric Graphics**

Graphics features are positioned on separate levels and may overlap each other. Standard rulers, grids and size indicators are provided

(C) Spreadsheets

A Slate spreadsheet element is a table that can be represented as a two-dimensional array where each element or cell can be empty or may contain a number, label, date, or formula. Formulas serve to relate the contents of cells to other cells in the table. A document containing a spreadsheet element

Buffer: slate-brochure* (Confidential) File: /usr/slate/demo/slate-brochure.slt

Buffer: main* (Secret) File: [none]

Figure 4-16   Classification Markings

4.4.10   Document Menu

```
████ BBN/Slate Multimedia Document Editor
▦   Add   Edit   File   Mail   Print   Classify   Document   Editor   Keycaps
                                                  Set Language/Font...
                                                  Find Object        ⇒
                                                  Check Spelling     ⇒
```
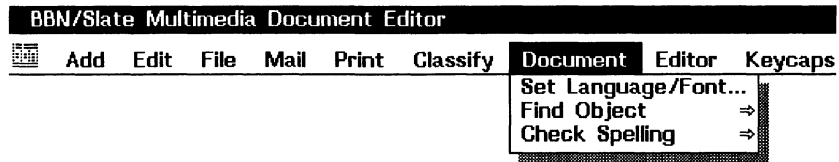
Document commands are used to perform document-wide operations, including setting the default font for the document and starting the spelling checker **Set Language/Font Item**.

Set Language/Font...

This command lets you set the default language (optional) and the default font for the entire document. When you select this item, BBN/Slate displays a dialog box (Figure 4-17) that shows the default language and font characteristics. Any changes you make to the default language or font affect all of the text in the current document.

```
┌──────────────────────────────────┐
│  Document Font ───────────┐       │
│   Family    ◇ helvetica    │       │
│   Face      ◇ Normal       │       │
│   Size      ◇ 10 pt        │       │
│   □ Underlined             │       │
│  └─────────────────────────┘       │
│                                    │
│  Language ────────────────┐       │
│   Keyboard ◇ English       │       │
│   Text Flow◇ Normal        │       │
│  └─────────────────────────┘       │
│                                    │
│   ┌──────────┐  ┌──────────┐       │
│   │    OK    │  │  Cancel  │       │
│   └──────────┘  └──────────┘       │
└──────────────────────────────────┘
```
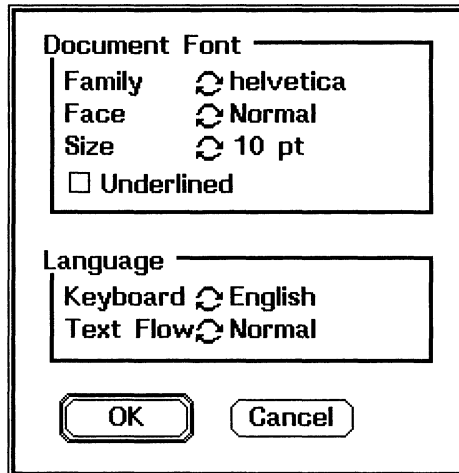
Figure 4-17   *Document Font and Language Dialog Box*

Each document has a default font that is used as the baseline font for the document. Because all other font changes are performed relative to this default font, when you change the default font, all of the changes track accordingly.

When your BBN/Slate system is installed, it is configured with a set of fonts. The default fonts are TimesRoman, Helvetica, and TV (a fixed-width font). For each of these fonts there are four faces (normal, **bold**, *italic*, and ***bold italic***) and five sizes (8, 10, 12, 14, and 18).

The Language box in this dialog box relates to the Multilingual Option to BBN/Slate. For basic BBN/Slate, there is only one language, English, configured with the system. See *Multilingual Documents* for more information on language features.

Find Object
Use this menu to find an element of a specified type. Its options are shown in the following submenu.

```
Document   Editor   Keycaps
Set Language/Font...
Find Ob  Find Media Type...
Check    Find Again
```
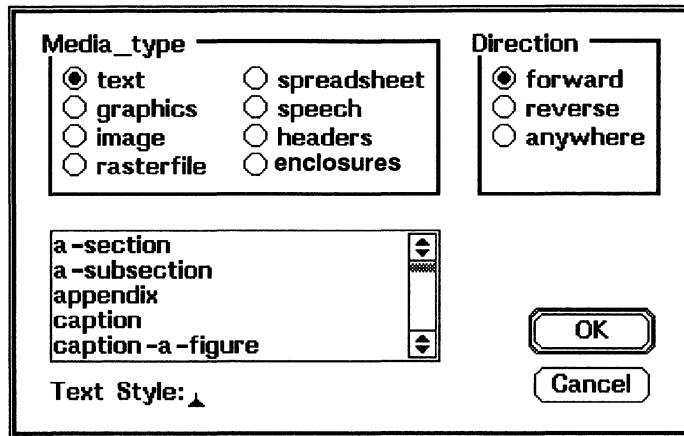
Figure 4-18   *Media Type Dialog Box*

Find Media   The dialog box in Figure 4-18 appears in response
Type   to this command.

                   Use this dialog box to select the media type you
                   want to find, and (optionally) the direction in the
                   document you want to search. After specifying
                   your media search criteria, **LEFT click** on **OK**.

Find Again   After specifying a media type, you can use this
                   command to locate additional occurrences of the
                   chosen element type.

                   The default subcommand for the **Find Object**
                   command is **Find Again**.

Check Spelling   Use this menu item to check the entire document or the selected
                       region for spelling errors. The spelling checker examines the text
                       in all text elements as well as the subject field of headers, text
                       features in graphics elements, labels in spreadsheets, and the
                       caption in speech elements. When you give the **Check Spelling**
                       command, the dialog box shown in Figure 4-19 appears.

```
┌──────────────────────────────────────────────────────┐
│ Spelling Checker                                       │
│ ┌──────────────────────────────────────────────────┐ │
│ │                                                    │ │
│ │    ( Start )      ( Done )        ( Close )        │ │
│ │                                                    │ │
│ │         ┌─ Region to Check ──────────┐            │ │
│ │         │ ◉ Whole Document           │            │ │
│ │         │ ○ Selected Region          │            │ │
│ │         │ ○ To End of Document       │            │ │
│ │         └────────────────────────────┘            │ │
│ │                                                    │ │
│ └──────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────┘
```
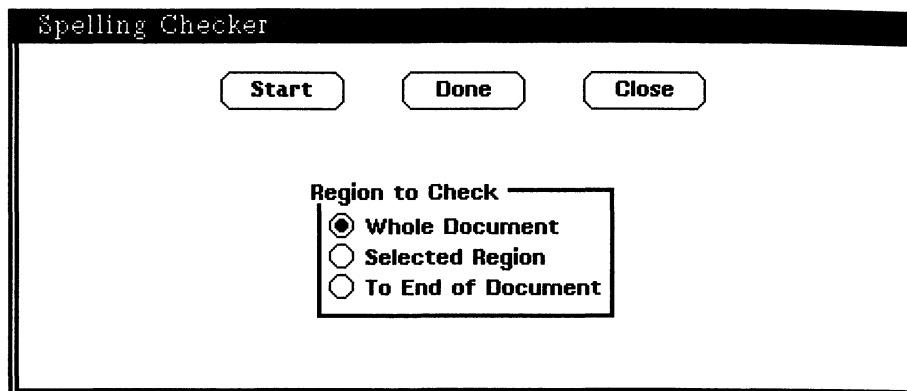
Figure 4-19   *Initial Spelling Checker Dialog Box*

The spelling checker accesses two different dictionaries:

1. A system-wide dictionary available to all users.

2. A user-specific spelling dictionary ($HOME/.slate_words).
    You can add words to this dictionary as part of the spelling
    checker operation.

When you push the **Start** button, BBN/Slate scans the selected
portion of your document. When it finds a word that is not in one
of the two dictionaries, a dialog box similar to that in Figure 4-20
appears.
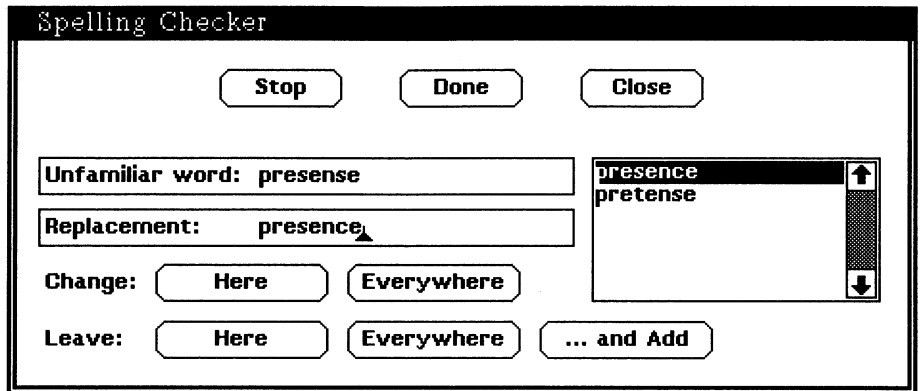
Figure 4-20   *Mispelled Word Dialog Box*

BBN/Slate will often propose a replacement word. You can either change the word or leave the "Unfamiliar word" in the document. You can also add the word to your personal dictionary by using **LEFT click** on the **...and Add** button.

4.4.11   Editor Menu
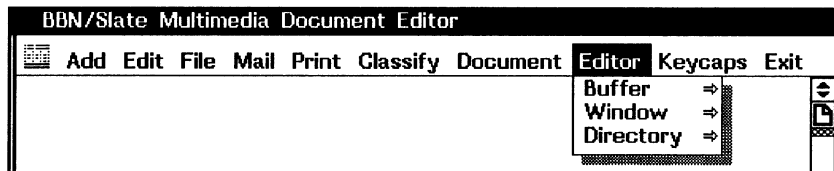
The **Editor** commands control various aspects of the Document Editor's operation, including the editing environment, current directory, current document, and editor window.

Buffer   Use this menu item to manage the buffers that hold documents in the editor. Operations available within this command are shown in the following submenu.

```
┌────────────────────────────────┐
│ ████████████                   │
│ ┌──────────────────────────┐   │
│ │ Editor  Keycaps  Exit    │   │
│ │ Buffer   │ Switch To  ⇒  │   │
│ │ Window   │ Delete     ⇒  │   │
│ │ Directory│ List          │   │
│ └──────────────────────────┘   │
└────────────────────────────────┘
```
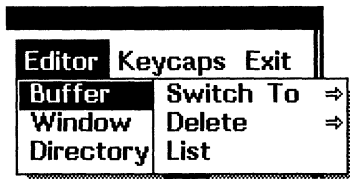
Switch To Change the buffer displayed in the current pane. The name specified can either be the name of an existing buffer (see the **List Buffers** command description that follows) or a name for a new empty buffer. The submenu to this command displays a menu of the available buffers. You can also get this menu by holding the **RIGHT hold** in the buffer status bar.

Delete Delete the specified buffer. If the buffer is modified, you will be asked if you really want to delete the buffer.

List Display a list of the buffers being maintained by the editor. The list includes the buffer's name, the associated file's name, if any, the buffer's size, and whether or not the buffer was modified since it was last written (indicated by the ("M") notation preceding the buffer name).

Window Subdivide, delete, or make the current pane occupy the entire display. The current pane is the pane containing the pointer when you invoke this command. The operations available within this command are shown in the following submenu.

```
┌────────────────────────────────┐
│ █████████████                  │
│ ┌──────────────────────────┐   │
│ │ Editor  Keycaps  Exit    │   │
│ │ Buffer    ⇒       [⬍]    │   │
│ │ Window    │ Split Across   │ │
│ │ Directory │ Split Down     │ │
│ └───────────│ Zoom           │ │
│             │ Delete         │ │
│             └────────────────┘ │
└────────────────────────────────┘
```
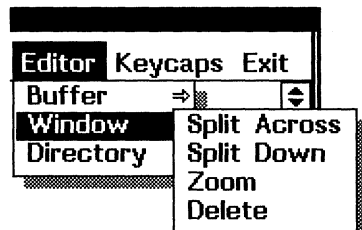
Split Across   Split the pane horizontally. The split is made halfway down the current pane. You can change the height of the new panes by using **LEFT drag** while pointing the mouse to its buffer status line.

Split Down   Split the pane vertically. The split is made halfway across the current pane.

Zoom   Make the current pane occupy the entire window.

Delete   Delete the current pane. Note that this does *not* delete the buffer being edited in that pane, it simply removes the pane from the display.

Directory   View or change the Document Editor's working directory. The options within this command are shown in the following submenu.
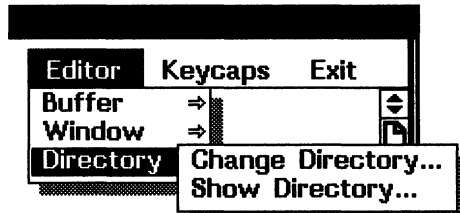
Change Directory   Change the current directory. File names are always relative to the current directory.

Show Directory   Display the editor's current directory.

4.4.12   Keycaps Menu

```
Editor  Keycaps  Exit
        Keycaps    ⇕
```
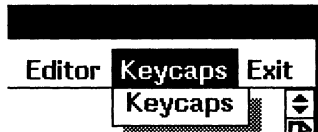
Keycaps

The **Keycaps** menu consists of one item, **Keycaps**. Use this item to display the keyboard for the language you are currently using, whether it is English or any of the languages installed as part of the BBN/Slate Multilingual Option. For information on how to use this feature, see the *Multilingual Documents* manual.

4.4.13   Exit Menu

```
Keycaps  Exit
         Exit   ⇕
```
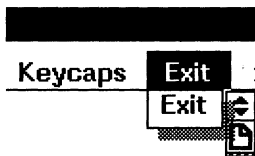
Exit

Exit the Document Editor. If you have modified any buffers, the dialog box shown in Figure 4-21 appears. The dialog gives you three choices: you can save your editing changes by writing the modified buffers into their respective documents; you can discard the modified buffers, along with all your edits; or you can cancel the **Exit** command and remain in the Document Edit.

```
┌──────────────────────────────────────────┐
│  Write out modified buffers before exiting? │
│     ( Yes )   ( No )   ( Cancel )          │
└──────────────────────────────────────────┘
```
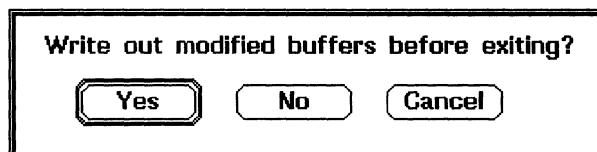
Figure 4-21   *Exiting the Document Editor Box*

4.4.14   **BBN Menu**

```
┌─────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor     │
├─────────────────────────────────────────┤
│ ▓▓  Add    Edit   File   Mail   Print    │
│ ┌──────────────────────┐                 │
│ │ About BBN/Slate...    │                 │
│ │ Help              ⇒   │                 │
│ │ Set Variable          │                 │
│ │ Invoke Function       │                 │
│ │ Load SEL Commands     │                 │
│ └──────────────────────┘                 │
```
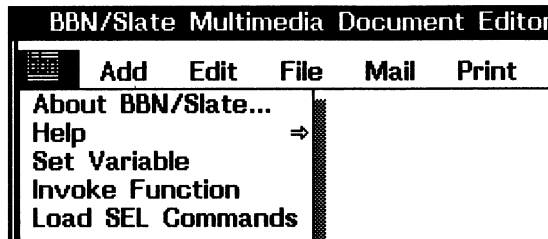
The BBN menu contains five items described here.

About   When you select **About BBN/Slate**, a dialog box describes the
BBN/Slate   current BBN/Slate release (Figure 4-22). To close the dialog box,
                     LEFT click on **OK**.

```
┌──────────────────────────────────────────────────────────────┐
│                                                                │
│                         BBN/Slate (Release 1.1)                │
│                            Copyright 1990                      │
│                                                                │
│                      Built: Wed May 2 17:21:31 EDT 1990        │
│       ┌──────────┐                                             │
│       │BBN Slate │        Running on: mica                     │
│       │ Editor   │                                             │
│       │ ▦▦▦  ▧   │                                             │
│       │ ◀▨   ▨x  │                                             │
│       └──────────┘                                             │
│                                                                │
│                                    ┌─────────┐                 │
│                                    │   OK    │                 │
│                                    └─────────┘                 │
└──────────────────────────────────────────────────────────────┘
```
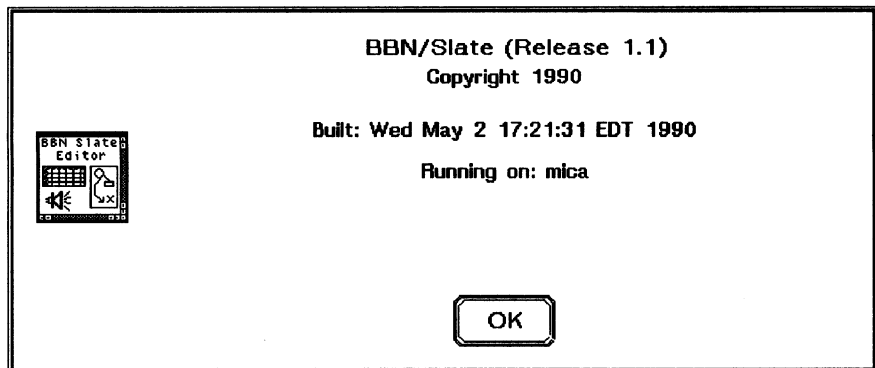
Figure 4-22   *Using the About BBN/Slate Option*

Help   The five items in this submenu are shown and described below:
                     Apropos, Describe Functions, Describe Variable, Describe Key
                     Binding, and List Current Key Bindings.

```
┌─────────────────────────────────────────────────┐
│  BBN/Slate  Multimedia  Document  Editor         │
├─────────────────────────────────────────────────┤
│ ▓▓  Add    Edit    File    Mail    Print         │
├──────────────────────┬──────────────────────────┤
│ About BBN/Slate...  ▓│                           │
│ Help          Apropos                            │
│ Set Variab│ Describe Function                    │
│ Invoke Fur│ Describe Variable                    │
│ Load SEL (│ Describe Key Binding                 │
│            List Current Key Bindings             │
└──────────────────────────────────────────────────┘
```
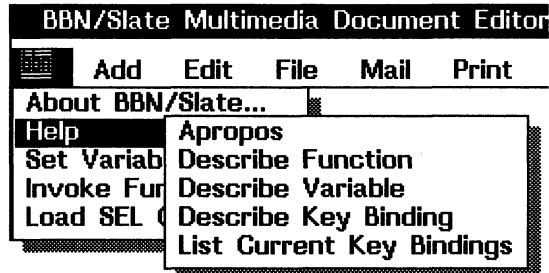
Apropos

When you select **Apropos,** a dialog box prompts you for a keyword (Figure 4-23). You can enter any word that is part of a BBN/Slate function and search for relevant help. For instance, if you enter the word **set,** you see every BBN/Slate function with the word **set** in its name. You can then select a specific function and get help on the function.

```
┌─────────────────────────────────────────────────┐
│                                                   │
│                                                   │
│                                                   │
│   ┌─────────────────────────────────────────────┐│
│   │ Apropos: ▸                                   ││
│   └─────────────────────────────────────────────┘│
│                          ╭──────╮    ╭────────╮   │
│                          │  OK  │    │ Cancel │   │
│                          ╰──────╯    ╰────────╯   │
│                                                   │
└─────────────────────────────────────────────────┘
```
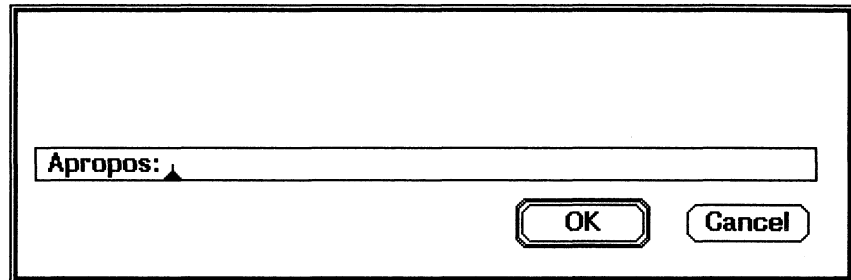
Figure 4-23   *Apropos Dialog Box*

Describe
Function

Select this item to get information on any function. When you select this option, a dialog box displays a list of functions, from which you can select one (Figure 4-24). You can also get information on a function by entering its name in the box provided.

```
┌─────────────────────────────────────────────────────────┐
│  Function name:                                         │
│  ┌──────────────────────────────────┬─┐  ┌──────────┐  │
│  │about-slate                       │▲│  │    OK    │  │
│  │add-blank-image                   │ │  └──────────┘  │
│  │add-enclosure                     │ │  ┌──────────┐  │
│  │add-graphics                      │ │  │  Cancel  │  │
│  │add-header                        │ │  └──────────┘  │
│  │add-image-from-file               │▼│                │
│  └──────────────────────────────────┴─┘                │
│  ┌──────────────────────────────────────┐              │
│  │▲                                      │              │
│  └──────────────────────────────────────┘              │
└─────────────────────────────────────────────────────────┘
```
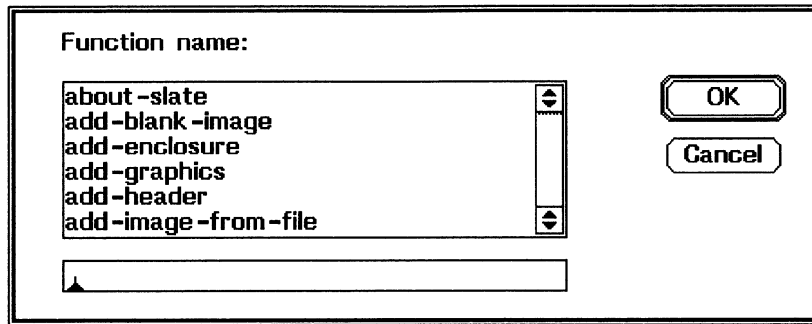
Figure 4-24   *Describe Function Dialog Box*

Describe   Select this item when you want to find out about
Variable   a particular preference variable. A dialog box
                      then displays a list of preference variables from
                      which you can select (Figure 4-25). You can also
                      enter the name of the variable you want to learn
                      about in the box provided.

```
┌─────────────────────────────────────────────────────────┐
│  Variable name:                                         │
│  ┌──────────────────────────────────┬─┐  ┌──────────┐  │
│  │SLATE_DIR                         │▲│  │    OK    │  │
│  │audio-input                       │ │  └──────────┘  │
│  │audio-output                      │ │  ┌──────────┐  │
│  │audio-playback-level              │ │  │  Cancel  │  │
│  │audio-record-level                │ │  └──────────┘  │
│  │auto-backup                       │▼│                │
│  └──────────────────────────────────┴─┘                │
│  ┌──────────────────────────────────────┐              │
│  │▲                                      │              │
│  └──────────────────────────────────────┘              │
└─────────────────────────────────────────────────────────┘
```
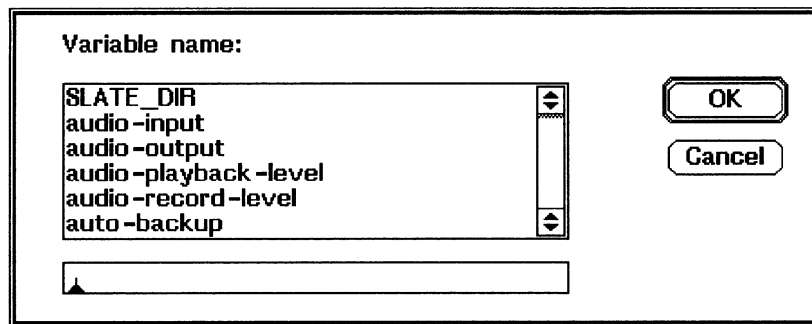
Figure 4-25   *Describe Variable Dialog Box*

Describe Key Binding	To find out about a key binding, select this item and strike the key or combination of keys that you want information about. A dialog box explains the binding for that key or combination.
List Current Key Bindings	Select this item to display a list of key bindings. A list of all the current bindings appear in a new pane in the current Document Editor window. When you are finished with the list, you can delete it just as you delete any buffer.

Set Variable   Select this item to set user preference variables, such as your default document template or the checkpoint frequency for the current editing session. When you select this item, a dialog box displays a list of variables (Figure 4-26). To select a variable to set, **LEFT double-click** on its name or type its name in the box provided. BBN/Slate then displays a second dialog box, which prompts you for the new value of the variable. For more information on preference variables, see the *Customizing Manual*.

Variable name:

    SLATE_DIR
    audio-input
    audio-output
    audio-playback-level
    audio-record-level
    auto-backup

    OK
    Cancel
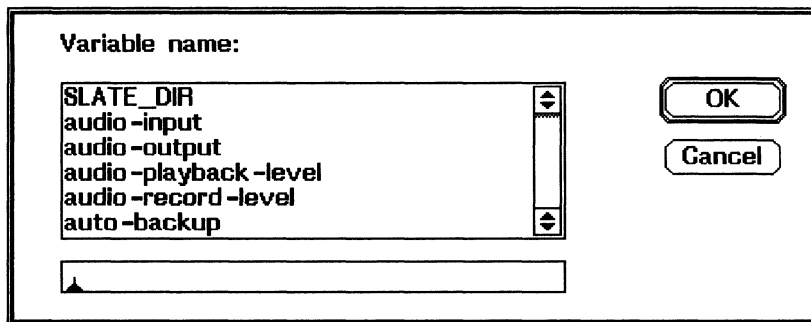
Figure 4-26   *Set Variable Dialog Box*

Invoke Function   Select this item to start any BBN/Slate function, such as **Add-Graphics** or **Reply-to-Message**. A dialog box lets you choose which function to invoke (Figure 4-27). For more information on preference variables, see the *Customizing Manual*.

```
┌─────────────────────────────────────────────────────────────┐
│  Function to execute:                                        │
│  ┌──────────────────────────────────┬─┐    ┌────────────┐    │
│  │about-slate                      │◆│    │    OK      │    │
│  │add-audio                        │ │    └────────────┘    │
│  │add-blank-image                  │ │    ┌────────────┐    │
│  │add-enclosure                    │ │    │  Cancel    │    │
│  │add-graphics                     │ │    └────────────┘    │
│  │add-header                       │◆│                      │
│  └──────────────────────────────────┴─┘                      │
│  ┌───────────────────────────────────────────────────────┐  │
│  │▲                                                       │  │
│  └───────────────────────────────────────────────────────┘  │
└─────────────────────────────────────────────────────────────┘
```
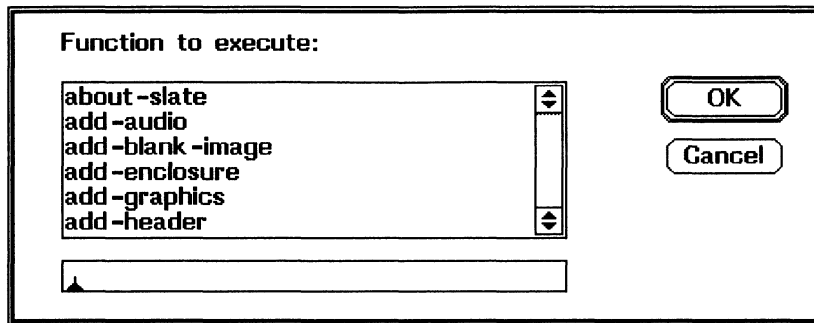
Figure 4-27   *Invoke Function Dialog Box*

**Load SEL
Commands**

You can load Slate Extension Language (SEL) commands into an
executable function by selecting this item. When you select this
item, a dialog box prompts you for the name of a file containing
the commands you want to load. After loading SEL commands
into a file, you can use the file just like any other BBN/Slate
function.

For example, suppose you have created a file called temp that
defines some new functions in SEL and you want to be able to
execute these functions just like other BBN/Slate functions. You
enter the name into the **Load SEL Commands** dialog box, **LEFT
click** on **OK**, and those functions are available for you to use. To
invoke the function, you select the **Invoke Function** item under
the BBN menu and choose the function or bind the SEL functions
to keys or menus.

4.5   Mouse Usage

The interpretation of the mouse buttons is determined, in part, by
the pointer's location when you click a button. The pointer is

inside an element if it is inside the element's outline (which appears for all element types, except text). The pointer is considered *inside* a text element if it is inside a text portion, or, if the pointer is not inside any other BBN/Slate element.

In general, pressing or holding *any* mouse button while the pointer is inside an element causes that element to be selected for editing. A selected element other than text is indicated by an outline drawn around the element with triangular and rectangular handles on the outline's corners and sides; a selected text element is indicated by a cursor placed at the current position in the text. Once the element is selected, the mouse button is interpreted by the appropriate media editor.

If the pointer is *not* within any element, the mouse buttons behave according to the following rules.

LEFT click   A text element in the document is selected for editing.

LEFT drag   If the pointer is inside a *handle* on an outlined element, the outline's corner or edge is dragged to the point at which the mouse is released, reshaping the viewport (see Section 4.2.2) on the element. A *handle* is a triangular or rectangular shape on the side or corner of an outline.

If the pointer is on the outline of an element, but not within a handle on the outline, the element is moved to the point at which the mouse button is released. You can only move elements horizontally, and only within the document margins.

MIDDLE click   Any selected elements are deselected.

MIDDLE hold   Has no effect when the pointer is not within an element.

RIGHT click   Has no effect when the pointer is not within an element.

RIGHT hold	If the pointer is positioned in the display area but outside any element, the top-level menu appears. If the pointer is in a pane's buffer description line or "mode line", a menu of buffers appears and you can select the buffer to be displayed in that pane.

In addition, you use the **control** key in conjunction with the various mouse buttons to perform editor-level commands *regardless of the pointer's position*. The two editor-level operations you can invoke this way are as follow.

control LEFT drag	If the pointer is inside a non-text element, that element is moved to the point at which the mouse button is released. The restrictions noted in the description of **LEFT drag** apply here as well.

control RIGHT hold	The **Editor** menu appears, providing access to editor-level commands even when an element is selected for editing.

4.6   Keyboard Commands

Although the system of menus, mouse buttons, and mouse pointer positioning is useful for many beginning users and for many editor-level activities, some operations on documents are much more convenient when performed from the keyboard. There are many keyboard equivalents for editor-level menu operations. Thus, you do not always need to use the mouse or pop-up menus when working on BBN/Slate documents.

Table 4-2 lists all editor-level menu commands, their equivalent default key commands, and the underlying functions that are invoked by the commands. In general there is a key command for every operation in BBN/Slate. If you want to add or change keyboard equivalents, the *Customizing Manual* describes how to bind keys to functions.

Table 4-2   *Editor-level Keyboard Commands*

```
^X^A          add-object
^X^B          change-to-buffer
^XB           change-to-buffer
ESC-W         copy
ALT-w         copy
^W            cut
ESC-[196z     deiconify
^XK           delete-current-buffer
^Xk           delete-current-buffer
^XD           delete-current-pane
^Xd           delete-current-pane
^X1           delete-other-panes
^X^D          describe-key
^X^L          display-buffer-status
ESC-P         display-print-dialog
ESC-p         display-print-dialog
ALT-p         display-print-dialog
ESC-X         execute-command-dialog
ESC-x         execute-command-dialog
ALT-x         execute-command-dialog
^C            exit
^U            gather-repeat-count
ESC-[198z     iconify
^X^I          insert-document-dialog
^X^T          insert-text-file-dialog
^X)           keymacro-done-remembering
^XX           keymacro-playback
^Xx           keymacro-playback
^X(           keymacro-start-remembering
```

(continued)

Keystroke	Function
^X^M	mail-send
^XN	next-pane
^Xn	next-pane
^V	page-down
ESC-V	page-up
ESC-v	page-up
ALT-v	page-up
^Y	paste
^XP	previous-pane
^Xp	previous-pane
^L	redisplay
^X^R	replace-buffer-contents
^X^S	save-current-buffer
^Z	scroll-down
ESC-Z	scroll-up
ESC-z	scroll-up
ALT-z	scroll-up
^X2	split-pane-across
^Xa	text-select-add
^X^F	visit-document-dialog
^X^V	visit-document-dialog
^X^W	write-current-buffer

5   Text

In formal documents, people express ideas primarily through the use of text. People use two aspects of text to convey ideas: *words* and *structure*. In writing you not only use various words to convey different ideas, but you may also want to emphasize certain words, by a variety of typographic means (e.g., underlining, **bold face**, *italics*, etc).

The structure of your document gives your reader important clues to the organization of your ideas. For example, when you see a bold section heading, you can decide whether or not to read that section.

BBN/Slate supports both of these aspects of text as well as many other features needed to produce complex documents. The BBN/Slate Document Editor lets you select the text style you want at any point (i.e., you choose traditional paragraphs of prose text, lists of points, headings, captions, and tables). As you type, the Document Editor presents the text formatted in the style you have selected. Text acts as the fabric of the document -- all other media types are embedded within text.

Text appears in the document when you begin typing in the Document Editor window. You can change the text in a document using graphical techniques, such as pointing with the cursor to select portions of the text and then choosing editing commands from pop-up menus. You can also type commands directly using the keyboard equivalents of menu commands.

This chapter describes how to format your document in the following ways:

- selecting specific portions of the text to change (Section 5.1)
- changing the fonts within the text (Section 5.2)
- controlling the style of the text fonts, margins, and spacing (Section 5.3)
- setting up lists, figures, and tables (Section 5.4)
- using **Text** menu commands (Section 5.5)
- using mouse and keyboard commands (Sections 5.6 and 5.7)

5.1 Selecting Regions of Text

BBN/Slate uses a special triangular symbol, called the *cursor*, to designate the point where new text will be inserted when you are typing. The cursor looks like this:

▲

The cursor position is sometimes known as the *insertion point*. You can move the cursor around the document either with the mouse and mouse buttons, or with function keys and control characters you enter from the keyboard (see Chapter 2 and Table 5-1). **LEFT click** at a spot in a document to move the cursor to that spot.

Another position in text is the *mark*. You can set the mark either by either typing **^@** or **^spacebar**. The mark is set wherever the cursor is. To clear the mark, **MIDDLE click** or type **ESC-@**. The mark also clears automatically whenever you modify any text.

You can use the cursor and the mark to designate a region of text called a *selected region*. If you set the mark and then move the cursor, all the text between the mark and the cursor becomes a selected region. A selected region is highlighted, as shown below:

The selected region is highlighted

You can also select a region without explicitly setting a mark, using only the mouse. To do this, **LEFT hold** at one end of the region you want to select, **LEFT drag** to the other end of the region, and **release** the mouse button. The text between the points where you held and released the button is selected.

If you choose not to use the mouse, you can select a region using only keystrokes. First set the mark. Then move the cursor in the text using arrow keys and standard cursor movement commands (see Chapter 2) until you have selected the desired region.

5.2   Changing Fonts

There are several ways to change the font used to display a sequence of characters. In general, characters in a BBN/Slate document appear in the same font as the characters that immediately precede the cursor. The command you use to change the font depends on the effect you want. The following list details your choices.

1. **Change the font of new characters (i.e., the next character you type).** Use the commands found on the **Text-Fonts** menu, or one of these keyboard commands:

^Xf	Choose font family
^Xr	Normal font
^Xb	Bold font
^Xi	Italic font
^Xs	Smaller font
^Xl	Larger font

2. **Change the font of a text region.** Select the region you want to change and then use the **Text-Fonts** commands or one of the above keyboard commands.

3. **Change the font of a single text element** (e.g., one paragraph). Put the cursor in the text element and then select the **Text-Styles-Local Change** command, or use the keyboard command ^Xe. A dialog box appears (Figure 5-1) in which you specify the desired formatting changes.

4. **Change the font of all text formatted according to a named style** (e.g., change all paragraphs). Use the **Text-Styles-Global Change** submenu to select the style you want to change, or use the keyboard command ^X^E. A dialog box appears (Figure 5-1) in which you specify the desired formatting changes.

5. **Change the font of the entire document.** Use the **Document-Set Language/Font** command from the Document Editor menu bar.

Each of these facilities has an intended use. Use the command that is appropriate to the effect you are trying to achieve. For example, it is possible to select the entire document and then invoke the **Text-Styles-Local Change** command, effectively "locally" changing each paragraph. However, if you then add a new paragraph, it is not displayed in the modified style. The proper way to change all the paragraphs is to perform a global change to the paragraph style using the **Text-Styles-Global Change** command; if you then add a new paragraph, it is displayed in the modified style.

5.3 Formatting Styles

You format each text element in BBN/Slate according to a named *formatting style*. A formatting style specifies how the text should be formatted; it controls the font, margins, line spacing, justi-

fication (left, right, centered), filling, page break control, and tab stops. Formatting styles make it easy to change the format of a single paragraph or to change the format of every paragraph in the document in a single operation.

The Document Editor has a set of predefined formatting styles. You can also define your own custom-made formatting styles and gather them together into a document template to create new documents using those styles.

There are several terms used in describing formatting styles. A *simple* formatting style describes how to format a text element. A *compound* formatting style includes two simple formatting styles and describes how to display a labeled list of points. For example, an **enumeration** is a compound style; it describes how to format both the numeric labels of the enumerated blocks of text and the contents of the enumerated blocks of text.

Each formatting style, whether simple or complex, consists of a list of *attributes* that determine how text with that style appears. Attributes specify the font, margins, line spacing, and justification, as well as other characteristics (see Figure 5-1). You can define a style by completely specifying all the required attributes or by using another style as a *base* and only describing the differences between the style you are defining and the base style. For example, **center** is based on **verbatim**, but the justification is changed from left-justified to centered. A new style is always defined with a previously defined style as the base. For example, you could define a style **title**, which is like **center** except that the font used to display the text is two points larger. A style *inherits* attributes of the style on which it is based.

There are two advantages to basing styles on one another. First, because most styles are very similar, the amount of information which must be specified for any one style is small once a few basic styles have been developed. The second advantage is less obvious at first, but becomes valuable when editing a document.

When the value of an attribute changes in a basic style, it also changes in all styles that inherit that attribute. For example, in the set of default styles distributed with BBN/Slate, all styles are ultimately based on **verbatim,** which is not itself based on anything. To convert the entire document from single to double spacing, you need only change the line spacing attribute of the **verbatim** style; all other styles inherit this attribute and change automatically.

While editing text, you create a new block (and thus a new instance of a formatting style) either by pressing **Return** or **Linefeed** (**^J**) or by using the **Text-Add** menu. When you press **Return** or **Linefeed**, the formatting style of the new block is the same as that of the previous block. When you use the **Text-Add** menu, you select the style from a submenu.

5.3.1 Style Definitions

The predefined formatting styles are descibed in this section.

caption-figure   A caption for a figure that appears above or below a figure. The figure can be any media type supported by BBN/Slate. You should make sure that the **Keep with Next** attribute (use the **Text-Styles-Local Change** command for text, **Edit-Change Attributes** command for other media types) is set for the figure so that the figure and its caption appear on the same page. After adding a figure caption to a document, you can define a label for the figure number by using the **Text-Counters-Label** command. You can refer to the figure caption number (or the page on which it resides) with the **Text-Counters-Refer** command. Another related style is **caption-table** style. The base style is **noindent**.

caption-table   A caption for a table that appears above or below the table. The table can be any media type supported by BBN/Slate, although the text **table** style and the spreadsheet media type are good ways to make tables. You should make sure that the **Keep with Next**

attribute (use the **Text-Styles-Local Change** command for text, **Edit-Change Attributes** command for other media types) is set for the table so that the figure and its caption appear on the same page. After adding a table caption to a document you can define a label for the caption number by using the **Text-Counters-Label** command. You can refer to the table number (or the page on which it resides) with the **Text-Counters-Refer** command. Another related style is **caption-figure** style. The base style is **noindent**.

center
Similar to **verbatim** except that the characters are centered between the left and right margins. This is useful for headings, although the **title** and **subtitle** styles are specialized for this purpose. Other related formatting styles include **caption-figure** and **caption-table**, which are centered captions for figures and tables.

chapter
A chapter heading in a document. After adding a chapter to a document you can define a label for the chapter number by using the **Text-Counters-Label** command. You can refer to the chapter number (or the page on which it resides) with the **Text-Counters-Refer** command. Other related styles include **section** and **subsection**. In addition, the **caption-figure** and **caption-table** styles recognize the number of the chapter in which they are contained. The base style is **paragraph**.

description
A format for listing a set of terms and describing those terms in an unindented text element. You can modify both the label and the contents describing that label. The term *tag* appears as a placeholder for the label to be described. Related styles include the **itemization** and **enumeration** styles for formatting bulleted or numbered lists of points.

enumeration
An enumerated list of points that have numeric, alphabetic, or Roman numeric labels, depending on the nesting. Related styles include the **itemization** style for formatting bulleted lists of points and the **description** style for formatting lists of terms and their corresponding descriptions.

example
A format for giving computer output example in a fixed-width font. This format is indented at the left margin to distinguish the example from the surrounding text. The base style is **noindent**.

itemization
A bulleted list of points. Related styles include the **enumeration** style for formatting numbered lists of points and the **description** style for formatting lists of terms and their corresponding descriptions.

itemtag
The basic format for labels in lists. Depending on the list style and embedding used, the contents are an enumerated value (1,2,3... or a,b,c,...) or a mark value (o,+,-,*).

noindent
A format for continuations of paragraphs with embedded figures as well as for the numbered, marked, or named elements within a list. A related style is the **paragraph** style.

paragraph
A simple paragraph format with initial indentation. Another useful style for continuing paragraphs that have embedded figures is the **noindent** style.

right
Right-adjusted **verbatim** text. This style can be used, for example, to format the topmost date line of a letter.

section
A section heading in a document. A section should be preceded by a chapter heading. After adding a section to a document you can define a label for the section number by using the **Text-Counters-Label** command. References to the section number (or the page on which it resides) can be made by using the **Text-Counters-Refer** command. Other related styles include **chapter** and **subsection**. The base style is **paragraph**.

subsection
A subsection heading in a document. A subsection should be preceded by a section heading. After adding a subsection to a document, you can define a label for the subsection number by

using the **Text-Counters-Label** command. You can refer to the subsection number (or the page on which it resides) with the **Text-Counters-Refer** command. Other related styles include **chapter** and **section**. The base style is **paragraph**.

subtitle   A centered, line-wrapped line set in a medium-size bold font. This style is used for subtitles of papers or reports. Related styles include **title** as well as **center**. The base style is **title**.

table   A table of text separated by tabs. This style is set up to support six 1-inch columns indented 1/2 inch from the left edge. Entries in the table should be separated by tabs. If you want other table layouts, you should modify this style. A related style is the **caption-table** command, which can be used to number this table. The base style is **verbatim**.

title   A centered, line-wrapped line set in a large bold font. This style is used for titles of papers or reports. Related styles include **subtitle** and **center**. The base style is **center**.

toc-body1   The format for the first-level listing in a table of contents. This style is used by the automatic table of contents generation facility of BBN/Slate and is not normally used explicitly by document authors. Related styles include **toc-title** and **toc-body2**.

toc-body2   The format for the second-level listing in a table of contents. This style is used by the automatic table of contents generation facility of BBN/Slate and is not normally used explicitly by document authors. Related styles include **toc-title** and **toc-body1**.

toc-title   The format for the initial title line of a table of contents. This style is used by the automatic table of contents generation facility of BBN/Slate and is not normally used explicitly by document authors. Related styles are the **toc-body1** and **toc-body2** styles.

usertag   A bold itemtag for the labels on a description list. A related style is the **itemtag** style used for the labels of enumerations and itemizations.

verbatim   An unformatted sequence of characters laid out as they were entered by you. You can enter carriage returns, spaces, and tabs to achieve any formatting desired. However, you should use this only in cases when you want to control your own formatting of text. Other styles to consider instead of **verbatim** include **paragraph** for indented paragraphs, **noindent** for unindented paragraphs (or continuations of paragraphs with embedded figures), **example** for illustrations of computer interactions (fixed-width font, indented from left edge), and **table** for tabular data using tabs to separate columns.

The **verbatim** style is the basic formatting style in BBN/Slate; all other styles are ultimately built on it. Therefore, to make a change that applies to *all* of the styles in a document, make the change to the verbatim style.

5.3.2   Formatting Attributes for Simple Styles

Figure 5-1 shows the attributes you can specify in simple formatting styles.

Attributes are either text, choices from a list of alternatives, or distance measurements. You can specify distances in any of the following units:

l   Lines in the style's default font (e.g., 2l)

i   Inches (e.g., 1.75i)

c   Centimeters (e.g., 15.3c)

s	Spaces in the style's default font (e.g., 5s)
p	Points (1/72 inch) (e.g., 15p)

```
Name: section                          Based on: section

Help: a section

Font
  Family ↻ helvetica      ☑ Word wrap   ☐ Width derived
  Face   ↻ Bold           ☐ Keep        ☑ Keep with Next
  Size   ↻ 14 pt          Page break ↻ None
  ☐ Underlined            Orphan: 1        Widow: 1

            1 inch    2       3       4       5       6       7
  ▶|▕▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔|◀
    t  ʇ  t  .t ..t  ⌐

  Left Margin:  0i        Indent:    0i      White Above: 0.35i
  Right Margin: 0i        Linewidth: 0i      White below: 0.25i

  Spacing                 Justification
  ▭ = = ▐ 1l ▏            ▤ ▤ ▤ ▤        Language ↻ English
                                         Paragraph Flow: Left-to-Right

  Tab stops: 0.5i

  Content: @counter(section:2)

  Print Values:

  Next Style: (section)

  ( OK )   ( Cancel )
```

Figure 5-1   *Simple Text Formatting Style Dialog Box*

The fields in the dialog box are descibed in the remainder of this section.

Name   The style's name.

Based on   The formatting style on which the style is built. In general, a style inherits the values of the base style's attributes.

Help

The formatting style's prose description. After the style has been defined, **MIDDLE click** over the named style in a menu for more information.

Font

Attributes to control the style's default font. Sub-attributes include:

Font Family

Current choices are: **TimesRoman**, **Helvetica**, and `tv` (fixed–width font).

Font Face

Choices are: Normal, **Bold**, *Italic*, and ***Bold Italic***.

Font Size

Choices are: 8, 10, 12, 14, and 18. (The units for the numbers are related but not exactly equivalent to typographic point sizes; 8 is the smallest and 18 the largest.)

Underline

If checked, text formatted in this style is also underlined.

Word wrap

The editor automatically breaks the sequences of words into lines as you type them.

Width derived

The width of an object (for layout purposes) is normally determined by the line width attribute or the left and right margins. If you choose this feature, the object's width shrinks to include only the contents of the block. This field is normally used for tag items on a list so that by default they appear in the margin, but long tags force the paragraph they are tagging to move down.

Keep

All characters formatted according to this style appear on one page. If they do not fit on a page, the editor starts a new page before formatting characters in this style.

Keep with Next   If you choose this field, the editor ensures that this paragraph is on the same page as some part of the paragraph that follows it. Use this with titles to keep them from occurring alone at the bottom of a page.

Page break   Use this to control where page breaks are placed during printing. Normally it is set to **None** and page breaks occur as needed. If the value is **Either**, then a page break is inserted before the region. **Break to Odd** inserts one or two page breaks before the region, forcing it to the top of an odd-numbered page. **Break to Even,** inserts one or two page breaks before the region, forcing it to the top of an even-numbered page.

Orphan   An orphan is a small number of lines at the end of a paragraph which began on the previous page. This field specifies how many lines define an orphan. When printing, BBN/Slate attempts to avoid orphans by pulling orphan lines back to the page on which the rest of the paragraph resides.

Widow   A widow is a small number of lines at the beginning of a paragraph that is mostly on the next page. (A widow is the opposite of an orphan.) This field specifies how many lines define a widow. When printing, BBN/Slate attempts to avoid widows by pushing widow lines forward to the page on which the rest of the paragraph resides.

Left Margin   The amount of space from the document left margin to the beginning of the lines of text. The default is 0 inches. You can also set this value by using the right-pointing triangle on the ruler.

Right Margin   The amount of space from the document right margin to the end of the lines of text. The default is 0 inches. You can also set this value by using the left-pointing triangle on the ruler.

Indent   The amount of space to indent the first line of a text element. Negative amounts can be specified for a hanging indent. You can also set this value by using the "backward L" on the ruler.

Linewidth	The text block's width. Default units are inches. The width of an object is normally determined by the left and right margins and the overall page width. This formats text correctly when the page width changes (e.g., on the screen versus on the printed page). If this attribute is non-zero, it overrides the right margin and page width. You might use this for a right-justified tag field on an enumeration or description.
White Above	The amount of blank space that must precede the text formatted according to the style. If you do not specify the units, lines are assumed.
White Below	The amount of blank space that must follow the text formatted according to the style. If you do not specify the units, lines are assumed.
Spacing	The amount of vertical space occupied by a line of formatted text; that is, the amount of spacing between lines of text (single spacing, double spacing, etc.). If you are not specific, lines are assumed. The values "1" or "1l" imply single spacing, "2" or "2l" imply double spacing.
Justification	How the text is to be formatted once it is broken into lines. The icons show the four different styles of justification. You can choose lines flush against the left margin, flush against the right margin, centered, or lined up flush against both margins.
Language	With BBN/Slate's Multilingual Option, this field lets you choose the language of the text element. Without the Multilingual Option, the only choice is English.
Paragraph Flow	With BBN/Slate's Multilingual Option, this field lets you choose the direction of text flow. Without the Multilingual Option, the only choice is left-to-right.

Tab Stops

There are two types of tab stops:

Ruler specified explicit tabs

These are explicit tab positions placed on the ruler by picking up the indicated tab with **LEFT hold** and placing it on the ruler at the proper position. The types of tab stops are shown in Figure 5-2.

Repeating tab stops ("Tab Stops")

This is the default interval for placing tabs. Left-justified tabs appear after all tabs placed explicitly on the ruler are exhausted.
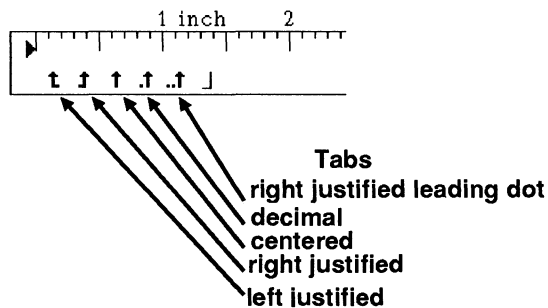
Figure 5-2   *Ruler Specified Tab Stops*

Content

This is text that is automatically inserted into a block of this style when the block is inserted in the document. This is typically used to automatically insert instances of counters when section headings and figure captions are inserted. See Section 5.4.2 for information about captions.

Text of this form is converted into a counter reference:

```
@counter(name:level:style:value)
```

All other text is inserted literally. Octal and C-style escape sequences (e.g., \023 and \t) are interpreted. For example, the content for the caption-figure style is:

```
Figure @counter(figure):
```

Print Values

A comma-separated list of name-value assignments to set during printing for access by the header and footer strings. For example, if:

```
subtitle = Text
```

appears in this field and the footer line in the print dialog is:

```
@1~~@subtitle
```

the bottom of each page is labeled with the page number at the left edge and the word "Text" at the right edge.

Next Style

Specify a formatting style to add when return or line-feed is typed at the end of a block of this type. The default action is to insert another block of the same type.

5.3.3 Formatting Attributes for Compound Styles

Figure 5-3 shows the attributes you can specify in compound formatting styles.

```
┌──────────────────────────────────────────────────────────────────────┐
│  ┌─────────────────────────────────┐ ┌──────────────────────────────┐ │
│  │Name: Itemization                │ │Based on: enumeration         │ │
│  └─────────────────────────────────┘ └──────────────────────────────┘ │
│  ┌────────────────────────────────────────────────────────────────┐   │
│  │Help: ption# style for formatting lists of terms and their corresponding descriptions│ │
│  └────────────────────────────────────────────────────────────────┘   │
│        1 inch    2         3         4         5         6         7    │
│  ┌──────────────────────────────────────────────────────────────┐      │
│  │ ▶                                                          ◀ │      │
│  └──────────────────────────────────────────────────────────────┘      │
│  ┌──────────────────────────────────────────────────────────────┐      │
│  │ Left Margin:  0.5i                    White Above: 1l         │      │
│  │ Right Margin: 0i                      White below: 1l         │      │
│  └──────────────────────────────────────────────────────────────┘      │
│                                                                         │
│  ☐ Keep               Page break ⟳ None                                 │
│  ┌───────────────────────────────────┐                                 │
│  │ Tag label:    o,+,-,*             │                                 │
│  ├───────────────────────────────────┤                                 │
│  │ Label format: itemtag             │                                 │
│  ├───────────────────────────────────┤                                 │
│  │ Text format:  noindent            │                                 │
│  └───────────────────────────────────┘                                 │
│  ┌──────────┐   ┌──────────┐                                           │
│  │   OK     │   │  Cancel  │                                           │
│  └──────────┘   └──────────┘                                           │
└──────────────────────────────────────────────────────────────────────┘
```

Figure 5-3   *Compound Formatting Style Dialog Box*

Compound formats are used to produce labeled lists of points. There are several forms of these lists, including the default **enumeration**, **itemization**, and **description** formatting styles. The fields in the dialog box that are different from the simple dialog box in Figure 5-1 are **Tag label**, **Label format**, and **Text format**, and they are described here.

Tag label

A description of the sequence of values to be used to label successive points in the list. Legitimate values of these enumerators are:

@1   Integers starting at 1.

@A   Uppercase letters starting at A.

@a   Lowercase letters starting at a.

@I   Uppercase Roman numerals starting at I.

@i	Lowercase Roman numerals starting at i.
text	User-provided text. You can type in any text for the tag label.

The style reproduces other characters literally. Specify multiple enumerators by separating values by commas. As you create nested instances of the list, the style uses the next enumerator in the list.

Label format   The style in which to format the label.

Text format   The style in which to format the list's text.

5.3.4   Using and Changing Format Styles

While editing text, you create a new block (and thus a new instance of a formatting style) in two ways:

- typing Return or Linefeed -- makes the new block's formatting style the same as that of the previous block

- using the **Text-Add** menu -- lets you select the style from a submenu

There are various ways to choose the style in which a block of text is formatted. These commands are discussed here.

Styles-Switch Format
This command changes the formatting style that is used to format a block of text. For example, switching a block formatted as **verbatim** to **paragraph**, causes lines to be filled. **Switch Format** works on the currently selected region. If more than one formatting style is used in the region, the command displays a

menu containing all formatting styles in the region for you to select which formatting style to change. If you do not select a region, the command operates on the block that contains the insertion point.

Styles-Global Change
This command changes all instances of text formatted in a particular style. For example, changing the margins of the **verbatim** style changes the margins of the styles based on **verbatim**, which includes most of the predefined styles in the document.

Styles-Local Change
This command changes particular instances of text formatting in a specified style. It operates only on the text in the selected region. If the selected region contains more than one style of text, a menu of the styles within that region is displayed so you can select which style to change.

Styles-Create
Use this command to create a new formatting style. Choose an existing style from the submenu, and create a new style based on the selected style. For example, to create a style named **title**, invoke **Styles-Create** with **center** as the basis for the new style. When the **Styles** dialog box appears (Figure 5-1), adjust the font size and face attributes so that text formatted in the title style is larger and bolder than ordinary centered text. Any new styles you create are added to submenus that the **Add** command and the various **Styles** commands display.

5.4   Text Structure

5.4.1   Lists, Nesting, and Grouping

Beyond the simple level of sequences of formatted blocks, you can group text into formatted, nested lists. The formatting style of a list can take many forms, including:

itemization   A bulleted list of items.

enumeration   A numbered list of items.

description   A list of points, each point labeled by a string specified by the user. This list is a description.

The simplest way to add a numbered list to a document is to use the **Text-Add-enumeration** command. This causes the first point of an enumeration to appear below the text element containing the cursor. Type the text of the point and then press **Return** to start the next point. Thus, it is very easy to generate the following list:

1. This is the first point.
2. This is the second point.
3. This is the third point.

It is also easy to add another point between points 1 and 2, by putting the cursor at the end of point 1 and pressing **Return**. A new point 2 appears, and former points 2 and 3 are renumbered to be points 3 and 4:

1. This is the first point.
2.
3. This is the second point.
4. This is the third point.

Of course, the text of the points in this example now needs to be changed.

The simplest way to terminate a list is to press **Return** twice. If the insertion point is in the last point of a list, and that point has no text (including spaces or tabs), pressing **Return** removes the list tag and returns the cursor to the surrounding context. For example, to create a paragraph followed by three numbered points and another paragraph:

- Select the **Text-Add-paragraph** command and type the initial paragraph.

- Select the **Text-Add-enumeration** command to begin the enumerated list.

- Enter each of the three points, terminating each by pressing **Return**. After the third point, pressing **Return** generates a tag (the number 4) for the fourth point.

- Instead of typing a fourth point, press **Return** again. The number 4 disappears and the insertion point moves out of the list, ready for you to continue typing the paragraph in which the list is embedded. If you want to start a new paragraph, use the **Text-Styles-Switch** command.

(In fact, pressing **Return** when the last point on a list has no text invokes the **Ungroup** command, described below.)

There are several other ways to do each of the operations above. First, if you have a sequence of blocks of text formatted according to some style, you can form them into a list by selecting them all and then invoking the **Lists** command. This command displays a submenu of possible list formatting styles which can be applied to the selected blocks of text. For example, if you have the following sequence of blocks of text:

This is the first point.

This is the second point.

This is the third point.

If you then highlight (or select) the three lines and choose the **Lists-itemization** command, the list will look like this:

o This is the first point.

o This is the second point.

o This is the third point.

Characters are still formatted in the style of the paragraphs in the list, so you may need to use the **Styles-Switch Format** command to produce the correct appearance. For example, the points in an **enumeration** are formatted according to the **noindent** style, whereas normal prose is formatted according to the **paragraph** style.

Sometimes the contents of a point in a list consist of several blocks of text, each formatted differently. The **Group** and **Ungroup** commands combine items with different formats. Each paragraph is normally a separate item in the list. For example:

1. This is the first point.

2. A paragraph to explain the first point.

3. This is the second point.

4. This is the third point.

The second paragraph above should be grouped with the first one, so select the first two paragraphs and invoke **Group:**

1. This is the first point.

    A paragraph to explain the first point.

2. This is the second point.

3. This is the third point.

The **Ungroup** operation reverses the effect of grouping. Notice that **Group** and **Ungroup** can be used to combine several paragraphs into one item in a list as well as to include or remove elements from a list entirely.

Finally, it is possible to nest a list within a point of another list by using the **Add...** command and choosing one of the list formatting styles to add. For example, if you have the enumeration shown above and want to add a description under the second point, invoke the **Add-Description** command while the cursor is in the contents of the second point, and then add the points of the description. The result is:

1. This is the first point.
2. This is the second point.

    Alpha   The description of point Alpha.

    Beta   The description of point Beta.

    Gamma   The description of point Gamma.

3. This is the third point.

5.4.2   Counters

Simple Counters

Counters are used to generate numbers in text. Some examples of uses of numbers in text that can be generated by counters are section numbers, figure numbers, equations, points in a list.

The number 5.4.2 in the section title above is an example of a counter. In particular, it is an example of a counter named **section**, which is specifically defined in this document. Look at the counter definition for section counters, using the **Text-Counters-Define New** command, to see how this counter is defined (Figure 5-4).

Counters are used to automatically number sections, figures,
tables or any other numbered sequence.

Select from one of the existing counters to change its style,
or type a new counter name and define its counting style.

Counter Name: **Existing Counters:**

section

figure
table
section
a-figure

Level Styles

Level 1: @1

Level 2: @counter(section:1:noincr).@1

Level 3: @counter(section:2:noincr).@1

Level 4: @counter(section:3:noincr).@1

Level 5: @counter(section:4:noincr).@1

Level 6: @counter(section:5:noincr).@1

Depends On: **Counters:**

Level ⟳ 1

figure
table
section
a-figure

(OK)   (Cancel)

Figure 5-4   *Counter Definition for a Section Counter Dialog Box*

Notice that the counter has 6 levels defined. Each level looks a
little like the definition for a list numbering style. In level 1, the
@1 means "generate a set of incrementing numbers each time an
instance of a level-1 section counter appears in a document."
Level 2 says "generate whatever is in level 1 of the section counter
without incrementing level one, followed by a dot, and an
incrementing number." Level 3 does something similar. Thus,
level 1 section counters appear as 1, 2, 3; level 2 section counters
are 1.1, 1.2, 1.3, 2.1, 2.2; and level 3 section counters are 1.1.1,
1.1.2, 1.1.3, 1.2.1, 1.2.2, 2.1.1, 3.1.1.

Counters that Depend on Other Counters

Using a section number followed by a figure number is a common numbering style for figures and table. BBN/Slate makes it easy to specify the numbers by letting you make one counter dependent upon another. Notice that the figure number below is number 5-5. Look at the counter definition for a **figure** counter, which was used to create the figure numbers in this document (Figure 5-5).

```
Counters are used to automatically number sections, figures,
tables or any other numbered sequence.

Select from one of the existing counters to change its style,
or type a new counter name and define its counting style.

Counter Name:          Existing Counters:
┌──────────────┐       ┌──────────────┬─┐
│ figure       │       │ figure       │↑│
└──────────────┘       │ table        │▓│
                       │ section      │ │
                       │ a-figure     │↓│
                       └──────────────┴─┘

┌ Level Styles ──────────────────────────────────────┐
│  Level 1:  @counter(section:1:noincr)-@1            │
│  Level 2:                                           │
│  Level 3:                                           │
│  Level 4:                                           │
│  Level 5:                                           │
│  Level 6:                                           │
└─────────────────────────────────────────────────────┘

Depends On:            Counters:
┌──────────────┐       ┌──────────────┬─┐
│ section      │       │ figure       │↑│
└──────────────┘       │ table        │▓│
  Level ↻ 1            │ section      │ │
                       │ a-figure     │↓│
                       └──────────────┴─┘

    ( OK )        ( Cancel )
```

Figure 5-5   *The Counter Definition for a Figure Counter Dialog Box*

There are two things to notice about this counter definition. The first is that a level 1 **figure** counter includes in its definition the string @counter(section:1:noincr) followed by a dash and then the usual @1 incrementing number generator. This means that each time you insert an instance of a level 1 **figure** counter in your document, you get *the current value of level 1* **section**

counter followed by an incrementing number. In other words, you get 1-1, 1-2, 1-3, 1-4, and so on. Include the :noincr modifier in the section counter reference so that adding a figure does not change the **section** counter.

That's almost, but not quite, enough to get the result you want. You also have to have some way to say to the editor "the incrementing number you're adding to the figure counter has to begin from 1 each time you go to a new section." The **Depends On:** field at the bottom of the dialog box controls this format.

Note that the **figure** counter *depends on* level 1 of the **section** counter. Because of this dependency, the counter mechanism restarts any numbering sequences defined in the **figure** counter whenever the value of a level 1 **section** counter changes. Since the level 1 **section** counter changes at section boundaries, you get Figures 1-1, 1-2, 1-3, followed in Section 2 by Figures 2-1, 2-2, 2-3.

Dependent counters are automatically renumbered when the counter they depend on changes. If you add a new section to the middle of a document, changing Section 2 to Section 3, all of your figure numbers adjust themselves automatically.

5.4.3 Sectioning and Figure and Table Captioning

Now that you have some counters defined, you can start to use them in documents. One way is to do this is to insert them literally into the text, using the **Text-Counters-Insert** command. This command prompts you for the counter type and level you want to add, and asks whether you want to increment the numbering for this counter, leave it alone, or reset it to an initial value.

Inserting counters explicitly is fine when you only expect to use one or two instances of a counter in a document. However, when counters are used frequently, such as section or figure numbers, it is often more convenient to include the counter in a customized text style. For instance, if you examine the section heading above, you find that it is an instance of a style named **Section**. The style sheet for **Section** is displayed in Figure 5-6.

| Figure 5-6 | *Style Sheet for the Section Style Dialog Box* |

Notice especially the **Content:** field near the bottom of the dialog. Whenever you insert an instance of this text style, the editor automatically generates whatever text is in the **Content:** field of the style definition. In that case, the **Content:** field tells the Document Editor, "when you add a section to a document, insert a

level 1 section counter and a dot." (A counter name with no ":level" after it defaults to level 1). So, when you give the command **Text-Add-section**, the Document Editor automatically adds the section number and the dot, then leaves the cursor after the dot so you can add additional text, like the section title.

Similarly, a style called **subsection** contains a **Content:** field with the string @counter(section:2). This generates a level 2 text counter (i.e., for subsection 1.1, 1.2, etc.) and a dot.

This document also contains a style named **section-caption** whose **Content:** field is Figure @counter(section-figure):. When you add a section-caption to this document, the editor automatically inserts the string Figure $X-Y$ for you, where X and Y are the correct section and figure numbers.

5.5   Text Menu Commands

```
Text
Add          ⇒
Fonts        ⇒
Language     ⇒
Styles       ⇒
Edit         ⇒
Counters     ⇒
Group
Ungroup
Search...
Select       ⇒
Lists        ⇒
Describe Item...
```
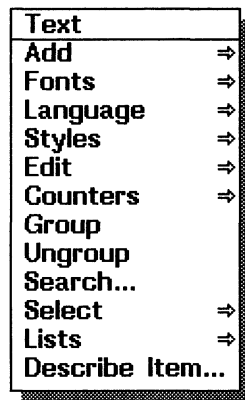
To display the **Text** menu, **RIGHT hold** while the mouse pointer is in a text element. This section contains a description of the commands available in the text editor, in the order in which they appear in the top-level text editor menu. The **Text** menu commands are described in this section.

```
┌──────────────────────┐▓
│ Text                 │▓─────────────────────┐▓
├──────────────────────┤ caption-figure        │▓
│ Add                  │ caption-table         │▓
│ Fonts                │ center                │▓
│ Language             │ chapter               │▓
│ Styles               │ example               │▓
│ Edit                 │ itemtag               │▓
│ Counters             │ noindent              │▓
│ Group                │ paragraph             │▓
│ Ungroup              │ right                 │▓
│ Search...            │ section               │▓
│ Select               │ subsection            │▓
│ Lists                │ subtitle              │▓
│ Describe Item..│ table                 │▓
└▓▓▓▓▓▓▓▓▓▓▓▓▓▓│ title                 │▓
              │ toc-body1             │▓
              │ toc-body2             │▓
              │ toc-title             │▓
              │ usertag               │▓
              │ verbatim              │▓
              │ description           │▓
              │ enumeration           │▓
              │ itemization           │▓
              └▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓┘
```
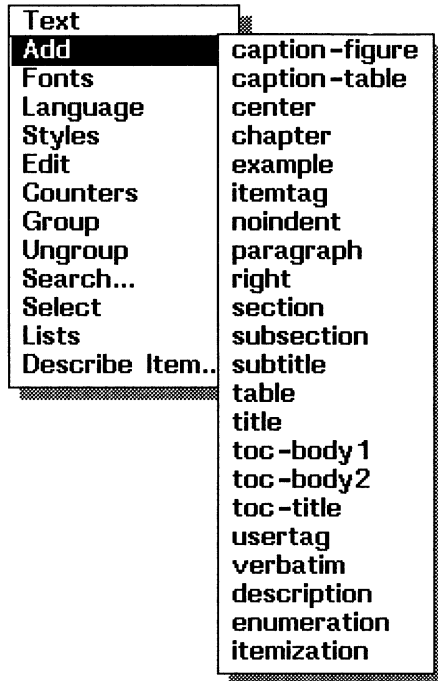
Add

Add text formatted in a specified style to the document at the
current nesting level. A list of possible formatting styles is
available as a submenu. They include all the standard styles
provided with BBN/Slate plus any additional styles you have
created for this document. If you select the **Add** command itself,
text formatted in the default formatting style is added to the
document.

```
┌─────────────────┐
│ Text            │▓
│ Add          ⇒ │▓
│ Fonts       ┌──────────────┐
│ Language    │ Face      ⇒ │
│ Styles      │ Family    ⇒ │
│ Edit        │ Size      ⇒ │
│ Counters    │ Lines     ⇒ │
│ Group       │ Clean up    │
│ Ungroup     └──────────────┘
│ Search...       │▓
│ Select       ⇒ │▓
│ Lists        ⇒ │▓
│ Describe Item...│▓
└─────────────────┘
```
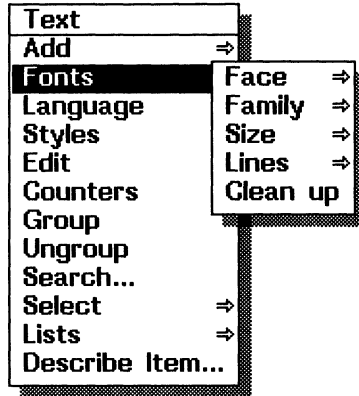
Fonts

Change the selected region's font style. If no region is selected, then the next character typed takes on the specified font attribute. After selecting a region, you can change font styles by choosing an operation from the submenu. The choices are:

Face	Change the face of the selected region.
Italic	Make the selected region *italic*.
Bold	Make the selected region **bold**.
Bold Italic	Make the selected region ***bold italic***.
Normal	Make the selected region Roman.

Family	Select the font family to represent the selected region.
timesroman	A font with *serifs*.
helvetica	A *sans-serif* font.
tv	A *fixed-width* font.

Size	Change the selected region's size or baseline.

Smaller	Decrease the size of characters in the selected region. (Available sizes are 8, 10, 12, 14, and 18.)
Larger	Increase the size of the characters in the selected region. (Available sizes are 8, 10, 12, 14, and 18.)
Superscript On	Superscript a selected region (characters are smaller and lie above the baseline, e.g., 2^{nn}).
Superscript Off	Change a selected region so it is not superscripted.
Subscript On	Subscript a selected region (characters are smaller and fall below the baseline, e.g., xi_1).
Subscript Off	Change a selected region so it is not subscripted.
Lines	Change the selected region's underlining and overstriking.
Underline On/Off	Turn <u>underlining</u> on or off in the selected region.
Overstrike On/Off	Turn ~~overstriking~~ on or off in the selected region.
Doubleline On/Off	Turn <u>double underlining</u> on or off in the selected region.
Clean Up	Remove any font changes in the selected region. Refer to *System Topics* for a discussion of how you can use the `slate_fonts.config` file to configure your version of BBN/Slate to support more font families and sizes.

```
┌─────────────────┐
│ Text            │▓
│ Add          ⇒ │▓
│ Fonts        ⇒ │▓
│ Language     ⇒ │▓──────────────────────┐
│ Styles         │ Local Change     ⇒   │
│ Edit           │ Global Change    ⇒   │
│ Counters       │ Remove Changes       │
│ Group          │ Create           ⇒   │
│ Ungroup        │ Switch               │
│ Search...      │ Delete           ⇒   │
│ Select        ▓└──────────────────────┘
│ Lists        ⇒ │▓
│ Describe Item...│▓
└─────────────────┘▓
```
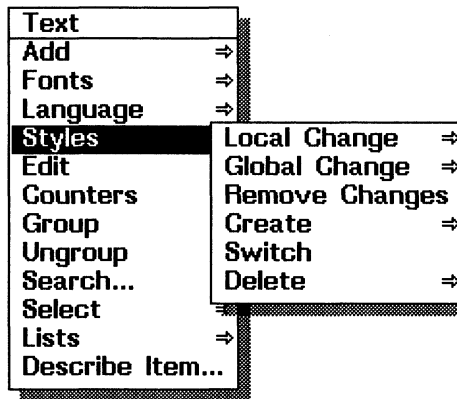
Styles   Edit or change the formatting style of text elements. A submenu
                      lets you select various formatting style edits or changes described
                      here.

    Local   Edit the formatting style in the selected region.
    Change   If there is more than one text style in the selected
                      region, the editor displays a menu of the text
                      styles used in the region. Select which style to
                      change. The editor displays the dialog box shown
                      in Figure 5-1 (or Figure 5-3 for a compound
                      formatting style), in which you can change the
                      selected style's attributes.

    Global   Edit a formatting style globally (throughout the
    Change   document). Local changes to attributes in the
                      same style supersede global values. The editor
                      displays a menu of all the formatting styles. You
                      select the style you wish to change and then
                      modify the dialog box's contents shown in Figure
                      5-1 (or Figure 5-3 for a compound formatting
                      style) to make the desired changes. For example,
                      you could use this command to change the initial
                      indentation of all paragraphs in a document.

If you change an attribute of a style using this command, and there are other styles based on the changed style, the attribute is changed in all the styles that inherited this attribute (i.e., all the styles for which you did not explicitly change the attribute). For example, changing the **verbatim** style's margins changes the margins of the styles based on **verbatim**, which includes most of the predefined styles in the document.

Remove Changes   Remove any special changes that you have applied to the styles in the selected region.

Create   Create a new, customized formatting style. A menu of all the formatting styles appears. Choose the formatting style; the dialog box appears in which you can define the new formatting style (see Figure 5-1, or Figure 5-3 for a compound formatting style). New styles that you create are added to the submenus displayed by the **Text-Add** command and the various **Text-Styles** commands.

For example, you could create a style named **heading** by invoking the **Text-Styles-Create** command with **center** as the basis for the new style. A dialog box like that in Figure 5-1 appears. The **Name** and **Help** fields are blank so that you can fill in the identity of the style along with its purpose. Next you can adjust the font size and face attributes so that text formatted in the **heading** style is larger and bolder than ordinary centered text.

Switch

Switch the format of text elements in the selected region from one style to another. If more than one formatting style is used in the region, the command displays a menu containing all the formatting styles shown, and you must select which formatting style to change. A second menu lets you select the new formatting style. If no region is selected, the command operates on the element containing the insertion point.

For example, you can switch a block formatted as **verbatim** to **paragraph**, causing lines to be filled (Figure 5-7).

Verbatim

Now is the time
for all good people
to come to the
aid
of their party.

Paragraph

Now is the time for all good people to come to the aid of their party.

Figure 5-7   *Verbatim Text Changed to Paragraph*

Delete

Remove a formatting style that is defined but not used in the document. The editor displays a menu of the unused formatting styles that can be deleted.

```
┌─────────────────────┐
│ Text                │▓
│ Add            ⇒│▓
│ Fonts          ⇒│▓
│ Language       ⇒│▓
│ Styles         ⇒│▓──────────────────────┐
│ Edit            │ Cut                    │▓
│ Counters        │ Copy                   │▓
│ Group           │ Clear                  │▓
│ Ungroup         │ Paste                  │▓
│ Search...       │ Copy To Selection      │▓
│ Select          │ Paste From Selection   │▓
│ Lists           │ Split                  │▓
│ Describe Item.. │ Transliterate          │▓
└─────────────────────▓──────────────────────┘
  ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
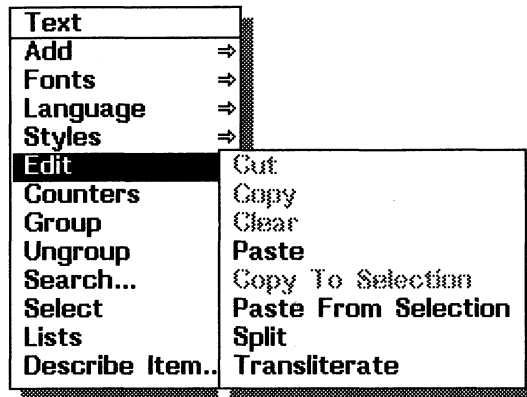
Edit   Commands to cut, copy, and paste text.

       Cut   Remove the selected region from the document
                        and copy it to the clipboard.

       Copy   Copy the selected region to the clipboard.

       Clear   Remove the selected region from the document,
                        but do *not* put it on the clipboard.

       Paste   Paste the clipboard contents into the document
                        before the cursor.

       Copy To   Copy the selected region onto the window system
       Selection   clipboard, so that you can get that text from
                        another application running under the window
                        system.

Paste From Selection	Paste the contents of the window system clipboard into the document as **verbatim** text. This command lets you insert text produced by other applications running under the window system. It does not do any new line filtering, so if the text contains new lines, they are inserted into the paragraph even if the paragraph is word-wrapped.
Split	Split the current paragraph into two paragraphs at the insertion point. You can also invoke this with **Return** (in word-wrapped paragraphs) or **Linefeed** (anywhere).
Transliterate	This command is not implemented with basic BBN/Slate. If you have the Multilingual Option installed on your workstation, refer to *Multilingual Documents* for a description of **Transliterate**.

```
Text
Add            ⇒
Fonts          ⇒
Language       ⇒
Styles         ⇒
Edit           ⇒
Counters       Refer
Group          Label
Ungroup        Insert
Search...      Find Tag
Select         Find Tag Ref
Lists          Define New
Describe Item. Delete Style  ⇒
```
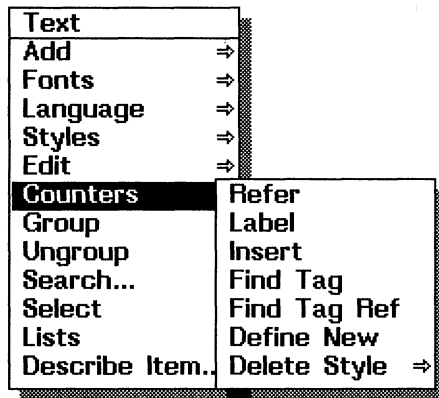
Counters	Create, insert, reference, or find counters. Counters are automatically numbered elements that are used as part of chapter and section headings and figure and table captions. Counters can be named, and their value, or the page on which they appear, referenced by name other places in the document.

You use the following commands to control counters (for numbering sections, tables and figures) in text:

Refer Counters can be used for cross-references. An instance of a counter can be labeled with a symbolic tag, and the counter's value can be referenced symbolically elsewhere in the document. This command is used to reference some counter that has been defined elsewhere. When the command is invoked, the dialog box shown in Figure 5-8 is displayed. The scrolling list shows the tags of currently defined counters. The **style** of reference is either *value* or *page*. If *value* is selected, the counter's value is inserted into the text. This value is updated if the referenced counter's value changes. If *page* is selected, the page on which the counter occurs when the document is printed is inserted in the text. Until actually printed, the value of the page number is not known.
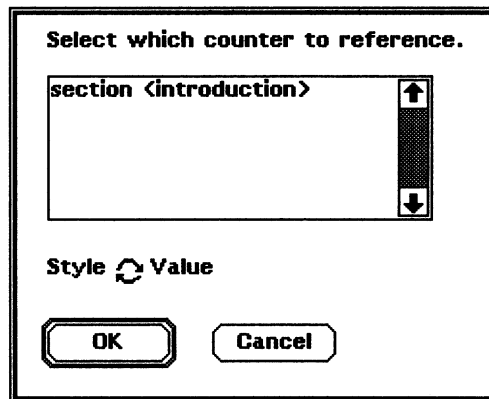
Figure 5-8   *Counter to Reference Dialog Box*

Label   Used to attach a symbolic tag to some counter in
                     the text. Invoke the command with your text
                     cursor close to the counter that is being labeled.
                     The dialog box shown in Figure 5-9 is then
                     displayed, and you can type a tag for the counter.
                     If the counter already has a tag, the dialog's **Tag**
                     field is initialized with its contents and you can
                     modify it. This command can also be used to
                     change the counter from a normal incrementing
                     style counter to one in which the value is
                     explicitly specified.

```
┌──────────────────────────────────────────────────────┐
│ ┌──────────────────────────────────────────────────┐ │
│ │                                                    │ │
│ │  Modify the tag or style of this 'section' counter.│ │
│ │                                                    │ │
│ │  Style ↻ Increment      ┌·················┐       │ │
│ │                         │ Value: 0        │       │ │
│ │                         └·················┘       │ │
│ │  ┌──────────────────────────────────────────────┐ │ │
│ │  │ Tag: ▲                                        │ │ │
│ │  └──────────────────────────────────────────────┘ │ │
│ │  ╭────────────╮   ╭───────────╮                   │ │
│ │  │    OK      │   │  Cancel   │                   │ │
│ │  ╰────────────╯   ╰───────────╯                   │ │
│ └──────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────┘
```
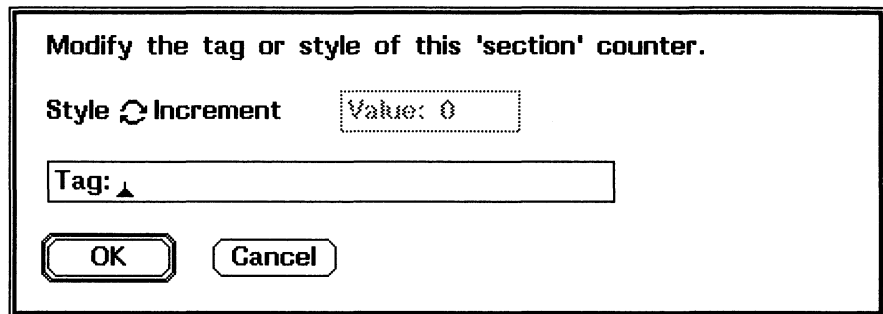
Figure 5-9   *Label a Counter Dialog Box*

Insert   Used to insert an instance of a counter into the
                     text. Counters are normally inserted as part of
                     the automatic content of a text style as described
                     above. However, this command allows a counter
                     to be inserted explicitly. The dialog box shown
                     in Figure 5-10 is displayed. You can specify the
                     type of counter, its level, its incrementing style,
                     and its tag from this dialog.
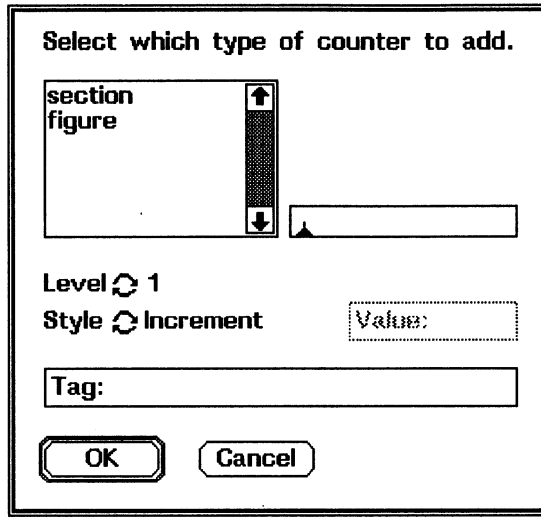
Figure 5-10   Add a Counter Dialog Box

Find Tag   Used to find where some tag is defined in the
                      text. When invoked, the dialog box shown in
                      Figure 5-11 is displayed and a tag can be selected
                      to find.
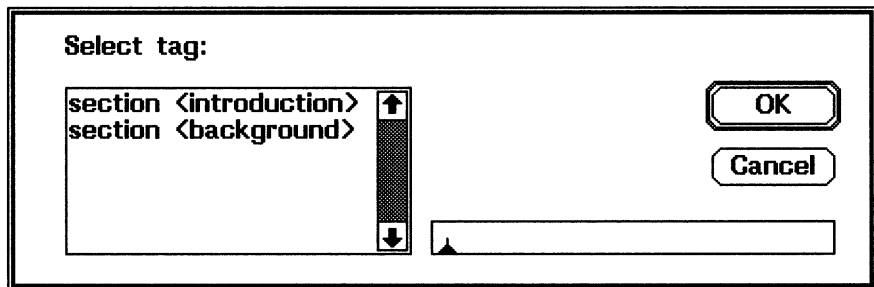
Figure 5-11   Select a Tag to Find Dialog Box

Find Tag Ref   Used to find where some tag is referenced in the text. When invoked, the dialog box shown in Figure 5-11 is displayed and a tag can be selected to find. Note that some tags cannot be referenced anywhere in the text.

Define New   Used to define new counter styles and to examine and modify existing counter styles. When invoked, the dialog box in Figure 5-12 is displayed. To create a new counter style, type in a new name for the counter and then describe the numbering style. You can also specify whether this counter depends on another one, and, if so, on what level of that counter it depends. You can specify up to six counter levels.

To edit or examine the style of an existing counter, select an entry from the **Existing Counters:** scroll. The other dialog fields are then initialized with its value. Only a single counter can be created or modified on each display of the dialog.

Counters are used to automatically number sections, figures,
tables or any other numbered sequence.

Select from one of the existing counters to change its style,
or type a new counter name and define its counting style.

Counter Name: Existing Counters:

[   ]   section
                      figure

Level Styles ────────────────────────────────────
  Level 1:
  Level 2:
  Level 3:
  Level 4:
  Level 5:
  Level 6:

Depends On: Counters:

[   ]   section
                      figure
  Level ↻ 1

  [OK]   (Cancel)

Figure 5-12   *Define a New Counter Dialog Box*

Delete Style   Used to delete an unused counter style. The
                    submenu displays the counters that have no
                    occurrences in the document. A counter can be
                    referenced in the **Content:** field of a text style
                    and still be considered unused if there are no
                    actual occurrences in the document.

```
┌─────────────────────┐
│ Text                │
│ Add              ⇒  │
│ Fonts            ⇒  │
│ Language         ⇒  │
│ Styles           ⇒  │
│ Edit             ⇒  │
│ Counters         ⇒  │
│ ███Group███████████ │
│ Ungroup             │
│ Search...           │
│ Select           ⇒  │
│ Lists            ⇒  │
│ Describe Item...    │
└─────────────────────┘
```
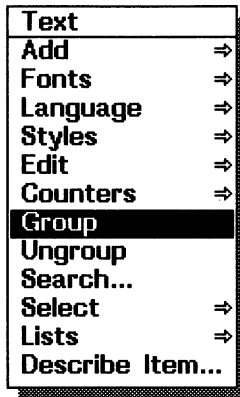
Group   Group the selected region into a single list, or a single point in a
                        list. If no region is selected, the command groups current
                        paragraphs with the region above it.

Ungroup   Move the selected region out of the group it is in. This can result
                        in the selected region becoming separate items in a list, or can
                        move the region out of the enclosing list entirely.

```
┌─────────────────────┐
│ Text                │
│ Add              ⇒  │
│ Fonts            ⇒  │
│ Language         ⇒  │
│ Styles           ⇒  │
│ Edit             ⇒  │
│ Counters         ⇒  │
│ Group               │
│ Ungroup             │
│ ███Search...███████ │
│ Select           ⇒  │
│ Lists            ⇒  │
│ Describe Item...    │
└─────────────────────┘
```
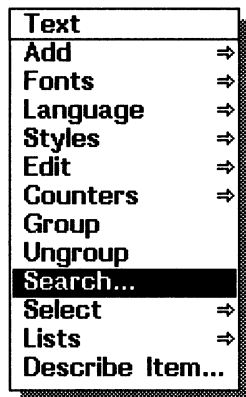
Search...   The text editor supports two types of searching: *normal* and
                        incremental. In *normal* searching, you specify what to search for,
                        and the editor searches for it. In *incremental* searching, you
                        specify what to search for and the editor searches for it as you

---

type it. For example, if you type the word **document**, when you type **d**, the cursor moves to the next **d** in the text, when you type **o**, the cursor moves to next **do** in the text, when you type **c**, the cursor moves to the next **doc** in the text, and so on.

You can do both types of searching either forward or in reverse through the document. In forward searching, the editor searches from the current cursor position to the end of the document. If the editor finds what it is searching for, it puts the cursor at the end of the search string. In reverse searching, the editor searches from the current position to the start of the document. If it finds what you specified, it puts the cursor at the start of the search string.

For normal searching use the **Text-Search...** command. It displays the dialog box shown in Figure 5-13.

```
┌─────────────────────────────────────────────────────────┐
│ ┌─ Action ──────────────┐                                │
│ │  ○ Search             │    Direction ⟳ Forward         │
│ │  ⦿ Replace            │    Area      ⟳ Whole Document  │
│ │  ○ Ask before Replace │                                │
│ │  ○ Delete String      │    ☑ Fold Case                 │
│ └───────────────────────┘    ☑ Maintain Case             │
│                                                          │
│  ┌─────────────────────────────────────────────────────┐ │
│  │ Search for:    mitsake                              │ │
│  └─────────────────────────────────────────────────────┘ │
│  ┌─────────────────────────────────────────────────────┐ │
│  │ Replace with:  mistake▲                             │ │
│  └─────────────────────────────────────────────────────┘ │
│                                                          │
│  ┌─────────────┐   ┌──────────┐                          │
│  │     OK      │   │  Cancel  │                          │
│  └─────────────┘   └──────────┘                          │
└─────────────────────────────────────────────────────────┘
```
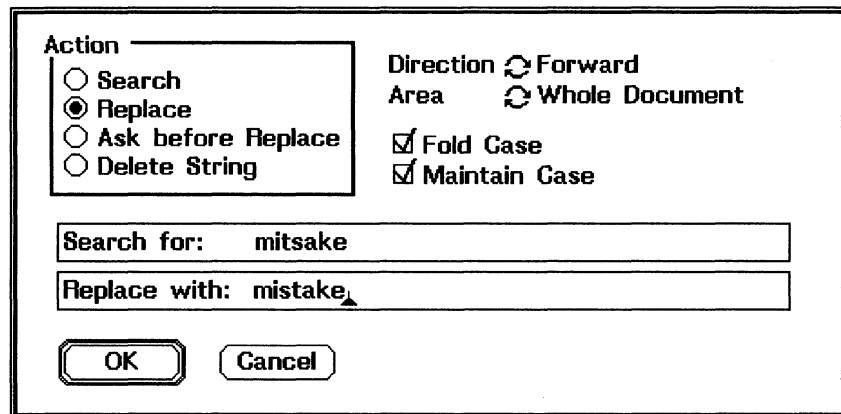
Figure 5-13   *Search and Replace Dialog Box*

The commands available from the **Text-Search...** command are as follows.

Search   Search for the given text.

Replace	Replace all occurrences of the string string with the replacement text.
Ask before Replace	Find the search string and ask the user what to do. Possible responses are as follows.
Space	Replace the search string with the replacement text and continue to the next occurrence of the search string.
n	Do not perform the replacement, but continue.
^G	Abort the replacement operation.
. (dot)	Perform the current replacement and then abort the operation.
Delete String	Remove all occurrences of the given text.
Search for	Specify the search string in this field.
Replace with	Specify the replacement text in this field, which is disabled unless you pick **Replace** or **Ask before Replace.**
Direction	Perform the operation forward or backward through the document.
Area	Perform the operation on the entire document or only the end or beginning of the document.
Fold Case	If checked, a lowercase letter in the search string will match either a lowercase or uppercase letter in the document. Uppercase letters in the search string must match exactly.

Maintain Case	If checked, when the search string is replaced, the replacement is capitalized according to the way search string originally appeared in the text.

Keyboard Searching/Replacing

To do incremental searching, use the keyboard commands ^S and ^R for forward and reverse searching, respectively. After you type ^S or ^R, a prompt appears in the bottom line of the editor's window, asking you to type in the text string for which you are searching. The following characters have special meaning in incremental searching:

^S	Search forward for the next occurrence of the search string. If you type ^S, type a search string, and then type ^S repeatedly without changing the search string, the cursor moves forward through the document from one occurrence of the string to the next. If you are doing a reverse search, ^S changes the search direction and finds the next string occurrence.
^R	Search backward for the next occurrence of the search string. If you type ^R, type a search string, and then type ^R again and again repeatedly without changing the search string, the cursor moves backward through the document from one occurrence of the string to the next. If you are doing a forward search, ^R changes the search direction and find the previous occurrence of the string.
DEL	Delete the last character from the search string. The editor puts the cursor at the previous occurrence of the revised search string.

^W   Delete the search string already specified, but remain in search mode. The next character typed becomes the first character of the new search string.

ESC   Exit the search. The cursor remains at the last occurrence of the search string successfully located.

^G   Abort the search. The cursor returns to its original position, as though the search command were never issued.

Typing any other control character causes the editor to terminate the search and execute the command associated with that control character.

```
┌──────────────────┐
│ Text             │▓
├──────────────────┤
│ Add          ⇒│▓
│ Fonts        ⇒│▓
│ Language     ⇒│▓
│ Styles       ⇒│▓
│ Edit         ⇒│▓
│ Counters     ⇒│▓
│ Group            │▓
│ Ungroup          │▓
│ Search...        │▓
├──────────┐┌──────────────┐
│ Select   ││ Word         │▓
│ Lists    ││ Line         │▓
│ Describe Item.│ Sentence     │▓
└──────────┘│ Paragraph    │▓
            │ List         │▓
            │ Document     │▓
            └──────────────┘
```
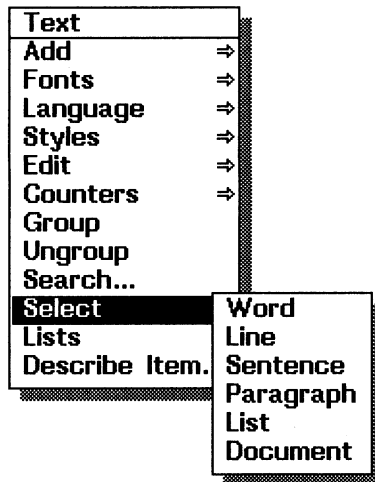
Select   Select the word, line, sentence, paragraph, list, or entire document containing the cursor. Choose the extent of the selection from a submenu. If you do not choose a submenu item, the default is to

select the current paragraph. If you choose the same **Select** subcommand multiple times, each invocation extends the selection by the appropriate unit (i.e., invoking **Select-Line** three times in a row selects three lines).

```
Text
 Add          ⇒
 Fonts        ⇒
 Language     ⇒
 Styles       ⇒
 Edit         ⇒
 Counters     ⇒
 Group
 Ungroup
 Search...
 Select       ⇒
 Lists          description
 Describe Item.. enumeration
                itemization
```
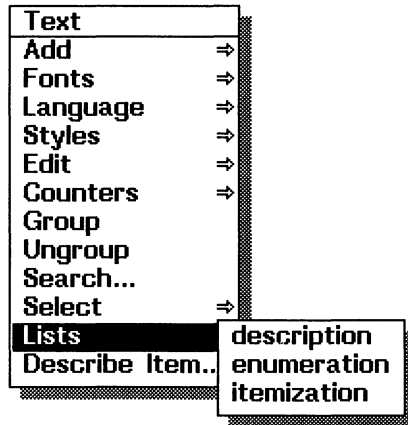
Lists

Perform a grouping (or ungrouping) operation on the text in the selected region. The selected paragraphs are grouped into a list according to one of the available list (i.e., compound) formatting styles. You see a submenu containing three default list formatting styles, plus any others that you have defined yourself.

description   You can enter list tags.

enumeration   List tags are numbered.

itemization   List tags are bullets.

```
┌─────────────────────┐
│ Text                │▒
│ Add            ⇒    │▒
│ Fonts          ⇒    │▒
│ Language       ⇒    │▒
│ Styles         ⇒    │▒
│ Edit           ⇒    │▒
│ Counters       ⇒    │▒
│ Group               │▒
│ Ungroup             │▒
│ Search...           │▒
│ Select         ⇒    │▒
│ Lists          ⇒    │▒
│ Describe Item...    │▒
└─────────────────────┘▒
  ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒
```
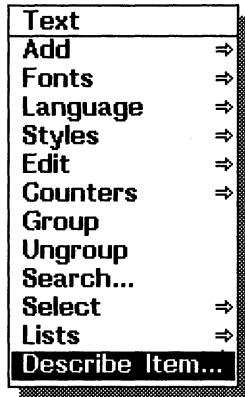
Describe Item...

Provide information about the selected region of text in which the cursor resides. This command gives information about the formatting style used for this text as well as information about counters that can lie near the text cursor. For example, if the cursor is in the contents of a doubly nested list and you use the **Text-Describe Item...** command, the information in Figure 5-14 appears on the screen.

┌──┐
│   │
│   The cursor resides in a 'noindent'. It is embedded in a │
│   'description' embedded in a 'enumeration'.   │
│   │
│   │
│   ┌──────────┐   │
│   │   OK   │   │
│   └──────────┘   │
│   │
└──┘
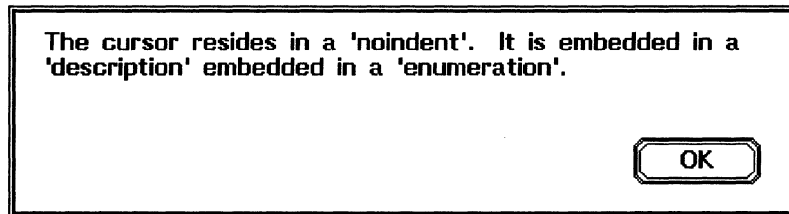
Figure 5-14   *Describe Item... Command Response*

5.6   Mouse Usage

In addition to the standard use of mouse buttons to control menus and dialog boxes, you use the mouse to control the text insertion point and to highlight regions of text. The following list describes mouse operations within text.

LEFT click	Set the text insertion point.
LEFT drag	Set the insertion point and establish a new position for *mark*, thus establishing a new selected region.
MIDDLE click	Unset *mark*, thus removing the currently selected region.
RIGHT hold	Display the **Text** menu.

5.7   Keyboard Commands

Although the system of menus, mouse buttons, and mouse pointer positioning is useful for many beginning users and for many text editing activities, some text operations are much more convenient when performed from the keyboard. There are keyboard equivalents for almost every menu operation used in text editing. Thus, you often do not need to use the mouse or pop-up menus when editing text in BBN/Slate documents.

Some keyboard commands for performing small character-oriented operations have no menu equivalents. These include commands for moving around the display, deleting characters, changing the case of characters in a word to UPPERCASE, lowercase, or Capitalized.

Table 5-1 lists all text menu commands, their equivalent default key commands, and the underlying functions that are invoked by the commands. In general there is a key command for every operation in BBN/Slate. If you want to add or change keyboard equivalents, the *Customizing Manual* describes how to bind keys to functions.

Table 5-1   *Text Editing Keyboard Commands*

```
^[W              copy
^B               text-backward-character
ESC-[D           text-backward-character
ESC-,            text-backward-paragraph
ALT-,            text-backward-paragraph
ESC-b            text-backward-word
ALT-b            text-backward-word
^Xb              text-boldify
ESC-c            text-capitalize
ALT-c            text-capitalize
ESC-@            text-clear-mark
ALT-             text-clear-mark
ALT-2            text-clear-mark
ALT-@            text-clear-mark
ESC-w            B10text-copy-region
ALT-w            text-copy-region
^W               text-cut-region
ESC-[201z        text-cut-region
^Xs              text-decrement-pointsize
^H               text-delete-back
DEL              text-delete-back
ESC-h            text-delete-back-word
ESC-DEL          text-delete-back-word
ALT-h            text-delete-back-word
ALT-DEL          text-delete-back-word
ESC-/            text-delete-extra-white-space
ALT-/            text-delete-extra-white-space
^D               text-delete-forward
ESC-d            text-delete-forward-word
ALT-d            text-delete-forward-word
ESC-\            text-delete-white-space
```

(continued)

Table 5-1   *Text Editing Commands (continued)*

```
ALT-\          text-delete-white-space
^Xw            text-describe-object
^N             text-down-line
ESC-[B         text-down-line
^X^E           text-edit-global-format
^Xe            text-edit-local-format
ESC->          text-end-of-buffer
ALT->          text-end-of-buffer
^E             text-end-of-line
ESC-.          text-end-of-paragraph
ALT-.          text-end-of-paragraph
ESC-e          text-enumerate
ALT-e          text-enumerate
^F             text-forward-character
ESC-[C         text-forward-character
ESC-f          text-forward-word
ALT-f          text-forward-word
ESC-[199z      text-get-selection
ESC-r          text-global-replace-dialog
ALT-r          text-global-replace-dialog
^Xg            text-group
^Xl            text-increment-pointsize
^Xi            text-italicize
ESC-i          text-itemize
ALT-i          text-itemize
^K             text-kill-line
ESC-!          text-line-to-top
ALT-!          text-line-to-top
ESC-^M         text-newline
ALT-^M         text-newline
^M             text-newline-check
^O             text-open-line
^Y             text-paste
ESC-q          text-query-replace-dialog
ALT-q          text-query-replace-dialog
```

(continued)

Table 5-1   *Text Editing Commands (continued)*

```
Keystroke      Function

^Q             text-quote-next-character
^Xr            text-romanize
ESC-<          text-scroll-to-start-of-buffer
ALT-<          text-scroll-to-start-of-buffer
ESC-s          text-search-forward-dialog
ALT-s          text-search-forward-dialog
^S             text-search-forward-incrementally
^R             text-search-reverse-incrementally
^Xa            text-select-add
^Xf            text-select-font-family
   through ~   text-self-insert
^@             text-set-mark
ESC-^J         text-split
ALT-^J         text-split
^J             text-split-check
^X^J           text-split-in
^X.            text-split-in
^X>            text-split-in
^X,            text-split-out
^X<            text-split-out
^A             text-start-of-line
^Xc            text-switch-format
^I             text-tab
ESC-l          text-tolower
ALT-l          text-tolower
ESC-u          text-toupper
ALT-u          text-toupper
^T             text-transpose-characterss
^Xu            text-ungroup
^P             text-up-line
ESC-[A         text-up-line
ESC-[197z      text-write-selection
```

6   Graphics

A picture can be an important part of a document. Sometimes shapes and relationships can be easier to show than to describe with words. A drawing that includes lines, rectangles, polygons, circles, ovals, and curves rendered with various line weights and shadings is called a *graphics* object in the BBN/Slate system.

This chapter includes:

- an explanation of concepts and terms that describe graphics commands (Section 6.1)

- mouse usage (Section 6.2)

- **Graphics** menu command descriptions and keyboard commands (Sections 6.3 and 6.4)

6.1   Basic Features

A graphics object contains lines, text, and various freehand and geometric figures, such as boxes, wedges, and ellipses; these are called graphics *features*. Figures 6-1 and 6-2 illustrate the types of graphical features that can be included in this medium. Features are added from the Graphics Palette, which is described in detail in Section 6.3
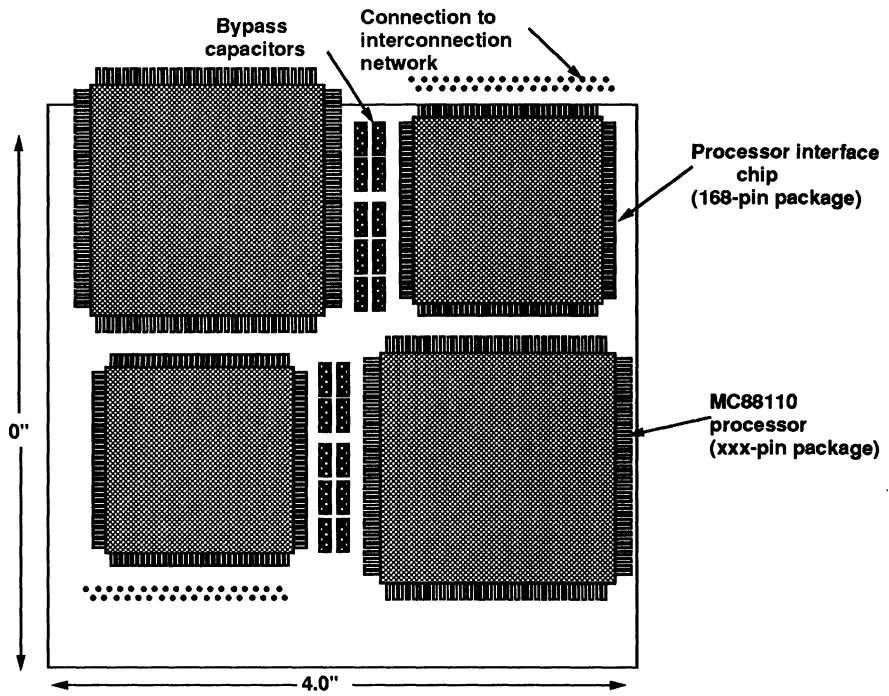
Figure 6-1   Graphics Sampler
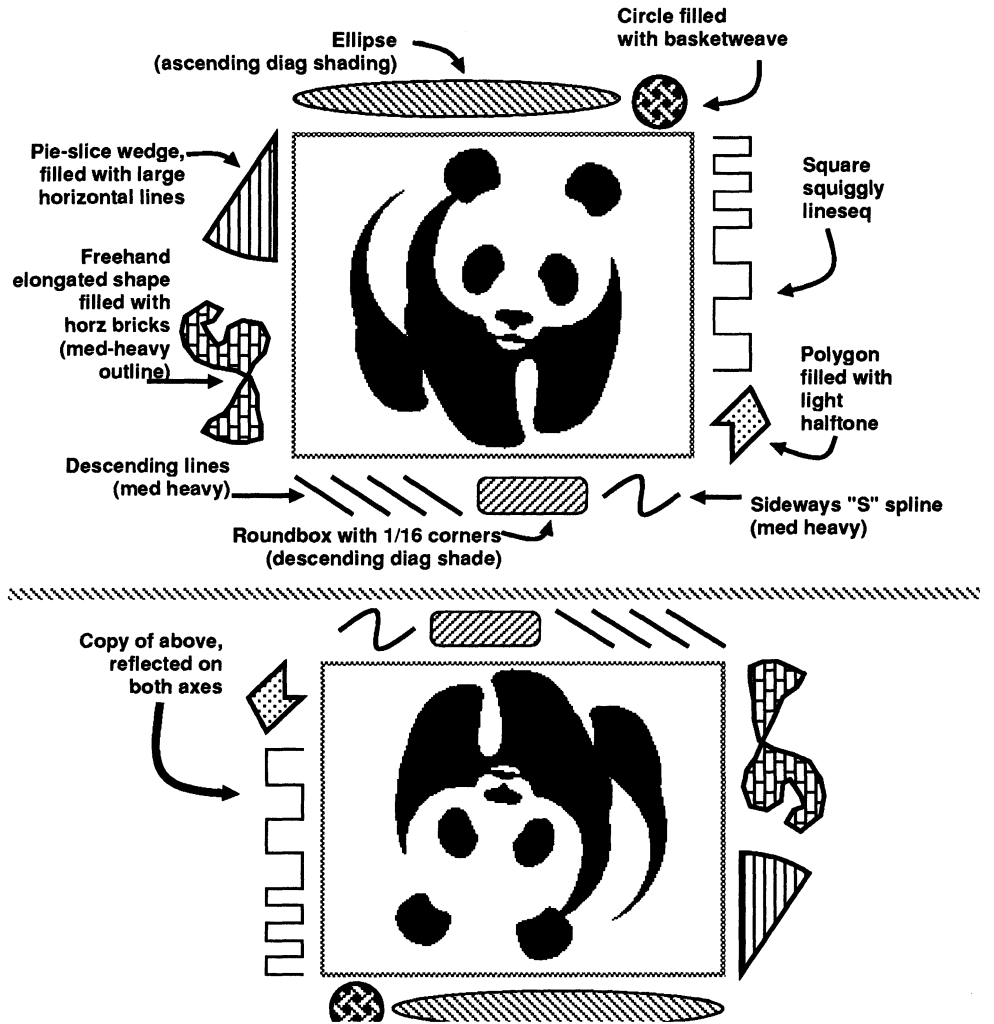
Figure 6-2   *Graphics Sampler*

Features may be either *open* (like a line or spline curve) or *closed*
(like a circle, box, or polygon). All features except text have a
Line style and **Pen** pattern that are used to draw their outlines. In

addition, closed features may be transparent, or they may be filled with a **Fill** pattern. By default, new features are drawn with a thin black outline, and new *closed* features are filled with a white, opaque pattern.

You can overlap features. Each new feature appears in a new plane in front of any existing features, possibly obscuring those features. You can move features to the back of the drawing or to the front of the drawing as shown in Figure 6-3.
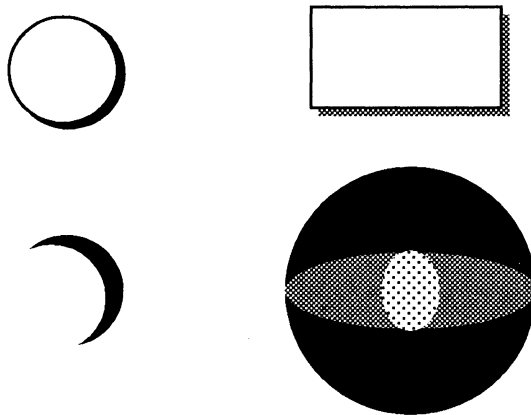
Figure 6-3   *Overlapping Features*

In addition to creating geometric and freehand features, you can paste an image, part of an image, or an entire rasterfile from the clipboard into a graphics drawing.

6.2   Mouse Usage

Many of the graphics commands operate only on the selected features within a drawing, and you can use the mouse to make selections. Selected features are marked by small rectangles, called *handles*, which are drawn on the borders of the features (Figure 6-4). You can use the handles to reshape or move most features, as explained below.
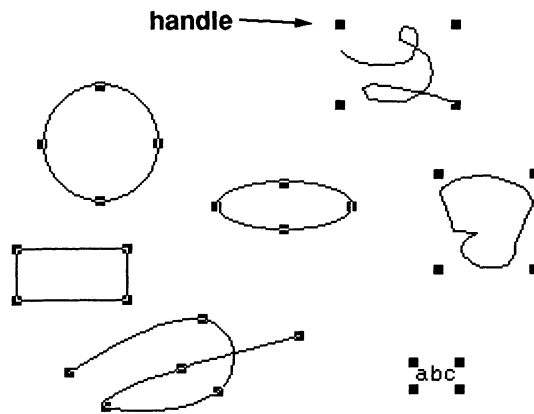
Figure 6-4   Handles on Graphics Features

The mouse buttons have a variety of functions when composing and editing drawings. Use the mouse to point to a feature and the mouse buttons to specify some action to be performed on that feature. To point to a feature, put the mouse pointer on the outline of the feature. If the feature is a closed feature filled with an opaque pattern, you can also point to it by putting the pointer anywhere inside the feature. The following list describes the functions of each of the mouse buttons.

LEFT click   If the pointer is on a feature, select that feature and deselect all the other features. When a feature is selected, small rectangles called *handles* appear on or near the feature's outline. The handles are used to resize and reshape features, as described below.

If the pointer is pointing to an already selected text feature, a cursor appears in the text, letting you edit it. When you are finished editing the text, **LEFT click** anywhere outside the text to confirm your changes. To abort editing the text, type **^G**. (See Table 6-1 for a list of the text editing commands.)

When you are adding a feature in a drawing, use **LEFT click** to specify the points in the feature. See the description of the **Palette...** command below for more information on adding features.

shift LEFT click   Select the feature the pointer is on and *add* it to the set of selected features.

LEFT drag   There are three possible actions associated with **LEFT drag**, depending on the location of the pointer.

If the pointer is on a feature, but not on one of the feature's reshaping handles, move the selected feature using **LEFT drag**. The feature appears at the point where you release the left mouse button. The pointer is changed to an open hand to indicate that you are dragging features (Figure 6-5). If you **RIGHT click** before you release the left mouse button, the move is aborted and the feature remains in its original position.

If the pointer is on a handle, reshape the feature using **LEFT drag**; the feature is redrawn with the reshaping point where you release the left mouse button. The pointer is changed to a pointing hand to indicate that you are reshaping a feature (Figure 6-5). If you **RIGHT click** before releasing the left mouse button, the reshaping operation is aborted and the feature retains its original shape.

Feature Movement   **Feature Reshaping**

Figure 6-5   *Graphics Pointer Shapes*

If the pointer is not on any feature, draw a *selection* box from the point at which you first press the left mouse button to the point you release it (Figure 6-6). When you release the mouse button, all features that are wholly or partially contained in the box are selected, and all other features are deselected. If you **RIGHT click** before releasing the left mouse button, then the selection box is erased and the set of selected features remains unchanged.
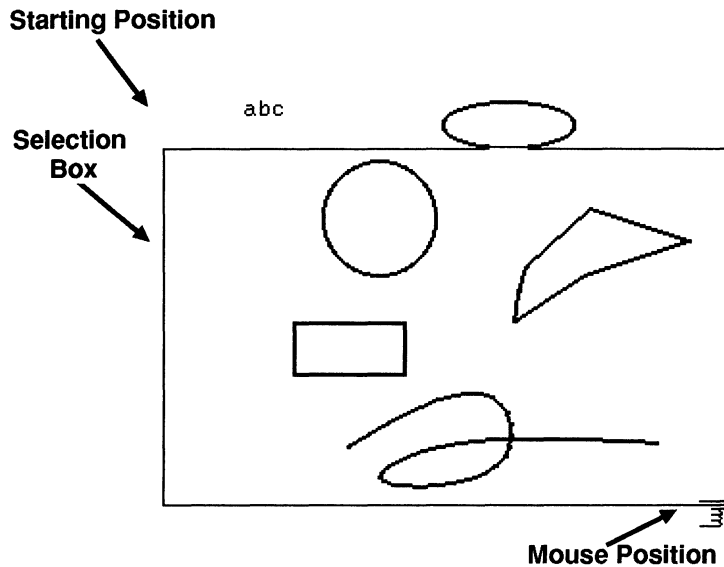
Figure 6-6   Graphics Selection Box

shift LEFT drag   Draw a *selection* box from the point at which the left mouse button is pressed to the point at which it is released. When you release the mouse button, all features that are wholly or partially contained in the box are *added* to the set of selected features. If you **RIGHT click** before releasing the left mouse button, the selection box is erased and the set of selected features is not changed.

MIDDLE click   Deselect any selected features.

Also, when you are adding a feature that is defined by multiple points (such as, a line sequence, polygon, spline), use **MIDDLE click** to finish specifying the points and add the feature to the drawing.

shift MIDDLE   Deselect the feature that the pointer is on.
click

RIGHT click   Abort any operation that is expecting mouse commands:

- If a feature is being moved or reshaped, abort that operation and restore the feature to its original position or shape.

- If a feature is being added to a drawing, abort adding that feature.

RIGHT hold   Display the media-specific **Graphics** menu. Section 6.3 describes the individual menu commands.

6.3   Menu Commands

You create a new graphics object by selecting **Graphics** from the **Add** menu. The various **Graphics** commands for creating and editing graphical drawings are described in this section in the order in which they appear in the top-level **Graphics** menu (Figure 6-7).

```
Graphics
Palette...
Style          ⇒
Placement      ⇒
Edit           ⇒
Preferences    ⇒
Group
Ungroup
Select All
Undo
Reshape
Move
Select
```

Figure 6-7   *Graphics Menu*

```
┌─────────────────┐
│ Graphics        │▓
│ Palette...      │▓
│ Style        ⇒  │▓
│ Placement    ⇒  │▓
│ Edit         ⇒  │▓
│ Preferences  ⇒  │▓
│ Group           │▓
│ Ungroup         │▓
│ Select All      │▓
│ Undo            │▓
│ Reshape         │▓
│ Move            │▓
│ Select          │▓
└─────────────────┘▓
 ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
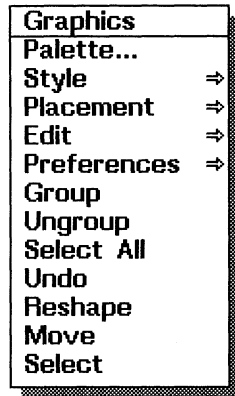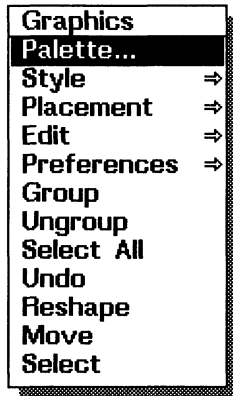
Palette...

This command displays the Graphics Palette shown in Figure 6-8. You use the Graphics Palette to set the default line style, pen pattern, and fill pattern for new features, or to change the **Line** style, **Pen** pattern, or **Fill** pattern of existing features.

The palette is a pop-up dialog box that can be made permanent by pressing the **Keep Up** button. Once you press the **Keep Up** button, the palette is displayed in its own window, and the **Keep Up** button is replaced with one that says **Take Down**.
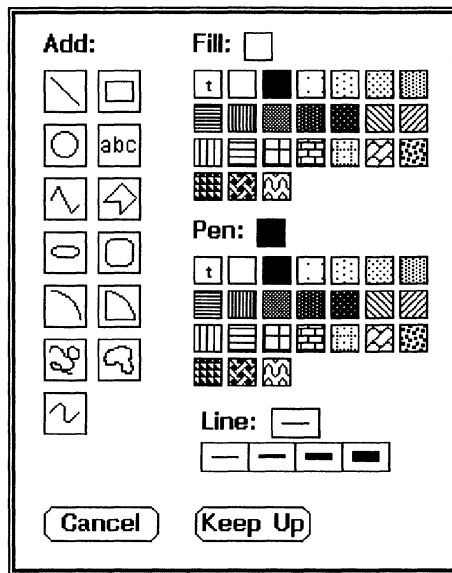
Figure 6-8   Pop-up Graphics Palette

The Pallete has these fields:

- **Add:** -- lets you choose the type of feature you want to add
- **Fill:** -- lets you select the texture of closed figures
- **Pen:** -- lets you pick the texture of the pen
- **Line:** -- lets you select the width of lines

To pick a value in any of these fields:
LEFT click on your selection.   The values you select for **Fill:**, **Pen:**, and **Line:** appear in the boxes located to the right of the fields' labels.

To change the default style and pattern for new features:
LEFT click on a **Line**, **Pen**, or **Fill** pattern's icon while no features are selected.   New features that you add have the style and pattern you have chosen.

To change the style for an existing feature:
Select that feature with the mouse and then use the palette to select the new style or pattern for your selected feature.

To make a closed feature transparent, select the **Fill** pattern marked with a "t" in the palette.

Features that you can add are graphically represented on the left of the Graphics Palette (Figure 6-8) and labeled in Figure 6-9.

line			box
circle			text
line sequence			polygon
ellipse			rounded box
arc			wedge
freehand			closed freehand
spline			
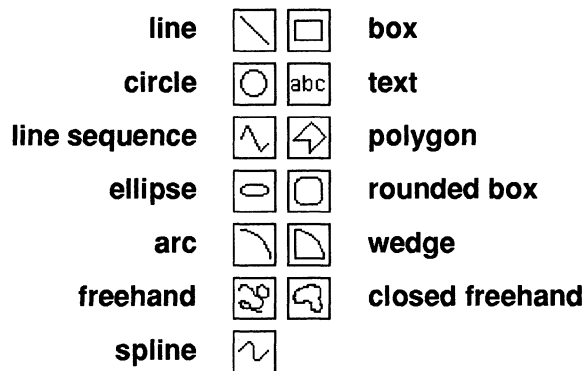
Figure 6-9   *Graphical Features on the Graphics Palette*

LEFT click on the desired feature to select that feature. The pointer becomes a pencil to indicate that you are adding a feature. Then **LEFT click** within the graphics element to specify points in the feature to be added. **MIDDLE click** ends specification of points in the feature (for line sequences, polygons, splines, and freehand drawings). **RIGHT click** aborts addition of the feature.

Each feature has a minimum size. If you try to add a feature that is too small, a pop-up dialog appears giving you the option of deleting the too-small feature.

Features you can add:

Line   You specify the positions of the two endpoints of
                        the line by **LEFT click**. To constrain the line to
                        be either vertical or horizontal, use **shift LEFT
                        click** when you specify the first endpoint.

Box   You specify the positions of the opposite corners
                        of the rectangle by **LEFT click**.

Circle   You specify the position of the center and the
                        radius of the circle by **LEFT click**.

Text   Use the icon labeled "abc" to add one or more
                        lines of text to a graphics drawing. After you
                        select "abc" from the dialog box, the mouse shape
                        changes to a small triangle, indicating that you
                        must specify the text placement point. **LEFT
                        click** to specify the *insertion point* where you
                        want the text to appear.

                        The text appears with the baseline of the text font
                        at the insertion point. Horizontal text placement
                        is determined by the current justification style.

                        • **Left** justification -- text starts at the insertion
                          point
                        • **Center** justification -- text appears centered at
                          the insertion point
                        • **Right** justification -- text appears ending at
                          the insertion point

                        After selecting the insertion point, type in the text
                        you want to appear in the drawing. You can use

Return to separate multiple lines of text. You can also use the mouse or the keyboard to edit the text you are adding. (See Table 6-1 for a list of the text editing commands.)

When you are finished entering text, click any mouse button outside the text area. To abort entering the text passage, type **^G**.

After you type the text, you can use **LEFT click** to edit the text passage. You can also change the justification and font with the **Graphics-Style** commands explained later in this section.

Line Sequence

A line sequence is a series of connected line segments.

- To specify the endpoints of each segment, **LEFT click**.
- To constrain a line segment to be either vertical or horizontal, hold the Shift while you **LEFT click** to specify the first endpoint.
- To finish the line sequence, **MIDDLE click**.

A line sequence cannot be filled even though the line segments may enclose a region. If you want to fill a region with a pattern, you should use a polygon or closed freehand drawing instead of a line sequence.

Polygon

A polygon is like a line sequence, except that the startpoint and endpoint are connected to form a closed region. Polygons may be filled with a pattern.

- To specify the position of each vertex of the polygon, **LEFT click**.

- To constrain a side of the polygon to be either vertical or horizontal, **shift LEFT click** to specify the vertex at the start of that side.
- To finish the polygon, **MIDDLE click**; the editor draws a line from the last point you specified to the first point in the polygon, closing the region.

Ellipse

The ellipse is drawn with its center located at the center of the rectangle. Its width and height are determined by the width and height of the rectangle.

- To specify the center of a rectangle that encloses the ellipse, **LEFT click**.
- To specify a corner of the rectangle, **LEFT click** again.

Rounded Box

A rounded box is a rectangle with rounded corners. To specify the opposite corners of the rectangle, **LEFT click**. The radius of the rounded corners is proportional to the length of the shortest side of the rectangle. You can change this radius with the **Graphics-Edit-Round Corners** command, explained later in this section.

Arc

An arc is part of the outline of a circle. To specify the positions of the center of the circle, and the start- and endpoints of the arc, **LEFT click**. The editor draws the arc clockwise from the startpoint to the endpoint.

Wedge

A wedge is part of a circle that is shaped like a pie slice. **LEFT click** to specify the positions of the center of the circle and the wedge's start- and endpoints. The editor draws the wedge clockwise from the startpoint to the endpoint.

A wedge differs from an arc because it has lines drawn from the center of the circle to the start- and endpoints of the wedge. Unlike arcs, wedges are closed features, and may be filled with a pattern.

Freehand Drawing

This feature allows you to draw arbitrary shapes.

- To specify the position of the start of the drawing, **LEFT click**, then move the mouse around to draw whatever you like.

- To end the drawing, **MIDDLE click**.

Freehand Drawing Closed

This feature is like a freehand drawing, except that the beginning and end of the drawing are connected to form a closed shape, which may be filled with a pattern.

As with a freehand drawing, **LEFT click** to start drawing, and **MIDDLE click** to finish drawing. When you finish, the editor draws a straight line from the endpoint to startpoint.

Spline

A spline is a smooth curve defined by several points called *knots*. The spline is drawn so that it passes directly through all of the knots like a line sequence, but the parts that connect the knots are curved instead of straight.

- To specify the positions of the knots, **LEFT click**.

- To finish the spline, **MIDDLE click**; the point at which you **MIDDLE click** is not added to the spline.

You can convert a line sequence to a spline, or a spline to a line sequence, by using the **Graphics-Edit-Smooth or Unsmooth** command described later in this section.

The Graphics Palette is also used to adjust style properties of features, including the **Line** style (width), **Fill** pattern, and **Pen** pattern. The same mechanism is used to change both the default style property and the styles of selected features.

Note: When you **LEFT click** on a property, if any features that have the specified property are selected, those features are redrawn using the newly selected property. If no features that have the specified property are selected, the default property used to draw new features is changed.

For example, if you change the **Fill** pattern and a closed feature (such as a circle) is selected, the pattern of the circle changes. If none of the selected features are closed, then the default **Fill** pattern for new features changes.

There is one exception to this; the **Arrow Style** command only changes the arrow style for *new* features; the **Change Arrows** command changes the arrow style for *existing* features.

Properties you can change using the Graphics Palette include **Line Style** and **Fill Pattern**.

Line Style   The width of the line used to draw features. The line width that will be used to draw new features appears in the palette, after the label **Line** (Figure 6-10). **LEFT click** on the desired line width to select that width.
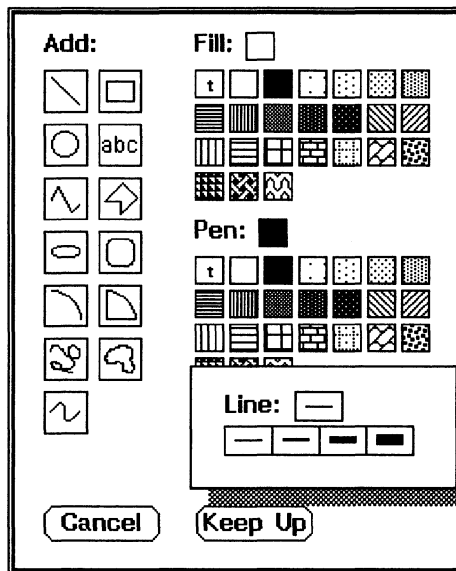
Figure 6-10   *Selecting Line Width*

**Fill Pattern
and Pen
Pattern**

The **Fill** pattern is used to fill closed features; the
Pen pattern is used to draw a feature's outline.
Fill and **Pen** patterns used to draw new features
appear next to the labels **Fill** and **Pen** (Figure
6-11). To select a new **Fill** or **Pen** pattern,
LEFT click on the desired pattern.
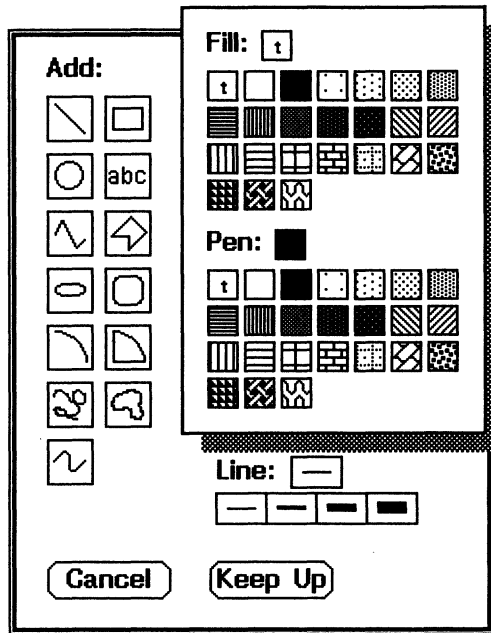
Figure 6-11   Selecting Pen and Fill Patterns

```
┌─────────────┐
│ Graphics    │▓
│ Palette...  │▓
│ Style       │ Text Justification  ⇒▓
│ Placement   │ Arrow Style         ⇒▓
│ Edit        │ Font...              ▓
│ Preferences │ Rulers...            ▓
│ Group       │ Grid...              ▓
│ Ungroup     │▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
│ Select All  │▓
│ Undo        │▓
│ Reshape     │▓
│ Move        │▓
│ Select      │▓
└─────────────┘▓
```
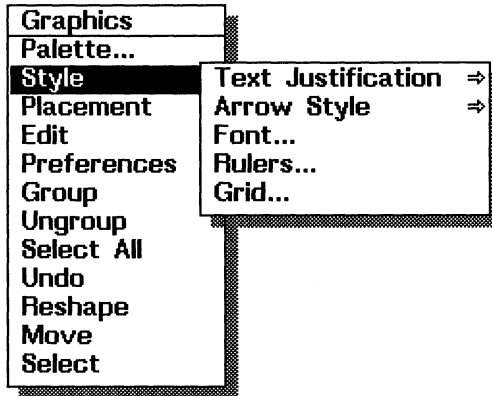
Style

The **Style** commands let you change how text is displayed in the drawing, whether arrows appear on lines and line sequences, and the format for rulers and the grid.

The drawing characteristics you can change are described here.

Text Justification

Specify how text is to be justified. You may choose **Left, Center,** or **Right** justification from the submenu.

- **Left** justification -- text starts at the insertion point

- **Center** justification -- text appears centered at the insertion point

- **Right** justification -- text appears ending at the insertion point

The **Text Justification** command is used to set the default justification for new text features, as well as to change the justification of existing features.

Note: If any text features are selected when you use the **Text Justification** command, the justification of the selected features is changed. If no text features are selected, the default justification for new text features is changed.

Arrow Style   Specify whether arrows should appear on lines, line sequences, and splines. You can choose the arrow style from a menu that lists the four types of arrow styles (shown in Figure 6-12):

- **None** -- no arrows appear.
- **At Start** -- an arrow is drawn at the first point specified in the feature.
- **At End** -- an arrow is drawn at the last point specified in the feature.
- **Both** -- arrows are drawn both at the start and the end.
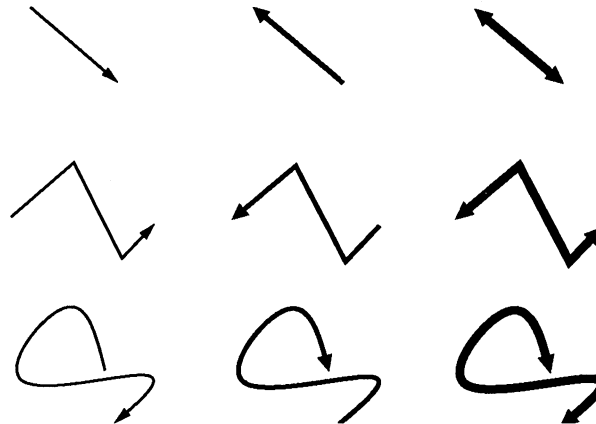
Figure 6-12   *Arrows*

The **Arrow Style** command sets the defaults for new features. You can use the **Graphics-Edit-Change Arrows** command to change the arrows on existing features, either by adding or removing an arrow at the end of a line.

Font...   Display a dialog box to select the font family, face, and size, and underlining for text features (Figure 6-13).

```
┌─────────────────────────────────────┐
│  ┌ Font ──────────────────────────┐  │
│  │  Family  ⟳ helvetica           │  │
│  │  Face    ⟳ Bold                │  │
│  │  Size    ⟳ 14 pt               │  │
│  └────────────────────────────────┘  │
│                                       │
│   ╭─────────╮    ╭──────────╮         │
│   │   OK    │    │  Cancel  │         │
│   ╰─────────╯    ╰──────────╯         │
└─────────────────────────────────────┘
```
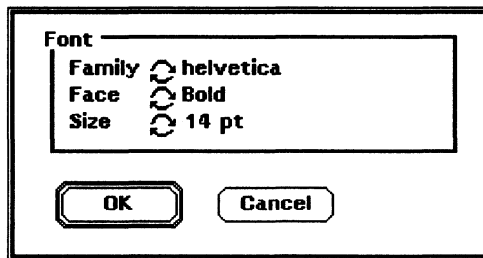
Figure 6-13   *Fonts Dialog Box*

Font... sets the default font for new text features, and changes the justification of existing features.

Note: If any text features are selected when you use the **Font...** command, the font of the selected features is changed. If no text features are selected, the default font for new text features is changed.

Rulers...   Display a dialog box to specify the format and units of the rulers (Figure 6-14).

```
┌─────────────────────────────────┐
│ ┌─────────────────────────────┐ │
│ │ Major Division Units ─────┐ │ │
│ │ ◉ Inches   ○ Centimeters │ │ │
│ │ └───────────────────────┘ │ │
│ │ Minor Division Spacing      │ │
│ │ In Inches ⟳ 1/16 inch       │ │
│ │ ┌─────────────────────────┐ │ │
│ │ │ Number increment: 1     │ │ │
│ │ └─────────────────────────┘ │ │
│ │  ╭─────────╮  ╭─────────╮   │ │
│ │  │   OK    │  │ Cancel  │   │ │
│ │  ╰─────────╯  ╰─────────╯   │ │
│ └─────────────────────────────┘ │
└─────────────────────────────────┘
```
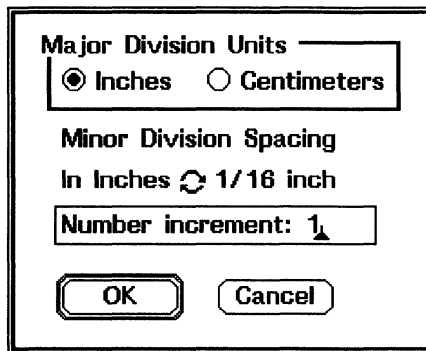
Figure 6-14   *Customizing Ruler Specifications*

Options that may be specified for rulers are described as follows.

Major
Division Units

The units in which rulers are marked. Default value is inches.

Minor
Division
Spacing

The spacing of markings within each inch or centimeter. Default value is 1/16 inch.

Number
Increment

The increment between numbers on the largest divisions of the ruler. (For example, a numbering increment of 1 produces a ruler with markings labeled 1, 2, 3, etc., and a value of 2 produces a ruler with markings labeled 2, 4, 6, etc.) Default value is 1.

Grid...

When creating or editing a drawing, you may constrain your operations so that all of the points that define features line up along a grid. This makes it very easy to add features that are evenly spaced, or features that are aligned with each other.

In Figure 6-15, there is a grid of points with 1/8 inch spacing. When in *grid mode*, those points are the only ones where features in the drawing can lie.
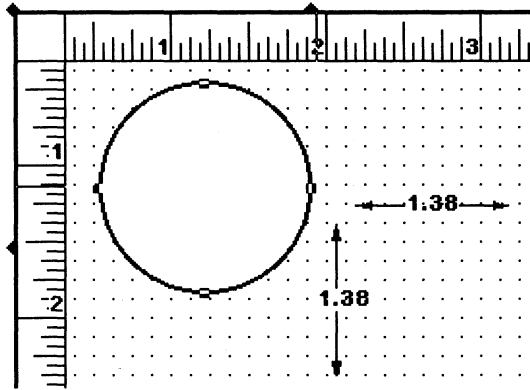
Figure 6-15   *Grid, Rulers, and Size Preferences*

You can adjust the spacing of the points in the grid with the **Grid...** command, which displays the dialog box shown in Figure 6-16. Possible grid sizes are 1/16, 1/8, 1/4, and 1 inch, 1/2, and 1/10 centimeter.
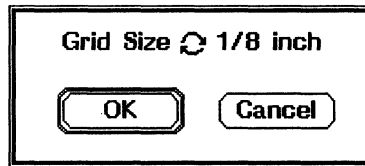
Figure 6-16   *Grid Size Dialog Box*

There are two other commands that you can use with the grid.

- **Graphics-Preferences-Show Grid / Hide Grid** -- turns on and off the display of the grid.

- **Graphics-Preferences-Grid Mode On / Off** -- turns on and off the editor's *grid mode*. When grid mode is turned on, the points that define a feature are forced to line up on the grid. When you add new features in grid mode, they are automatically aligned along the grid. Existing features are aligned to the grid when you reshape them.

With the **Graphics-Preferences-Show Rulers** command, you can cause rulers to appear on the edges of the graphics element. The **Graphics-Style-Rulers...** command lets you change the numbering and marks on the ruler.

Using the **Graphics-Preferences-Show Size** command you can see the current size of graphics features. The size is updated as you define or adjust the points of the feature.

```
Graphics
Palette...
Style          ⇒
Placement       To Front
Edit            To Back
Preferences     Align Features
Group           Align To Grid
Ungroup         Lock
Select All      Unlock
Undo
Reshape
Move
Select
```
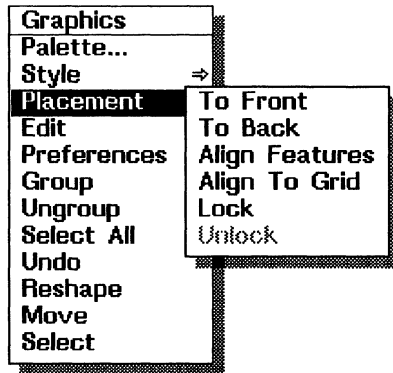
Placement

When you add features to a drawing, you may position them so that they overlap other features. Each new feature appears in a new plane in front of any existing features, possibly obscuring those features, as shown in Figure 6-17.
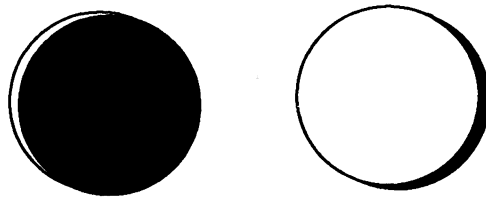
Figure 6-17   *Overlapping Circles*

You can move features to the back of the drawing (so that all overlapping features obscure them) or to the front of the drawing (so that they are completely separate), using the commands on the **Graphics-Placement** submenu:

To Front   Move the selected features to the front of the drawing.

To Back   Move the selected features to the back of the drawing.

**Align
Features**

Align the selected features with each other. A dialog box appears that shows the types of alignment (Figure 6-18). You can align features either horizontally, vertically, or both. In the horizontal direction, you can align the features' left sides, horizontal (**Left/Right**) centers, or right sides. In the vertical direction, you can align the features' tops, vertical (**Top/Bottom**) centers, or bottoms.
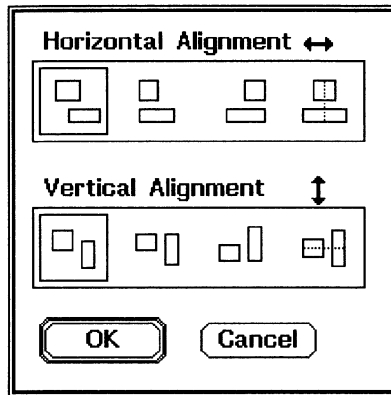
Figure 6-18   *Selecting an Alignment Style*

When you align features' left sides, they move so that their left sides align with the leftmost side of all the selected features. Similarly, you can use right, left, and bottom to align the features. Center alignment aligns to the horizontal or vertical center of all the selected features.

When you align one feature with another, *the points that define the features are aligned.* Thus, if you draw features with different line widths, the lines are centered on the defining points of the features, and their outlines may not align exactly, as illustrated in Figure 6-19.

Top of Boxes
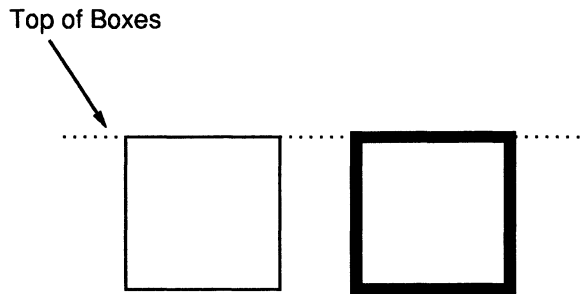
The tops of these boxes were aligned to each
other using the "Align Features" command.

Figure 6-19   *Aligning Graphical Features*

If any of the selected features are *locked* (using
the **Lock** command), the position of those features
is considered in determining where to align the
selected features, but the locked features are not
moved.

**Align To
Grid**

Align the selected features to the grid. (See the
Graphics-Preferences-Grid Mode On command
for a discussion of how each type of feature is
aligned.)

Lock

Once you have developed a drawing, you may
want to ensure that the features are not changed
inadvertently. Use this command to lock the
selected features.

You cannot change locked features (i.e., you
cannot cut, move, reshape, rotate, scale, or edit
them in any way, nor can you change their **Fill**
patterns or **Line** styles). Selection handles on
locked features appear in a grey pattern to
distinguish them from unlocked features, which
have black selection handles (Figure 6-20).

Unlock   Unlock the selected features, thus enabling them to be changed.
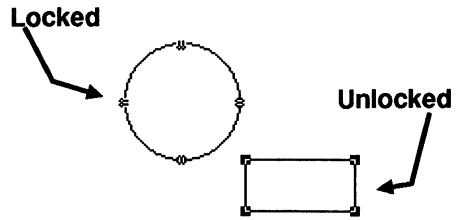
Locked

Unlocked

Figure 6-20   *Locked and Unlocked Features*

```
┌─────────────────┐▓
│ Graphics        │▓
├─────────────────┤▓
│ Palette...      │▓
│ Style        ⇒  │▓
│ Placement    ⇒  │▓
├─────────────┬───┴──────────────────┐▓
│ Edit        │ Cut                  │▓
│ Preferences │ Paste                │▓
│ Group       │ Copy                 │▓
│ Ungroup     │ Clear                │▓
│ Select All  │ Duplicate            │▓
│ Undo        │ Scale...             │▓
│ Reshape     │ Change Arrows        │▓
│ Move        │ Round Corners    ⇒   │▓
│ Select      │ Smooth or Unsmooth   │▓
└─────────────┴──────────────────────┘▓
  ▓▓▓▓▓▓▓▓▓▓▓    ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
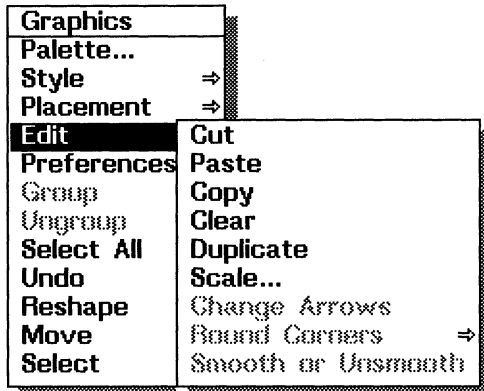
Edit   Change the selected features. The submenu choices are as follows.

> **Cut** Remove the selected features from the drawing and put them on the clipboard. They overwrite any previously cut features. You can put the newly cut features back in the drawing using the **Paste** command.
>
> **Paste** Paste the most recently cut object from the clipboard into the drawing. The object may be a graphics object or an image. When you choose this command, the features to be pasted appear in the drawing at the position of the mouse pointer. You can use the mouse to move them to a new position, then **LEFT click** to add them to the drawing. To abort pasting the features, **RIGHT click**.
>
> **Copy** Copy the selected features from the drawing onto the clipboard, but do not remove them from the drawing.

Clear	Remove the selected features from the drawing and discard them (do not put them on the clipboard).
Duplicate	Duplicate the selected features. The new features appear in front of the original features, slightly below them and to their right. The original features are deselected, and the copies are selected.
	If you immediately move the new features using **LEFT drag**, the editor remembers where you have moved them relative to their original location. If you select **Duplicate** again, another copy of the selected features appears, but instead of being placed below and to the right of the selected features, it is moved by the same amount.
	This makes it easy to create a regularly spaced collection of features. For example, to create a row of boxes, you could add a box, duplicate it, move the duplicated box next to the original box, and repeatedly select the duplicate command to create the rest of the row.
	When you **click** any mouse button, or choose a new command, the editor resets the placement information to its default behavior.
Scale...	You can scale an existing set of features by a specified factor using this command. This allows you, for example, to create a large scale diagram and then scale it down so that it fits into another part of the drawing (Figure 6-21). All features except text are scaled. You can adjust text font sizes as a separate operation.
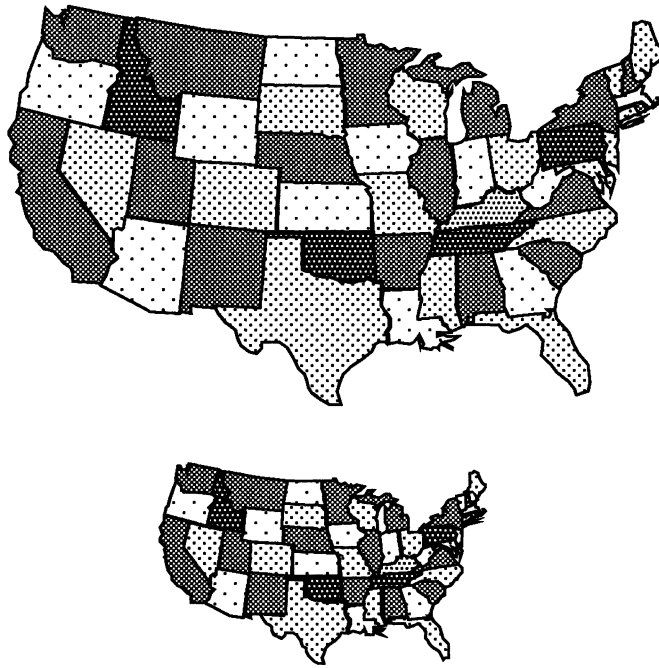
Figure 6-21   *Scaled Graphics Drawings*

When you use the **Scale...** command, a dialog box appears in which you can set the scaling parameters (Figure 6-22). The two types of scaling are:

- **Size** scaling -- only the size of the features changes.

- **Size and Position** scaling -- the size of the features changes, and so do their position in the drawing, relative to the upper-left corner of the drawing.

The **Scale Factor** is specified in the dialog box as a decimal number (Figure 6-22). For example, to double the size of a feature, specify a factor of 2; to halve the size of a feature, specify a factor of .5.

```
┌─────────────────────────────────────────────────────────┐
│ Type of Scaling ─────┐                                   │
│   ◉ Size and Position │  ┌──────────────────────────┐    │
│   ○ Size Only         │  │ Scale factor: ▲          │    │
│                       │  └──────────────────────────┘    │
│                                                          │
│   ╭──────────╮    ╭──────────╮                           │
│   │    OK    │    │  Cancel  │                           │
│   ╰──────────╯    ╰──────────╯                           │
└─────────────────────────────────────────────────────────┘
```
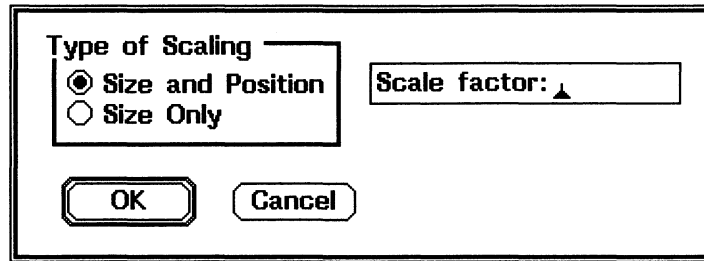
Figure 6-22   *Scale Dialog Box*

Each feature has a minimum size. If you try to reshape or scale a feature so that it would become too small, a pop-up dialog appears giving you the option of undoing the operation and restoring the original feature.

Change Arrows

Change the arrow style of a line, line sequence, or spline. After selecting this command, **LEFT click** near the end of the line, line sequence, or spline where you want to change the arrow. If it had no arrow drawn, one is added; if it had an arrow drawn, the arrow is removed. **RIGHT click** to abort the command. When deciding which line to change, the editor first checks if the click was near a line that was already selected. If the endpoints of two lines are very close to each other, you can control which one changes by selecting it before invoking this command.

Round Corners

Round the corners of the selected rectangles. You can choose the radius of the corners from a submenu. If you choose a value of **0 inches**, the rectangles appear with square corners. If you

choose **Automatic**, the radius is automatically made proportional to the length of the shortest side of the rectangle, and changes if you reshape or scale the rectangle.

Smooth or Unsmooth Convert the selected line sequences to splines or convert the selected splines to line sequences.

```
┌─────────────────┐
│ Graphics        │▓
├─────────────────┤▓
│ Palette...      │▓
│ Style        ⇒ │▓
│ Placement    ⇒ │▓
│ Edit         ⇒ │▓┌──────────────┐
│ Preferences     ││ Show Rulers  │▓
│ Group           ││ Show Grid    │▓
│ Ungroup         ││ Grid Mode On │▓
│ Select All      ││ Show Size    │▓
│ Undo            │▓└──────────────┘▓
│ Reshape         │▓ ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
│ Move            │▓
│ Select          │▓
└─────────────────┘▓
 ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
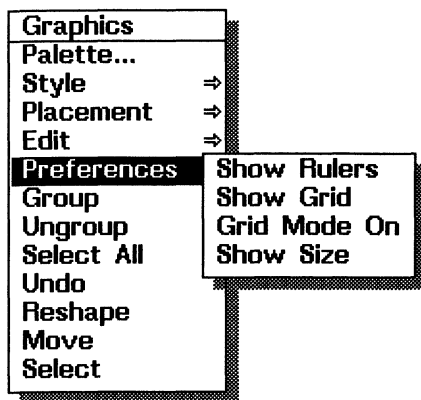
Preferences   Indicate whether or not to display rulers and grids, whether to draw in grid mode, and whether to show the size of features. The following list gives the commands shown in the menu when you create a new drawing; the alternative commands are in parentheses. For example, this menu initially contains a command named **Show Rulers**. If you select this command, the next time you display the menu, **Hide Rulers** appears instead.

    Show (Hide)   Display (or do not display) rulers along the edges
    Rulers   of the drawing (see Figure 6-23). You can use the **Graphics-Style-Rulers...** command to change the numbering style of the rulers.

        When the rulers are displayed, you can **LEFT drag** in a ruler to set that ruler's origin (the tick mark is numbered 0). The origin is set to the point at which you release the mouse button.

        If you **LEFT drag** from a ruler into the drawing, a pair of crosshairs appears. The crosshairs follow the pointer until you release the button;

the editor sets the origin of both rulers at the pointer position. This provides a convenient technique for setting the (0, 0) point to any desired location.
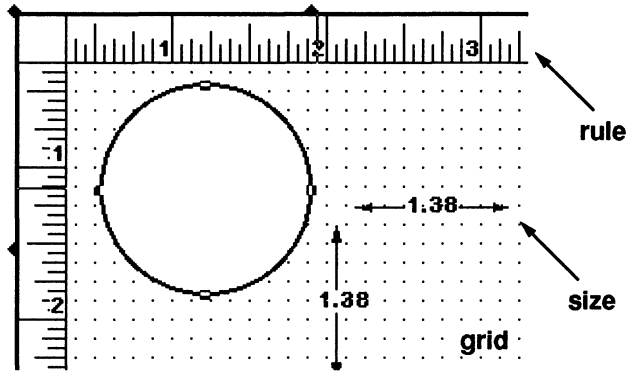
Figure 6-23   Rulers, Grid, and Size Displayed

Show (Hide)   Display (or do not display) the grid (see Figure
Grid   6-23).

Grid Mode   Turn on and off the editor's *grid mode*. Grid
On (Off)   mode affects the placement of new features, as
                     well as the moving and reshaping operations on
                     existing features.

                     When grid mode is turned on, the points that
                     define a feature are forced to line up on the grid.
                     When you add new features in grid mode, they
                     are automatically aligned along the grid. Existing
                     features are aligned to the grid when you reshape
                     them.

                     When you align a feature with other features on a
                     grid, *the points that define the features are
                     aligned.* Thus, if you draw features with different

line widths, their outlines may not align exactly, and if you draw a feature with a line width greater than 1, its outline may not be exactly on the grid.

The editor aligns features to the grid according to the following rules:

Arc, Wedge, Circle
Place the center on the nearest gridpoint. Make the radius an integral number of grid spacings.

Ellipse
Place the center on the nearest gridpoint. Make the height and width an integral number of grid spacings.

Boxes, Rounded Boxes, Polygons
Place the vertices at the nearest gridpoints.

Lines, Line Sequences, Freehand Drawings
Place the endpoints at the nearest gridpoints.

Spline
Place the knots at the nearest gridpoints.

Text
Place the insertion point at the nearest gridpoint.

(Don't) Show Size
Show (or do not show) the size of features (see Figure 6-23). The size of a feature appears when you select the feature or add a new feature. When you reshape an existing feature, the size changes as you adjust the feature size.

The size is given in the same units as the major divisions of the rulers; the default is inches (see the **Graphics-Preferences-Rulers...** command above). The size does not take into account the width of the line used to draw the feature. The sizes given for each type of feature are as follows:

Arc, Wedge	The radius of the arc or wedge and the clockwise angle that the arc or wedge inscribes.
Box, Rounded Box, Circle, Ellipse, Text	The height and width of the feature.
Line Sequence, Polygon	The height and width of the feature. When you add a feature, the size shown includes the distance from the pointer position to the previous endpoint, and the clockwise angle between the current and preceding line segments. When you reshape a feature, the size shown includes the length of the segments preceding and following the selected endpoint and the clockwise angle from the following segment to the preceding segment. If you select the startpoint or endpoint of a line sequence when reshaping, the size information given is the same as if the second or second-to-last endpoint was selected.
Spline	The height and width of the spline. When you add a new spline, the size includes the horizontal and vertical distance from the pointer position to the previous knot.
Line	The length of the line.

Freehand Drawings, Closed Freehand Drawings   The height and width of the feature.

Each feature also has a minimum size. If you try to add a feature that is too small or to reshape or scale a feature so that it would become too small, a pop-up dialog appears, giving you the option of either undoing the operation (restoring the original feature) or deleting the feature that is too small to display.

```
┌─────────────────────┐
│ Graphics            │▓
│ Palette...          │▓
│ Style          ⇒    │▓
│ Placement      ⇒    │▓
│ Edit           ⇒    │▓
│ Preferences    ⇒    │▓
│ Group               │▓
│ Ungroup             │▓
│ Select All          │▓
│ Undo                │▓
│ Reshape             │▓
│ Move                │▓
│ Select              │▓
└─────────────────────┘
  ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
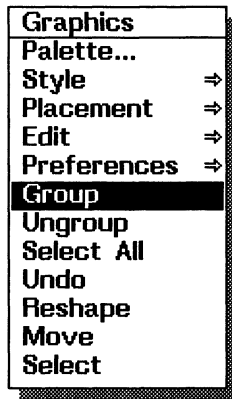
Group   Use this command to combine a selected set of multiple features in a drawing so that they act as if they were a single feature. A *group* is a set of features that is treated as a single feature; features within a group are called *members* of that group. Groups can be members of other groups. Groups must contain at least two features; you cannot make a single feature into a group.

A selected group is marked with small rectangles at the corners of the bounding rectangle of its members, as shown in Figure 6-24. When you move a group, the members of the group move so that their position relative to each other is maintained. When you reshape a group, its members are reshaped proportionally. When you change the line style or pattern of a group, the line style and pattern of all of its members change.

**Multiple   One
Features   Group**
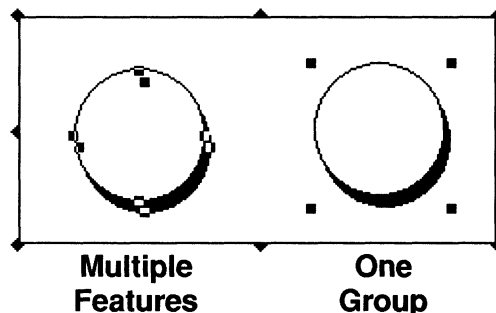
Figure 6-24   *Graphics Feature Groups*

When you reshape a graphics group, text features are not resized. You can change the font of text features separately by selecting the group, then using the **Graphics-Style-Font...** command.

Once features have been combined into a group, you cannot select, move, reshape, or edit any *single* member of the group. However, you can remove the grouping (or *ungroup*) to treat the members of the group as individual features again.

```
Graphics
Palette...
Style          ⇒
Placement      ⇒
Edit           ⇒
Preferences    ⇒
Group
Ungroup
Select All
Undo
Reshape
Move
Select
```
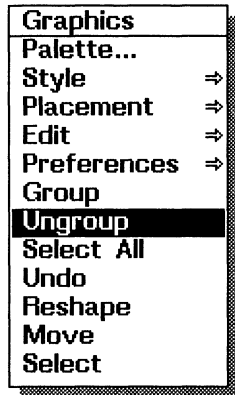
Ungroup

Remove groupings in the selected set of features so that the features are treated individually. If there are several levels of grouping (i.e., groups containing other groups), the editor removes one level of grouping each time the **Ungroup** command is used.

```
┌─────────────────┐
│ Graphics        │▓
├─────────────────┤▓
│ Palette...      │▓
│ Style        ⇒  │▓
│ Placement    ⇒  │▓
│ Edit         ⇒  │▓
│ Preferences  ⇒  │▓
│ Group           │▓
│ Ungroup         │▓
│▓Select All▓▓▓▓▓▓│▓
│ Undo            │▓
│ Reshape         │▓
│ Move            │▓
│ Select          │▓
└─────────────────┘▓
 ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
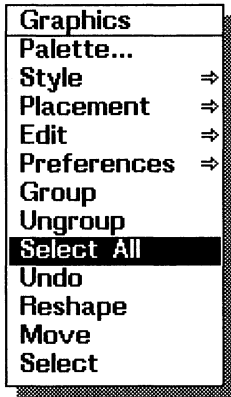
Select All   Select all the features in the drawing.

```
┌─────────────────┐
│ Graphics        │▓
├─────────────────┤▓
│ Palette...      │▓
│ Style        ⇒  │▓
│ Placement    ⇒  │▓
│ Edit         ⇒  │▓
│ Preferences  ⇒  │▓
│ Group           │▓
│ Ungroup         │▓
│ Select All      │▓
│▓Undo▓▓▓▓▓▓▓▓▓▓▓▓│▓
│ Reshape         │▓
│ Move            │▓
│ Select          │▓
└─────────────────┘▓
 ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
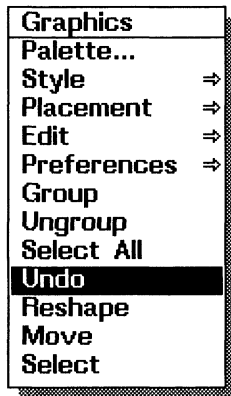
Undo   Undo the last operation performed on the drawing. Not all
                  operations can be undone. If the last operation cannot be undone,
                  this command is dimmed in the menu.

```
┌─────────────────┐
│ Graphics        │▓
├─────────────────┤▓
│ Palette...      │▓
│ Style        ⇒  │▓
│ Placement    ⇒  │▓
│ Edit         ⇒  │▓
│ Preferences  ⇒  │▓
│ Group           │▓
│ Ungroup         │▓
│ Select All      │▓
│ Undo            │▓
│ ███Reshape████  │▓
│ Move            │▓
│ Select          │▓
└─────────────────┘▓
 ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
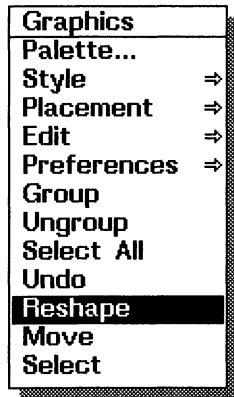
Reshape

Reshape a selected feature by using **LEFT hold** while moving the
mouse pointer. This command and the next two commands are
useful in situations where features are too close together or too
small to differentiate between reshaping, movement, and selection.
You can remove the ambiguity by explicitly defining the next
operation.

```
┌─────────────────┐
│ Graphics        │▓
├─────────────────┤▓
│ Palette...      │▓
│ Style        ⇒  │▓
│ Placement    ⇒  │▓
│ Edit         ⇒  │▓
│ Preferences  ⇒  │▓
│ Group           │▓
│ Ungroup         │▓
│ Select All      │▓
│ Undo            │▓
│ Reshape         │▓
│ ████Move█████   │▓
│ Select          │▓
└─────────────────┘▓
 ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
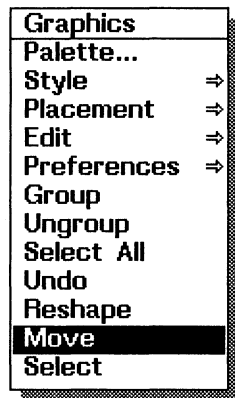
Move

Move the selected features by using **LEFT hold** while moving the
mouse pointer. This command is useful when features are too
close together or too small to differentiate between reshaping,
movement, and selection.

```
┌─────────────────────┐
│ Graphics            │▓
│ Palette...          │▓
│ Style           ⇒   │▓
│ Placement       ⇒   │▓
│ Edit            ⇒   │▓
│ Preferences     ⇒   │▓
│ Group               │▓
│ Ungroup             │▓
│ Select All          │▓
│ Undo                │▓
│ Reshape             │▓
│ Move                │▓
│ ███Select███████████│▓
└─────────────────────┘
  ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```
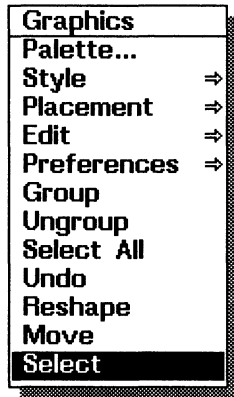
Select   Select features by drawing a box around them. Use **LEFT hold**
                    while moving the mouse pointer. This command is useful when
                    features are very small or very close together.

6.4   Keyboard Commands

In most cases, you will probably edit graphics in BBN/Slate using
the mouse, menus, and dialogs. There are, however, some
situations where it is nice to be able to have one hand on the
keyboard issuing commands and the other hand on the mouse
controlling placement of features. The keyboard equivalents for
many menu operations used in graphics editing provide this
flexibility.

Table 6-1 lists all graphics menu commands, their equivalent
default key commands, and the underlying functions that are
invoked by the commands. In many cases you will notice that no
default key command exists, but in general you can create a key
command for almost every operation in BBN/Slate. If you want to
add or change keyboard equivalents, the *Customizing Manual*
describes how to bind keys to functions.

Table 6-1   *Graphics Editing Keyboard Commands*

Keystroke	Function
b	graphics-add-box
c	graphics-add-circle
e	graphics-add-ellipse
l	graphics-add-line
L	graphics-add-lineseq
p	graphics-add-polygon
B	graphics-add-rounded-box
t	graphics-add-text
^P	graphics-align-features
^I	graphics-align-features-dialog
ALT-^I	graphics-align-features-dialog
a	graphics-change-arrows
^X^X	graphics-clear
ESC-W	graphics-copy
ESC-w	graphics-copy
ALT-w	graphics-copy
^D	graphics-cut
^W	graphics-cut
d	graphics-duplicate
ALT-d	graphics-duplicate
^Xf	graphics-font-dialog
g	graphics-group-objects
^M	graphics-move
^B	graphics-move-to-back
^F	graphics-move-to-front
^Xa	graphics-palette
w through x	graphics-palette
^Y	graphics-paste

(continued)

Table 6-1   *Graphics Editing Keyboard Commands (continued)*

Keystroke	Function
^A	graphics-repeat-add-feature
^R	graphics-reshape
^S	graphics-select-with-box
^XR	graphics-set-ruler-units
^XG	graphics-toggle-griddisplay
^Xg	graphics-toggle-griddisplay
^G	graphics-toggle-gridmode
^X^G	graphics-toggle-gridmode
^Xr	graphics-toggle-rulersdisplay
^X^R	graphics-toggle-showsize
^X^U	graphics-undo
u	graphics-ungroup-object

7   Images

Visual images of an object or scene can provide a compelling expression of a large amount of information. In addition to conveying information, however, images can often communicate a feeling with greater clarity than words or diagrams. No textual description of the expression on a face, for example, can substitute for an image of the face itself (Figure 7-1).
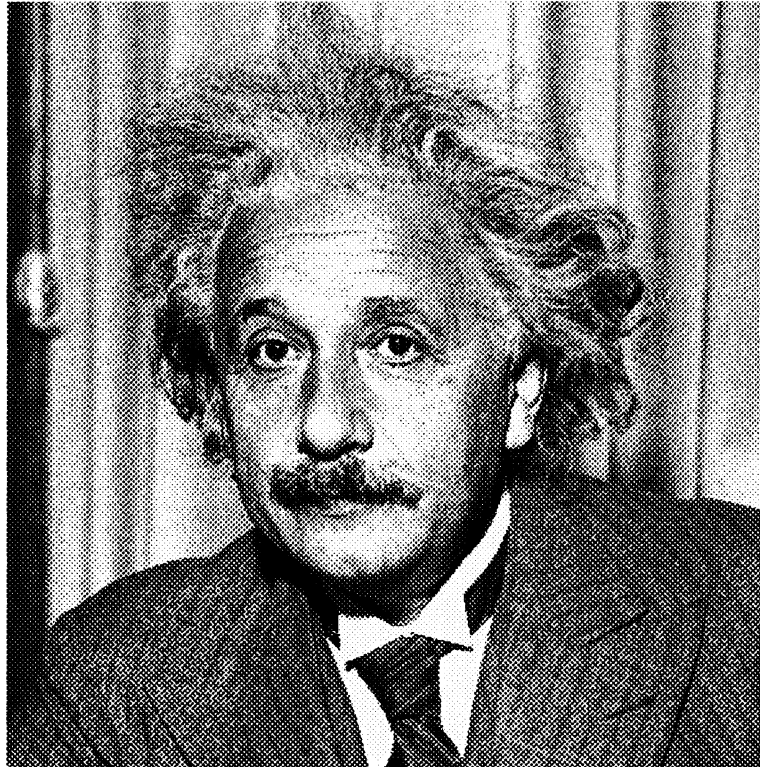
Figure 7-1   *A Sample BBN/Slate Image*

This chapter discusses:

- image types (Section 7.1)
- how to create images -- reading an image from a file, drawing/painting images, capturing screen and window system displays, and scanning (Section 7.2)
- working with color images (Section 7.3)
- print resolution (Section 7.4)
- **Image** menu commands (Section 7.5)
- mouse usage and keyboard commands (Sections 7.6 and 7.7)

7.1   Image Types

BBN/Slate lets you work with both black and white, and color images by providing three image options: blank, bitmap, and rasterfile.

- A *blank* image -- a blank space within a document in which you paint or create an image. A blank image can house a black and white image.
- A *bitmap* image -- a black-and-white bitmap representation of some object, such as a piece of paper with drawings on it, or a photograph. BBN/Slate uses its own format to reproduce a bitmap image within a document.
- A *rasterfile* -- used as a common image format on selected workstations. Rasterfiles may contain either black-and-white or color images.

BBN/Slate also lets you import XWD files and converts them into rasterfiles. XWD is an X11™ Window System format for images. You use the **Add-Image-XWD File** command to convert an XWD-formatted image to a rasterfile in the Document Editor.

You can perform many operations with a BBN/Slate bitmap image. To edit information in rasterfile or XWD format, you must first convert the rasterfile object to a bitmap image or graphics. You can also display a color rasterfile on a monochrome workstation; the color image will be rendered in black and white. A BBN/Slate feature called grayscale rendering lets you print color images on black-and-white PostScript® printers.

You can use an image-scanning device to bring such things as maps, drawings, and photographs into your BBN/Slate document. You can also use image-editing commands to "paint" an image freehand.

The image editor includes facilities for reading, writing, drawing, painting, rotating, scaling, reflecting, and otherwise editing bitmap images. A companion program to BBN/Slate, MMScan, lets you use an IBM personal computer or compatible and an inexpensive image scanner to create BBN/Slate-compatible image files from a variety of printed materials. For more information on MMScan, see the *System Topics* manual.

7.2   Creating Images

You add images to a document in one of two ways: from files stored in the operating system or by painting on blank areas from within the image editor.

7.2.1 Reading an Image from a File

BBN/Slate images can come from many sources, including files created by:

- screen snapshot commands (i.e., **mmsnap** and **XWD**)
- filter programs that convert other image formats to the format used by BBN/Slate
- image scanners
- video image digitizers

To read an image from a file and insert it into a BBN/Slate document, you use one of these commands as appropriate for your window system:

- **Add-Image-BBN/Slate Bitmap**
- **Add-Image-Rasterfile**
- **Add-Image-XWD** (for selected X11™ Window Systems)

When you add an image, rasterfile, or XWD file, a dialog box appears in which you can enter the name of the file that contains the image (Figure 7-2). Enter the file name that contains the image, or use the **List** button to search your directories for the file. The image is imported into your document (and the XWD file is converted into a rasterfile format).

```
┌─────────────────────────────────────────────┐
│                Image from file:              │
│  ┌────────────────────────────────────────┐  │
│  │                                        │  │
│  └────────────────────────────────────────┘  │
│      ┌──────┐   ┌──────┐   ┌────────┐         │
│      │ List │   │  OK  │   │ Cancel │         │
│      └──────┘   └──────┘   └────────┘         │
└─────────────────────────────────────────────┘
```
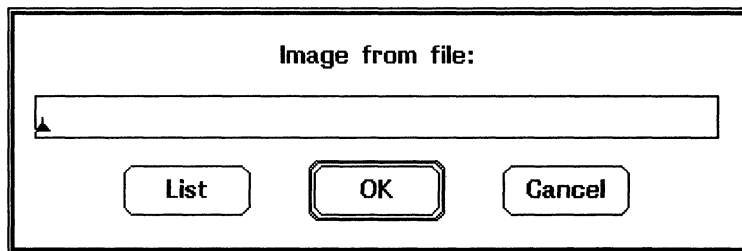
Figure 7-2   *Image Dialog Box*

7.2.2   Drawing and Painting Images

In addition to reading images from files, you can create blank images in a document, then draw or paint on them. You can also draw or paint on images that have been read from files, to annotate them, or touch them up.

To create a new blank image in your document:
Use the **Add-Image-Blank** command. After adding an image, there are two ways you can add to it: you can paint with a brush, and you can draw graphical features like those available in the graphics media type described in Chapter 6. In both cases you are changing the pixels of the image.

(You can think of pixels as tiny spots that may be either black or white. When you draw or paint on an image, you are turning some of these spots black and others white. This is in contrast to the graphics media type, where you are adding distinct features to a list of features that are individually drawn on the display.)

To paint on an image with a brush:
Use the **Image-Paint Palette...** and the **Image-Paint** commands, described in Section 7.5.

To draw graphical features in an image:
Use the **Image-Object Palette...** command to draw lines, boxes, circles, etc. When drawing graphical features in an image, BBN/Slate uses the same object palette that it uses for editing graphics elements. Remember, however, that you are drawing areas of black and white, not objects that can be changed after you have added them to the image.

Graphics elements and image elements have a special relationship with each other, since in many cases the same information may be represented in either media type. You can select features in a

graphics element and paste them into an image object (as areas of black and white) as well as copy an area of an image and paste it into a graphics element. Figure 7-3 illustrates the differences of output of image elements and graphics elements.
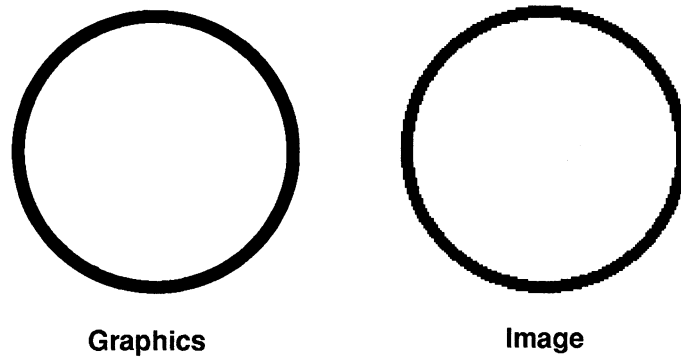
Graphics   **Image**

Figure 7-3   *Comparison between Graphics and Image Elements*

The circle on the left was added in a graphics object; the circle on the right was added in an image object. The graphics feature is "crisper" than the image feature.

For this reason, you should try to use graphics as the media type of choice. However, there are some cases where images are the preferred media types -- for example, when you wish to include a photograph in a document. Figures 7-5 and 7-6 are examples of photographic images.

7.2.3   Capturing Screen Displays as Images

Almost anything that can be displayed on your workstation can be captured with a shell command or window system utility and converted to an image in a BBN/Slate document. This is a two-step process.

1. Use the **mmsnap** or **XWD** command (or another screen utility appropriate to your window system) to capture a portion of the display into a file. The command **mmsnap** is explained below: consult your window system documentation for the "window dump" or "screen grabber" utility appropriate for your workstation.

2. Read the image file into the Document Editor using **Add-Image-Rasterfile** or **Add-Image-XWD**.

The imported image is now in the BBN/Slate rasterfile format.

For extensive image editing, you must convert the rasterfile to a BBN/Slate bitmap image (in black and white). There are two ways to do this.

1. Copy a rasterfile to the Document Editor clipboard and paste the clipboard contents into a blank image or blank graphics object using **Image-Edit-Paste** and **Graphics-Edit-Paste** commands.

2. Use the raster2bit filter as explained below and then read the bitmap image file into the Document Editor using **Add-Image-Bitmap**.

Using the mmsnap command:
The **mmsnap** command lets you define a rectangle of the display and store it as a rasterfile. Note that **mmsnap** works only in selected window systems.

The following command creates a file named `myfile` in BBN/Slate rasterfile format:

```
% mmsnap > myfile
```

This command creates an image file named `myfile.bit` from the rasterfile `myfile`:

```
% raster2bit > myfile.bit < myfile
```

You can combine these two operations into one shell command. For example:

```
% mmsnap | raster2bit > myfile.bit
```

If you do not need to edit the image, you omit the second and third steps, and load the rasterfile produced by **mmsnap** directly into your document with the **Add-Image-Rasterfile** command.

Using the mmsnap and sleep commands:
To capture an image that takes up the entire screen, you can use the **sleep** command followed by the **mmsnap** command. For example, the command:

```
% sleep 5; mmsnap | raster2bit > myfile.bit
```

This command delays the capturing of the screen image for 5 seconds, giving you time to set up the full-screen display you want to capture.

Figure 7-4 shows an example of a display produced by a chess program called **chesstool**. The image was created by running the chesstool program, then using **mmsnap** and **raster2bit** to capture its image from the screen.
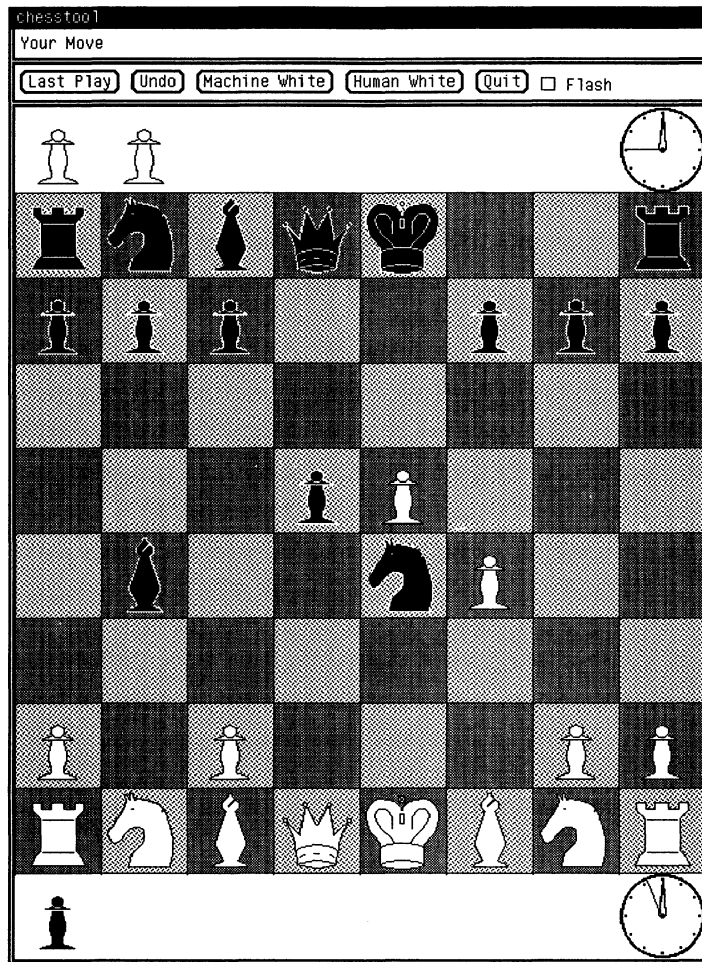
Figure 7-4   *Image Captured from the Workstation Display*

7.2.4 Scanning Images

BBN/Slate lets you import files created by standard image
scanners. With the image scanner, you scan documents using a
variety of different scanner settings to achieve different results, and
place the resulting images into files that can be included in
BBN/Slate documents. For additional information on scanning
images, see *System Topics*.

7.2.5   **Translating Images from Other Representations**

The BBN/Slate image editor understands two formats for images: the BBN/Slate bitmap format and the rasterfile format. Both of these representations are detailed in *System Topics*.

In addition, BBN/Slate includes a translation program to convert XWD files to the BBN/Slate rasterfile format when you bring them into your document.

These are only two representations among ten or so popular standard ways of representing image information. To deal with various image formats, BBN/Slate includes some translation filters for conversion to the two representations understood by the BBN/Slate image editor. See the *Release Notes* for a list of supported filters for your system.

If you have your own images in formats not directly supported by BBN/Slate, you may choose to provide your own translation programs. To assist translation program writers, the BBN/Slate image format is described in detail in *System Topics*.

7.3   **Working with Color Images**

You can include color images in your documents by reading them from rasterfiles and XWD files. BBN/Slate supports both 1-bit and 8-bit deep rasterfile and XWD file formats.

When you display a color image on a monochrome workstation, BBN/Slate automatically creates a black-and-white version of the screen image. When you print a color image, BBN/Slate automatically uses your PostScript printer's grayscale printing capabilities to produce the best image possible.

Color workstations are typically capable of displaying 256 colors at once. If you are running multiple color applications at the same time, those applications must compete with each other for using the available colors. If the total number of colors in use by all of your color programs is larger than 256, not all the programs can display their colors correctly at the same time.

Furthermore, if you are using several color applications at the same time, moving the mouse between them can cause the display to "flash" as the set of colors changes.

When you display a color image on a color workstation, BBN/Slate tries to avoid flashing the screen and disturbing the display of other color applications that you may be using at the same time. It does this by limiting its use of color to a subset of the available colors on the workstation.

By default, BBN/Slate uses a maximum of 128 colors to display documents, leaving the other 128 free for use by other programs. If you display an image that includes more than 128 colors, BBN/Slate selects the 128 most often used colors and displays the image with only those colors. (You can change the number of colors used by using the **colormap-size** variable described in the *Customizing Manual*).

BBN/Slate limits its use of color only for display purposes. When you save or mail a document containing color images, the complete set of colors is stored with each image. When you print a document containing color images, the complete set of colors is used to create the printed version.

If you have a single document that contains more than one color image, it is likely that the different images will require different sets of 128 colors. Since only one set of colors can be in use at a

time, BBN/Slate must determine which image's colors should be displayed at any given time. It uses a very simple rule to decide which colors to display: *the colors displayed are the colors of the last color image shown on the screen.*

If you have multiple color images on the same screen, only one of them can have its colors displayed at a time. To use the colors for a different image, simply **LEFT click** on the image and it will be displayed correctly. A **LEFT click** on a color image *always* forces its colors to be displayed correctly.

7.4   Print Resolution

You can force BBN/Slate to print images using the printer's full resolution. The resulting images are sharper, but they are also smaller than they appear on the screen.

If you use the **Edit-Change Attributes** command (described in detail in Chapter 4), a dialog box appears giving you a choice of four field values for the **Printed Size**: **As On Screen**, **1/2 Screen**, **1/4 Screen**, and **Specify**. Pick **Specify** to specify a print size other than full-size, 1/2, or 1/4.

Figures 7-5 and 7-6 illustrate the effect of printing at reduced size. It shows the same image printed **As On Screen**, **1/2 Screen**, and **0.3** times its size on the screen.

In addition, you can achieve a dramatic improvement by using a color or grayscale rasterfile instead of a black-and-white image. Figure 7-7 shows the difference in appearance between an image printed at 150 dpi versus a grayscale rasterfile printed at the same resolution. The improvement is due to preserving the maximum amount of information (grayscale) until printing time so that the printer can do the best possible job when rendering the image.
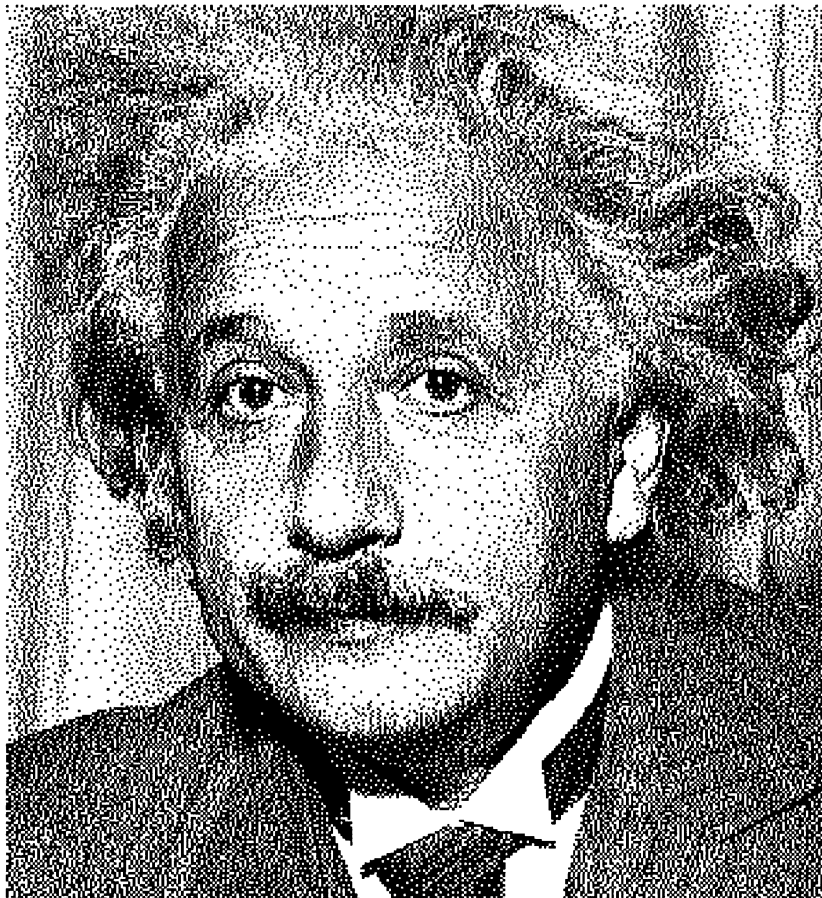
Figure 7-5   *As On Screen Size Image*
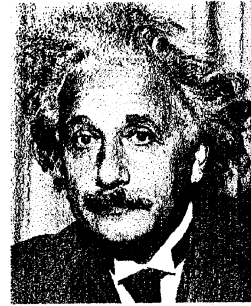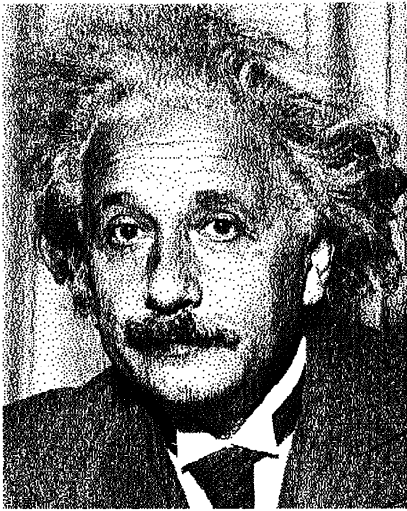
Figure 7-6   *Scaled Images: 1/2 screen size (left) and 0.3 screen size (right)*
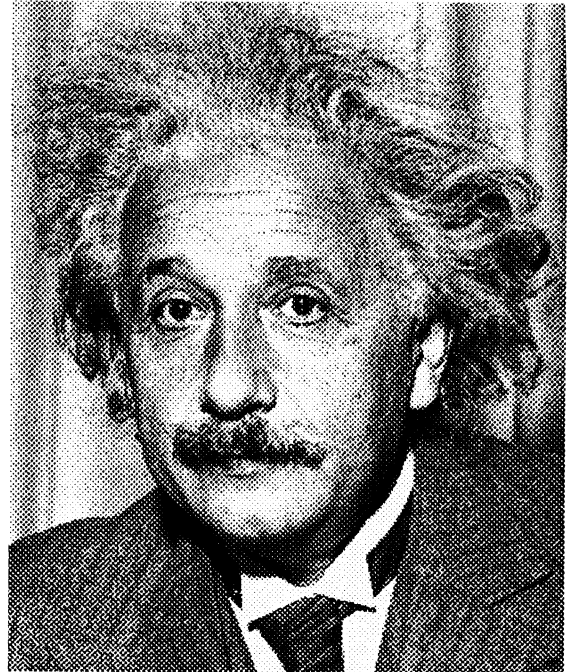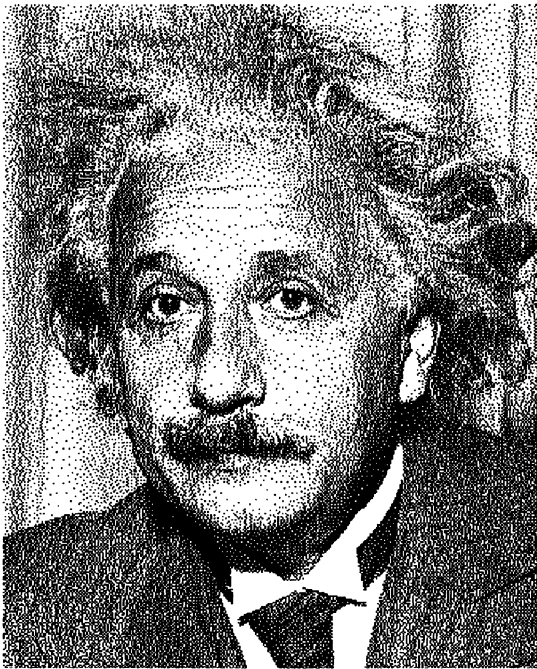
Figure 7-7   *Image versus Rasterfile*

7.5   Image Menu Commands

This section describes the commands available for image elements. Commands are described in the order they appear in the **Image** editor menu (Figure 7-8).

```
┌─────────────────────┐
│ Image:              │
├─────────────────────┤
│ Object Palette...   │
│ Paint Palette...    │
│ Paint               │
│ Edit            ⇒   │
│ File            ⇒   │
│ Scale...            │
│ Tilt...             │
│ Invert              │
│ Reflect         ⇒   │
│ Font...             │
│ Undo                │
└─────────────────────┘
```

Figure 7-8   *Image Menu*

You can restrict most image-editing operations to a subset of the image by selecting a region with the mouse. You select a region using **LEFT drag** and deselect it using **MIDDLE click**, as described in Section 7.6.

```
┌─────────────────────┐
│ Image               │▓
│ Object Palette...   │▓
│ Paint Palette...    │▓
│ Paint               │▓
│ Edit             ⇒  │▓
│ File             ⇒  │▓
│ Scale...            │▓
│ Tilt...             │▓
│ Invert              │▓
│ Reflect          ⇒  │▓
│ Font...             │▓
│ Undo                │▓
└─────────────────────┘
  ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```

Object Palette...   You use the Object Palette (Figure 7-9) to add a graphical feature, such as a line, circle, box, or text caption, to the image. This command is similar to the **Graphics Palette...** command in the graphics editor, and uses the same dialog box. Chapter 6 includes more detailed information on how to add each type of feature.

When you add graphical features to an image, they are drawn using the current line style, pen pattern, and fill pattern. To select a different line style, pen pattern, or fill pattern for a feature, **LEFT click** on the style or pattern you want *before adding the feature to the image.*

Once a feature is added, it becomes a part of the image rather than a separate object. This means that features in an image cannot be edited (i.e., you cannot move or reshape them, nor can you change their line or fill patterns).

When adding text features, you can add only one line of text at a time. To terminate each text feature, press **Return**.
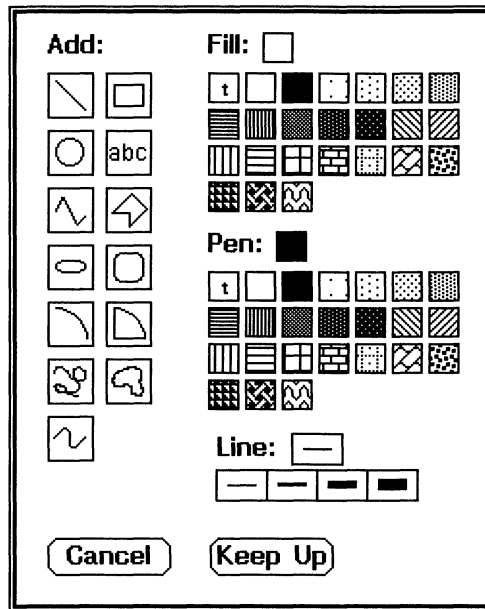
Figure 7-9   *Object Palette*

Paint Palette...   The Paint Palette (Figure 7-10) gives you a choice of brush sizes and patterns to use when painting, as well as a choice of back-

ground patterns. When you cut areas out of an image, the empty space is filled in with the background pattern you have chosen. To select a size or pattern, point to it in the palette and **LEFT click**.
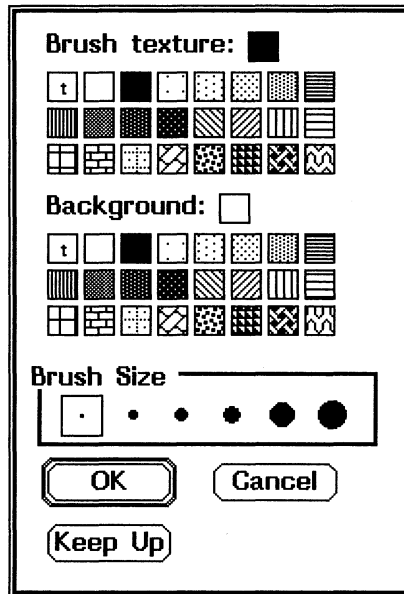
Figure 7-10   Paint Palette

```
┌─────────────────────────┐
│ Image                   │
│ Object Palette...       │
│ Paint Palette...        │
│ ▌Paint                  │
│ Edit               ⇒    │
│ File               ⇒    │
│ Scale...                │
│ Tilt...                 │
│ Invert                  │
│ Reflect            ⇒    │
│ Font...                 │
│ Undo                    │
└─────────────────────────┘
```

Paint

Select this menu command to paint over parts of an image with one of the graphics textures. Then use the **Paint Palette...** command (described previously) to define the paintbrush's size and shape and the background texture. When painting, use the mouse buttons as follows:

LEFT drag	Paint using the current paintbrush size and texture.
RIGHT drag	Erase the image (i.e., paint in the current background texture, using the current brush size).
MIDDLE click	Confirm the paint operation.
RIGHT click	Cancel the paint operation and restore the previous contents of the image.

```
┌─────────────────────────┐
│ Image:                  ▓
│ Object Palette...       ▓
│ Paint Palette...        ▓
│ Paint            ┌──────┐
│ Edit             │ Cut  ▓
│ File             │ Copy ▓
│ Scale...         │ Clear▓
│ Tilt...          │ Paste▓
│ Invert           │ Crop ▓
│ Reflect          └──────┘
│ Font...                 ▓
│ Undo                    ▓
└─────────────────────────┘
```
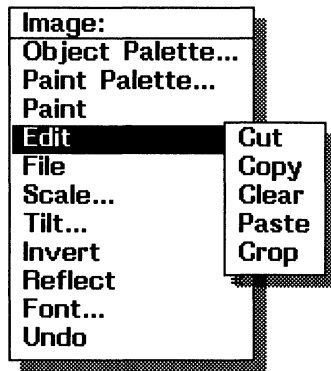
Edit

This submenu helps you perform various editing operations on the image. Editing operations affect only the image's selected region; if no region is selected, they affect the entire image. The choices available are:

Cut
Remove the selected region from the image and put it on the clipboard. The area cut from the image is filled with the current background pattern (Section 7.2.2 describes the background pattern).

Copy
Copy the selected region onto the clipboard, but do not remove it from the image.

Clear
Remove the selected region or the entire image and discard it. The area removed is filled with the current background pattern.

Paste
Paste an object from the clipboard into the image. You can paste objects that were cut or copied from an image, a rasterfile, or a graphics element. If you paste from a color rasterfile into an image, the rasterfile is automatically converted to black and white.

When pasting, you can use the mouse to position the pasted-in object anywhere within the image. **LEFT click** causes the object to overwrite the image beneath it. **MIDDLE click** combines the object with the image beneath it, using a logical "or" operation. **RIGHT click** aborts the paste command.

Crop

Discard everything outside the selected region. When you crop an image, the viewport in the document shrinks to enclose the part of the image that remains. This command has no effect if there is no selected region. Figure 7-11 shows the effect of cropping an image.
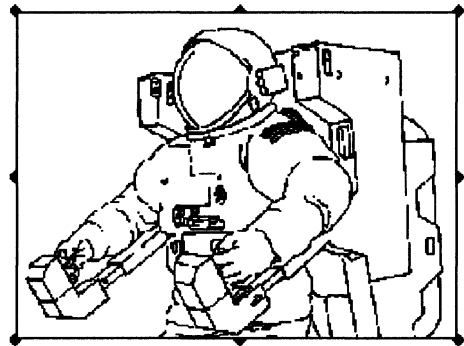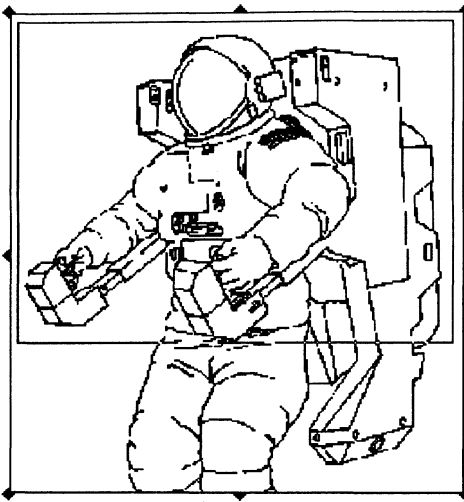
Figure 7-11   *Cropping an Image*

```
┌─────────────────────┐
│ Image:              ▓│
│ Object Palette...   ▓│
│ Paint Palette...    ▓│
│ Paint               ▓│
│ Edit            ⇨   ▓├──────────┐
│ File                │ Read     ▓│
│ Scale...            │ Write    ▓│
│ Tilt...             └──────────┘
│ Invert              ▓│
│ Reflect         ⇨   ▓│
│ Font...             ▓│
│ Undo                ▓│
└─────────────────────┘
```
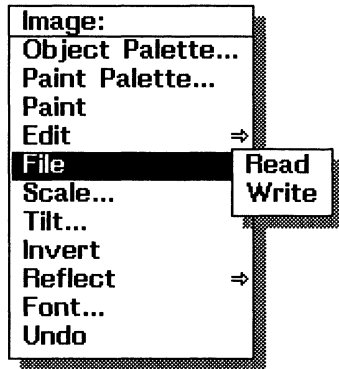
File

Read or write a BBN/Slate image to a file. These commands read and write only the selected image, not the entire document.

> **Read**
>
> Read an image file into the current image. The editor replaces the entire current image with the file's contents. It discards the previous contents of the image.
>
> **Write**
>
> Write an image to a image file.

```
┌─────────────────────┐
│ Image:              │
├─────────────────────┤
│ Object Palette...   │
│ Paint Palette...    │
│ Paint               │
│ Edit            ⇒   │
│ File            ⇒   │
│ ███████████████████ │
│ Scale...            │
│ ███████████████████ │
│ Tilt...             │
│ Invert              │
│ Reflect         ⇒   │
│ Font...             │
│ Undo                │
└─────────────────────┘
```

Scale...

Change the selected region's size or, if no region is selected, the entire image. This is done by a simple scaling method that replicates or removes rows and columns of pixels until the desired size is reached. When you select **Scale...**, a dialog box (Figure 7-12) appears. Its options are described below.

```
┌──────────────────────────────────────────────────┐
│  ┌─ Scaling Mode ──────────┐                      │
│  │  ◉ Interactive          │                      │
│  │  ○ Specified factor     │                      │
│  └─────────────────────────┘                      │
│  ┌─ Constraint ────────────┐                      │
│  │  ◉ Same aspect ratio    │                      │
│  │  ○ Width only           │      ┌─────────┐     │
│  │  ○ Height only          │      │   OK    │     │
│  │  ○ Unconstrained        │      └─────────┘     │
│  └─────────────────────────┘      ┌─────────┐     │
│                                   │ Cancel  │     │
│                                   └─────────┘     │
└──────────────────────────────────────────────────┘
```
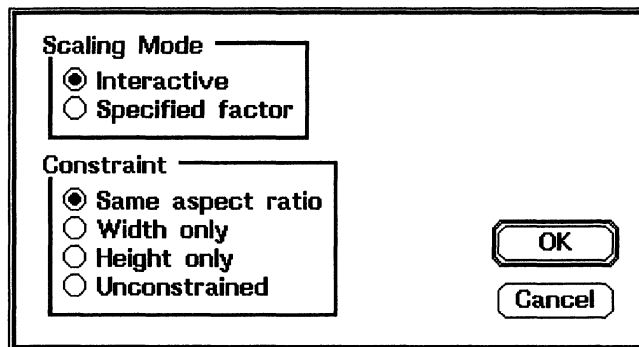
Figure 7-12　　　*Scaling an Image Dialog Box*

Scaling Mode

The scaling mode can be either **Interactive** or by a **Specified factor**.

In **Interactive** mode, you stretch or compress the image by moving the mouse; the image's lower right-hand corner follows the pointer. The

image's viewport in the document doubles in size so that you have room should you want to make the image larger. **LEFT click** confirms the scaling operation; **RIGHT click** cancels it.

In **Specified factor** mode, the image is stretched or compressed by the fixed factor you specified in the **Scale Factor** field. The scale factor need not be an integer. For example, a scale factor of 2 will double the size of an image, while a scale factor of 0.5 will halve it.

Constraint   You can constrain scaling in one of three ways:

- **Same aspect ratio** -- preserves the ratio of width to height of the image in all scaling operations.
- **Width only** -- scales the image only along its horizontal dimension.
- **Height only** -- scales the image only along its vertical dimension.

You can scale width and height independently of each other by selecting **Unconstrained**.

If you select a region in an image and make it smaller, the image's newly exposed area is filled with the current background texture.

Figure 7-13 shows the image on the right scaled to 0.85 times its original size.
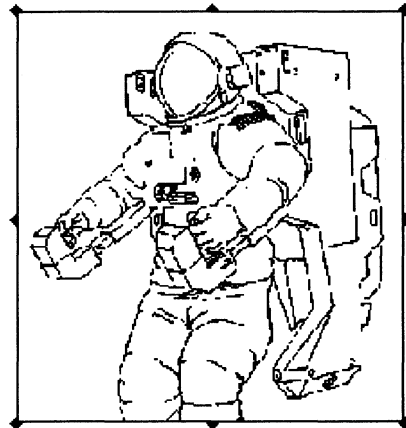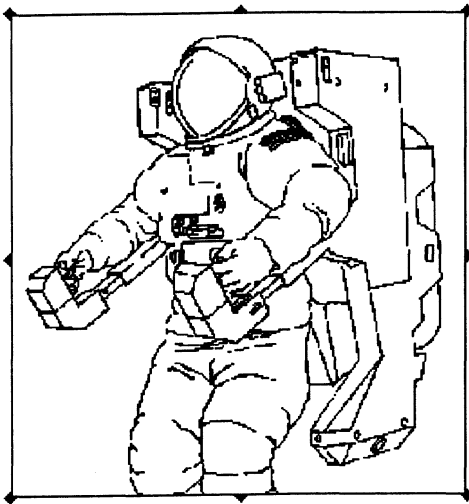
Figure 7-13   *Scaling an Image*

Tilt...   Rotate the selected region a specified number of degrees about its
center, or, if no region is selected, rotate the entire image. This is
useful in situations where an image has been skewed when
scanned. When you choose the **Tilt...** command, a dialog box
(Figure 7-14) appears where you specify the **Tilt** angle.

You rotate the image counterclockwise about its center by the
number of degrees given in the **Tilt angle:** field.
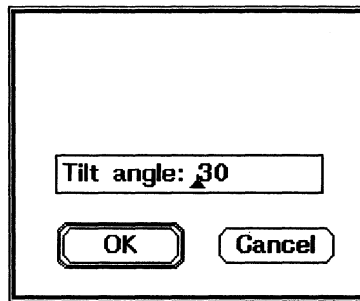
Figure 7-14   *Options for Rotating an Image*

In the case of a selected region, the editor removes original selection from the image and replaces it with the rotated version. It fills the area occupied by the original selection with the current background texture. You can use the mouse to position the rotated selection anywhere within the image. As in the **Paste** command:

- **LEFT click** causes the rotated selection to overwrite the image beneath it.

- **MIDDLE click** combines the rotated selection with the image beneath it.

- **RIGHT click** cancels the **Tilt** command

If you rotate the entire image, the object's viewport in the document expands to accommodate the new image.

When you tilt an image, the viewport in the document can expand to accommodate the entire image in its new orientation. Figure 7-15 shows an image before and after it has been tilted 10 degrees.
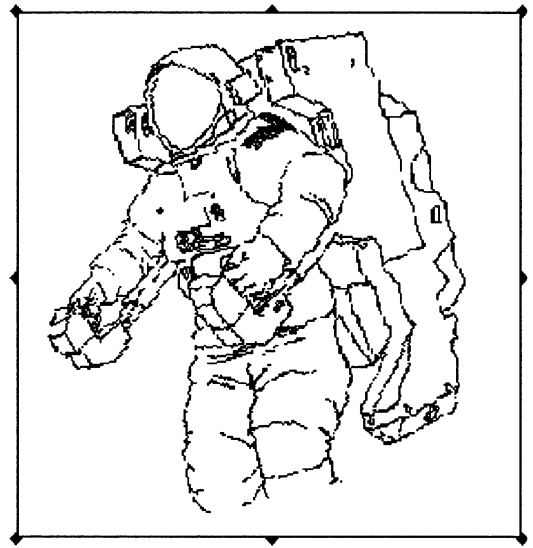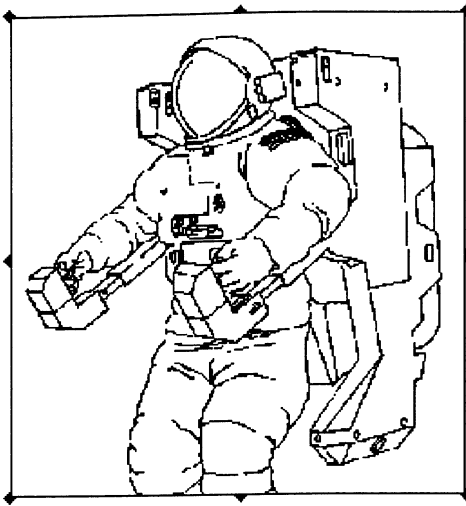
Figure 7-15   *Tilting an Image*

Image:
Object Palette...
Paint Palette...
Paint
Edit   ⇒
File   ⇒
Scale...
Tilt...
Invert
Reflect   ⇒
Font...
Undo

Invert   Invert the selected region, changing black pixels to white and white
pixels to black. If no region is selected, invert the entire image.
Figure 7-16 shows the selected region of the left image inverted in
the right image.
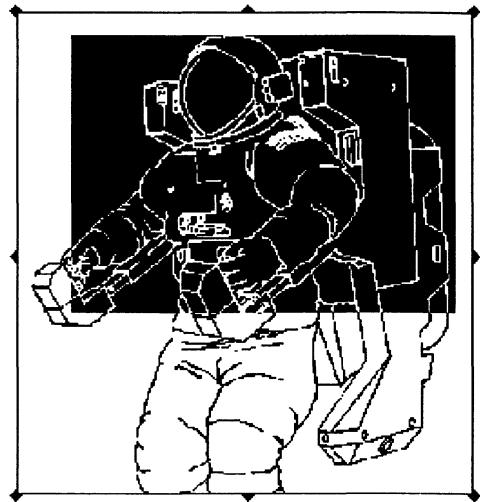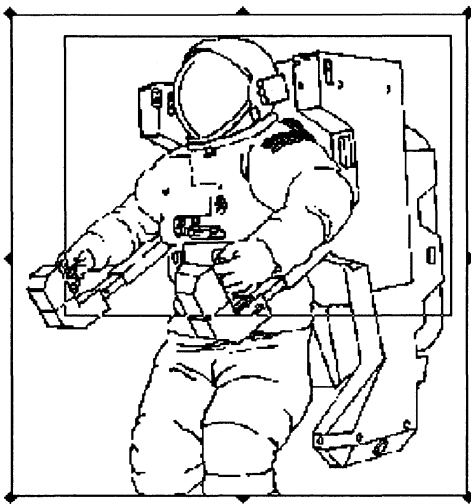
Figure 7-16   *Inverting an Image*
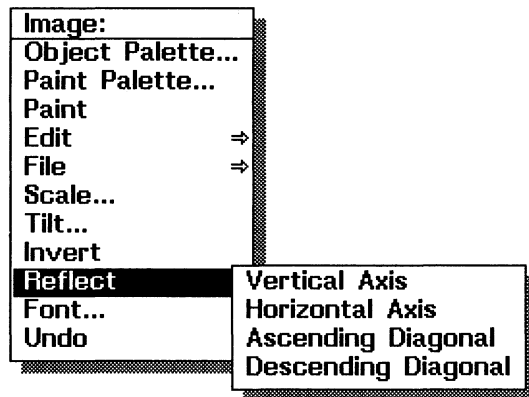
Reflect

Reflect the selected region about an axis. If no region is selected, this choice reflects the entire image. The four possible axes of reflection appear in a submenu:

Vertical Axis   Reflect about a vertical line passing through the center of the region so that the image's left and right sides exchange places.

Top
Left | Right
Bottom

qoT
Right | Left
Bottom
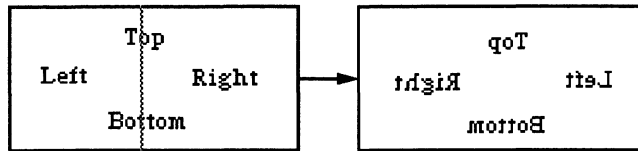
Horizontal Axis Reflect about a horizontal line passing through the region's center so that the image's top and bottom exchange places.

Top
Left — Right
Bottom

Bottom
Left | Right
Top
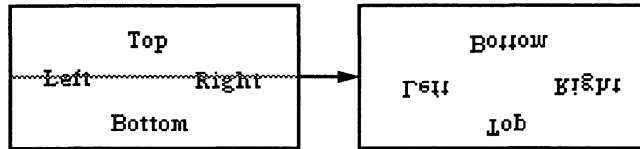
Ascending Diagonal Reflect about a diagonal line extending from the bottom left corner to the region's top right corner. The editor removes the original region from the image; you use the mouse to position the reflected region exactly as in the **Paste** command.

Top
Left | Right
Bottom

Right
Bottom | Top
Left
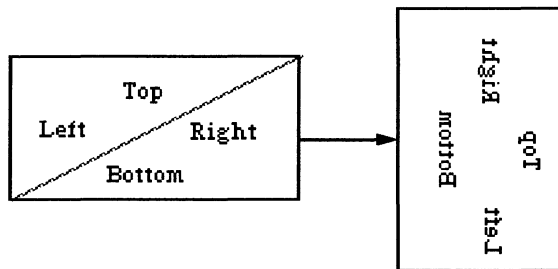
Descending Diagonal Reflect about a diagonal line extending from the top left corner to the region's bottom right corner. The editor removes the original region from the image; you use the mouse to position the reflected region exactly as in the **Paste** command.
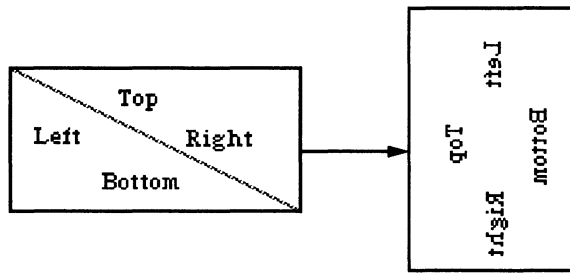
Figure 7-17 shows a reflection about the vertical axis.
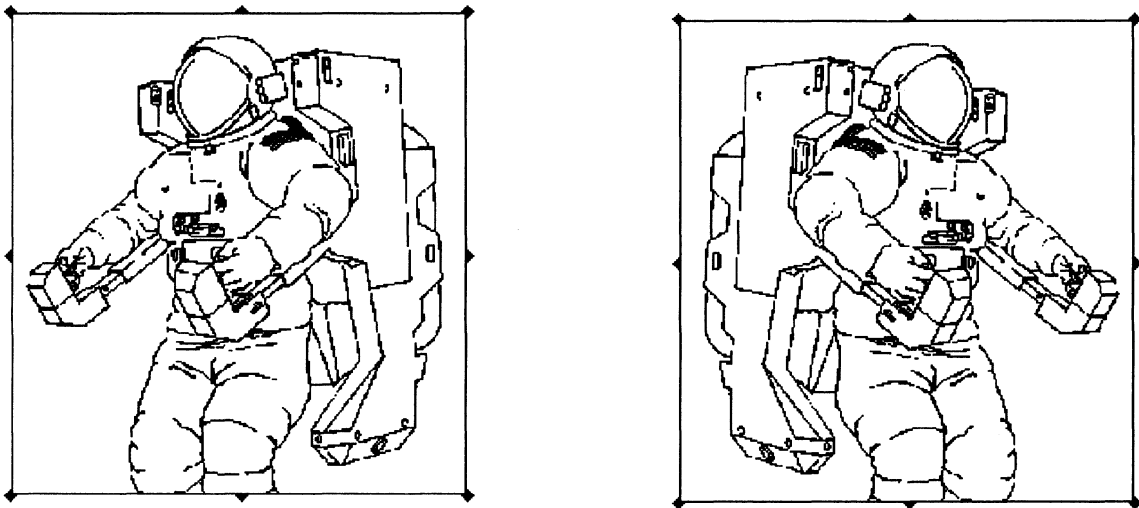
Figure 7-17   *Image Reflected on Vertical Axis*

```
Image
Object Palette...
Paint Palette...
Paint
Edit          ⇒
File          ⇒
Scale...
Tilt...
Invert
Reflect       ⇒
Font...
Undo
```

Font...   Display a dialog box (Figure 7-18) to select the font used when
                       adding text to the image.

```
Font ─────────────────────────
   Family  ⟳ helvetica
   Face    ⟳ Bold
   Size    ⟳ 14 pt

   (   OK   )    ( Cancel )
```
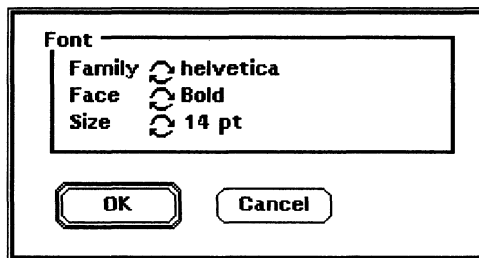
Figure 7-18   *Fonts Dialog Box*

```
Image
Object Palette...
Paint Palette...
Paint
Edit            ⇒
File            ⇒
Scale...
Tilt...
Invert
Reflect         ⇒
Font...
Undo
```

Undo   Undo the last change made to the image.

7.6 Mouse Usage

You can use the mouse to draw and paint, to select regions of an image for editing, and to drag images around the screen. Descriptions of the functions of each of the mouse buttons follow.

LEFT click

When pasting an object or region into an image or adding text to an image, paste at the pointer's current location, overwriting the existing image. When scaling interactively, accept the current size and proceed to select the position at which the scaled region should be placed.

When adding graphical features, the interpretation of **LEFT click** depends on the feature being added. See Chapter 6 for details.

LEFT drag

When painting on an image, paint using the current paintbrush size and texture.

When adding graphical features, the interpretation of **LEFT drag** depends on the feature being added. See Chapter 6 for details.

Otherwise, select a region to be operated on by the next command. The editor draws a rectangle from the position where the left mouse button is pressed to the position where it is released; this rectangle defines the selection.

shift LEFT click
shift LEFT drag

Extends or shrinks the selected region. The corner of the selection that is closest to the mouse pointer is moved to the pointer's position. If you **shift LEFT drag**, that corner will follow the pointer until you release the mouse button.

MIDDLE click

When painting on an image, end the paint operation and confirm any changes made to the image.

When pasting an object or region into an image or adding text to an image, paste at the mouse pointer's current location, combining the region with the existing image instead of overwriting it.

When adding graphical features, the interpretation of **MIDDLE click** depends on the feature being added. See Chapter 6 for details.

Otherwise, if a region is selected, deselect it.

RIGHT click   When an editing operation (painting, scaling, adding graphical features, etc.) is in progress, abort the operation and cancel any changes made to the image.

RIGHT drag   When painting on an image, paint using the current background texture.

Otherwise, display the **Image** menu. Section 7.5 describes the individual menu commands.

7.7   Keyboard Commands

You will probably most often use the mouse, menus, and dialog boxes to edit images. There are, however, some situations where it is nice to be able to have one hand on the keyboard issuing commands and the other hand on the mouse controlling the pointer's position. There are keyboard equivalents for many menu operations, so you do not always need to use the mouse or pop-up menus when editing images.

Table 7-1 lists all image menu commands, their equivalent default key commands, and the underlying functions that are invoked by

the commands. In general you can assign a key command for every BBN/Slate operation. If you want to add or change keyboard equivalents, the *Customizing Manual* describes how to bind keys to functions.

Table 7-1   *Image Editing Keyboard Commands*

Keystroke	Function
ESC-W	image-copy
ESC-w	image-copy
ALT-w	image-copy
^D	image-cut
^W	image-cut
ESC-@	image-deselect-region
^Y	image-paste

8 Spreadsheets and Charts

A *spreadsheet* is a powerful tool for manipulating groups of numbers and any type of tabular data, text, and/or numeric information. You can use spreadsheets in a BBN/Slate document, and you can import spreadsheet data created by other popular spreadsheet software. In addition, you can use the spreadsheet data to automatically create a variety of charts: *line graphs*, *scatter charts*, *bar charts,* and *pie charts*.

The BBN/Slate Document Editor contains a full-function spreadsheet editor, capable of handling large applications (the maximum size is 2048 rows by 256 columns). You can create spreadsheets in a BBN/Slate document by selecting **Add-Spreadsheet**. The left side of Figure 8-1 shows the spreadsheet in its its editing form; the right side of Figure 8-1 shows the same spreadsheet in its viewing form.

	A	B	C
1	Integer	Squared	Cubed
2	N	N^2	N^3
3	1	1	1
4	2	4	8
5	3	9	27
6	4	16	64
7	5	25	125
8	6	36	216
9	7	49	343
10	8	64	512
11			

Integer	Squared	Cubed
N	N^2	N^3
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125
6	36	216
7	49	343
8	64	512

Figure 8-1   *A Spreadsheet in Editing and Viewing Forms*

Figure 8-2 shows two charts: a line graph and a bar graph generated from this spreadsheet.
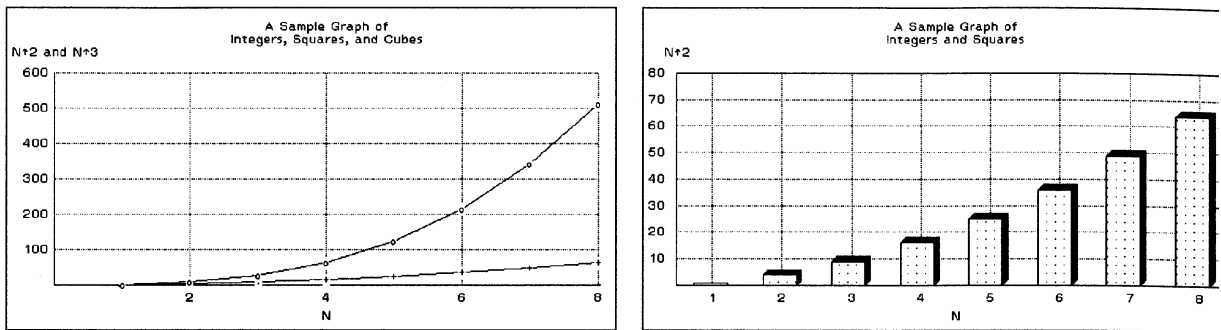
Figure 8-2   Chart Generated from a Spreadsheet

This chapter describes how to use the spreadsheets in the following ways:

- entering data into spreadsheets (Section 8.1)

- editing spreadsheets (Section 8.2)

- spreadsheet **Sheet** menu commands (Section 8.3)

- mouse usage and keyboard commands (Sections 8.4 and 8.5)

8.1   Entering Data into Spreadsheets

A spreadsheet is composed of individual boxes called *cells*, each of which is identified by its corresponding column and row. Columns are labeled by letters, and rows are labeled by numbers (e.g., A3 is in the first column, third row; R26 is in the 18th column, 26th row; and AC234 is in the 29th column, 234th row).

Each cell contains a number, a label, or a formula. To enter a value into a cell, move the mouse pointer to the cell, **LEFT click**

to select the cell, and enter the value. Different types of values require different modes of entry; this section describes how to enter the various kinds of numbers, labels, and formulas that a spreadsheet can include.

8.1.1   Literal Values

Numbers can be entered as either integers or real numbers. You can indicate positive or negative numbers by starting with + or -. Numbers also can be entered using scientific notation; you separate the mantissa and the exponent by the letter **e**.

Some examples of numbers include 134, -5, 1.054E2, and 1.3e-4. When performing mathematical calculations, the spreadsheet represents all numeric values as 64-bit real numbers.

A *label* is any sequence of printable characters. A label that extends over its boundary into another cell will be printed in its entirety only if the adjoining cell is unoccupied.

To enter a label that begins with digits or with plus, minus, or equal signs, begin the label by typing single (') or double (") quotation marks. This allows the spreadsheet to distinguish the labels, numbers (which begin with digits), and formulas (which begin with equal signs). The initial quote character is invisible, and will not appear in the spreadsheet.

8.1.2   Formulas

A *formula* in a cell is an expression containing numbers, functions, and references to other cells or ranges of cells, combined using arithmetic operations.

The real power of spreadsheets comes from the ability to store formulas in cells and have the value of these formulas calculated and displayed. In addition, BBN/Slate enables you to mail the "live" spreadsheet electronically. Thus, someone who is reviewing or contributing to a BBN/Slate document received through electronic mail can review and perhaps change the actual formulas or input to those formulas, not merely the displayed values.

To indicate to BBN/Slate that you are entering a formula, begin by typing an equal sign (=) into the cell. (If you begin with any other character, the editor interprets it as a label.) Then type in the formula. For example:

`=A1+1`   The value in cell A1 plus 1.

`=SUM(B3:B10)`   The sum of the values in cells B3 through B10.

`=A3*(5+B6)`   The value of the cell A3 times the sum of 5 and the value of cell B6.

The editor calculates the *value* of a formula by evaluating the expression and replacing each reference to any cell with the value in that cell. If the value of some cell changes, then the value of any formulas that use that cell also change automatically. The value of a formula may be a number, text, or one of the special values ERROR, RECURSIVE, or NA (No value Available).

Cell references (such as A1) may be either *absolute* or *relative*. The differences between absolute and relative references only become important when you are editing the spreadsheet.

You specify an absolute cell reference with a $ sign. For example, A1 specifies absolute column A and absolute row 1, while $C6 specifies absolute column C but relative row 6.

Operators

There are three kinds of operators you can include within a formula:

- *Arithmetic operators* like "plus" perform mathematical calculations. Arithmetic operators within a formula are +, - *, /, ^ (exponentiation), and % (remainder). When these operators are combined in an expression, exponentiation has the highest zprecedence, followed by multiplication, division, and remainder, then addition and subtraction.

- *Relational operators* like "greater than" compare values.

  Arithmetic expressions may be combined using the relational operators: <, >, =, >=, <=, <>. Relational operators have lower precedence than arithmetic operators and are left-associative. You may use expressions containing relational operators as the first argument to the **if** function (see below). The value of a relational expression is either 1 (true) or 0 (false). For example, the editor interprets the expression:

  ```
  5+4*3 > 8*2+2    as: (5+(4*3)) > ((8*2)+2)
  ```

  The value of this expression is 0, because 17 is not greater than 18.

- *Logical operators* like "and" combine the results of such comparisons. The *logical* operators are *#not#*, *#and#*, and *#or#*. Logical operators can be used to combine the results of relational tests. For example:

  ```
  A1 > B2 #or# C3 > D4
  ```

  The value of a logical operator is either 1 (true) or 0 (false).

Available Mathmatical Functions

You can use many mathematical functions within spreadsheet formulas. Some functions take a fixed number of arguments (e.g., *annuity* must take two), while others take an arbitrary list of values. A *list* is a sequence of expressions, separated by commas. A list may contain a *range* of cells, as a shorthand for enumerating the elements of a range. For example:

```
SUM(A1:A3)      is equivalent to: SUM(A1, A2, A3)
```

and

```
SUM(A3:A4)      is equivalent to: SUM(A3, A4, B3, B4)
```

Within arithmetic functions (**sum, avg**, etc.), labels have the value 0.

Available Arithmetic Functions

sum   Returns the sum of all the elements in the list.

avg   Returns the average of the elements in the list. Cells that are blank do not affect the average.

count   Returns the number of non-blank entries in a list.

min   Returns the minimum value in a list.

max   Returns the maximum value in a list.

compound   Takes the interest rate per period and the number of periods, and returns the compound interest rate. For example:

```
compound(rate, periods) = (1 + rate) ^ periods
```

annuity   Takes the interest rate per period and the number of periods, and returns a value called the *annuity factor*. If the principal is divided by this factor, the value is the payment per period necessary to pay off the principal. For example, to calculate the monthly payments on a four-year car loan of $8000 at 14% interest compounded monthly, use the formula:

```
8000 / annuity(0.14/12, 12*4)
```

The 12 in the formula is the number of months in a year.

choose

This function takes a list of values. It evaluates the first one and converts it to an integer, i, then returns the value of the (i - 1)th argument.

In other words, this function selects and returns one of its arguments based on the value of the first argument. You can use this function to do short table lookups. For example:

```
=choose(3, 1.3, 2.4, 5.6, 8.3, 9)
```

evaluates to 8.3.

If the value of the first argument is less than 0 or greater than number of arguments remaining, the `choose` function returns the special value ERROR.

hlookup

This function performs a *horizontal table lookup*. It takes three arguments:

- A test value.
- A range of cells in the spreadsheet. The first row of this range contains values to which the test value should be compared. These comparison values must be in increasing order, with no duplicates.
- An offset into the range.

"The `hlookup` function searches the first row of the supplied range. It finds the column containing the largest value that is less than or equal to the test value, moves "offset" cells down into that column, and returns the value in the cell it finds there. If the test value is larger than any of the comparison values, `hlookup` moves "offset" cells down into the last column of the range and returns the value found there."

This function returns the special value ERROR under the following conditions:

- The test value is smaller than the smallest comparison value.

- The offset argument is less than 0.

- The offset argument is greater than or equal to the number of rows in the comparison range.

Figure 8-3 shows the results of several calls to hlookup, for the given value, with explanations of how the results are derived.

	A	B	C	D	E	
1						
2	Values	1	3	5	7	
3						
4	Result Row 1:	A	B	C	D	
5	Result Row 2:	E	F	G	H	

Figure 8-3   *Results of hlookup Calls*

=hlookup(3,b2:e5,2)
returns B

The test value is found in Column C. The region begins at row 2 and the offset is 2, so the result is found in column C, row 4.

=hlookup(3,b2:e5,3)
returns F

The same as the previous example, except that the offset is 3, so the result is found in column C, row 5.

=hlookup(6,b2:e5,3)
returns G

The test value is not found, but 5 is the largest comparison value less than 6, so we use column D. The region begins at row 2 and the offset is 3, so the result is found in column D, row 5.

=hlookup(0,b2:e5,3)
returns ERROR

The test value is smaller than any of the comparison values.

| | `=hlookup(8,b2:e5,3)`
returns ERROR | The test value is larger than any of the comparison values. |

vlookup   This function performs a *vertical table lookup*. It is similar to `hlookup`, except that the comparison values are found in the first column of the range, and the offset tells how many columns to the right to look for the result.

npv   Returns the net present value of a discounted cash flow. The first argument is the discount rate; the next arguments are the cash flow values.

pmt   Calculates the *mortgage payment per period* for a given principal, interest rate per period, and number of periods (n). The formula used is that for an ordinary annuity:

$$\text{PMT} = principal * \frac{interest}{1 - (1 + interest)^{-n}}$$

pv   Calculates the *present value of an ordinary annuity* given a payment per period, an interest rate per payment period, and a number of periods.

std   Returns the *standard deviation* of a list of items.

var   Returns the *variance* of a list of items.

ln   Returns the *natural log* of its argument.

exp   Returns E (2.71828...) to the power of its argument.

log   Returns the *log* to the base 10 with its argument.

pwroften   Returns 10 to the power of its argument.

round   Rounds its argument to the nearest integer. For example:

                        `round(2.6) = 3`

                        `Round(2.5)` also equals 3.

                        If `round` is given two arguments, it interprets its second argument
                        as an integer that indicates the number of decimal places to round
                        off to. Thus,

                        `round(3.456, 2) = 3.46`

ceil   Returns the smallest integer greater than or equal to its argument.
                        For example:

                        `ceil(1.4) = 2`

                        and

                        `ceil(3) = 3`

int   Removes the fractional part of its argument. For example:

                        `int(2.6) = 2`

                        and

                        `int(-2.6) = -2`

                        The logical functions available are:

if   Takes three arguments. If the value of its first argument is
                        non-zero (true), then the value returned is the value of the second
                        argument, otherwise the value returned is the value of the

third argument. Only the argument that is returned is evaluated (so `if(2>1, 2, 4/0)` does not cause a division by 0).

The trigonometric functions available are:

sin, asin, sinh, asinh	Sine, arc sine, hyperbolic sine, and arc hyperbolic sine.
cos, acos, cosh, acosh	Cosine, arc cosine, hyperbolic cosine, and arc hyperbolic cosine.
tan, atan, tanh, atanh	Tangent, arc tangent, hyperbolic tangent, and arc hyperbolic tangent.

In addition to these functions there are three special constants:

pi	3.14159...
error	The value ERROR. The value of any formula that uses a cell containing *error* is also ERROR.
na	Indicates that a value is not available. The value of any formula that uses a cell containing *na* is also NA.

Some interrogative functions are:

iserr	Returns true if the value of the argument is ERROR.
isna	Returns true if the value of the argument is NA.

Including Text within Formulas
You may include text within a formula either by referencing a cell containing a label or by including a literal string in the formula. Put literal text within single quote marks. Text is typically used within formulas to print some type of message. For example, you could do range checking with the formula:

```
if(A1>10,'Value out of Range', 'OK')
```

For purposes of mathematical calculation, text in a formula has the value 0.

8.2   Editing Spreadsheets

The spreadsheet editor presents a window on the entire spreadsheet. The spreadsheet may have up to 2048 rows and 256 columns; at least one cell must be visible at all times.

8.2.1   Moving Around the Sheet

You can scroll the visible portion of the sheet within the viewport of the spreadsheet editor to see any part of the sheet. To scroll the spreadsheet within the viewport, use the arrow keys on the keyboard. This scrolling is separate from the scrolling of the entire document using the scrollbar.

Setting and Moving the Spreadsheet Cursor
The spreadsheet always displays one cell highlighted by a gray border. This is known as the *spreadsheet insertion pointer* or the *spreadsheet cursor*. It is analogous to the insertion point when you are moving through and editing text.

When you type a value into the spreadsheet and press **Return**, the value goes into the cell marked by the insertion pointer. The spreadsheet insertion pointer moves down one row in the current column. However, if you have highlighted a region of the spreadsheet (see "Selecting a Region", below), the behavior when you press **Return** is different. Instead of moving down, the insertion point moves to the next cell in the selected region.

When you **LEFT click** in a spreadsheet cell, the spreadsheet insertion point goes to that cell (unless a value is being entered into the previously active cell, as discussed in Section 8.2.2).

You can also move the insertion point by using the keyboard.

- ^F moves forward one column
- ^B moves backward one column
- ^N moves down to the next row
- ^P moves up to the previous row

Additional keyboard commands are described in Table 8-1.

Prefix Numeric Arguments
Any of the cursor moving commands (just discussed) can take a prefix numeric argument.

- ^U followed by one of these commands repeats the command 4 times.
- A sequence of n ^U repeats the command 4^n times (e.g., ^U^U^U repeats the command 64 times).
- A ^U followed by a number n sets the repeat count to n (e.g., typing ^U20^N moves the insertion point down 20 rows).

Selecting a Region
In addition to using the insertion point, you can select some portion of the spreadsheet for editing. This *selected region* may consist of an individual cell, an entire row or column, a rectangular area, or the entire spreadsheet. These units also may be combined to produce a selected region consisting of, for example, two rows, three columns, and five separate cells scattered throughout the spreadsheet. This section describes how to use the mouse to select a region. *If no region is explicitly selected, the selected region consists of the cell that is marked by the cursor.*

To select a *region:*
Put your cursor in the upper-left cell of the region and **LEFT drag** to the lower-right cell in the region.

To select a *column* or a *row*:
Put your cursor in the column or row header (the box that contains the column or row numbers, located at the top of a column or to the left of a row) and **LEFT click**. Select multiple columns or rows by dragging across more than one column- or row header.

To select the *entire spreadsheet*:
Put your cursor in the box in the upper-left corner of the spreadsheet and **LEFT click**.

Spreadsheet commands (cutting, pasting, setting alignment, or numeric formatting properties, etc.) apply only to the selected region.

When you are editing a spreadsheet, the selected region is always highlighted. If the region consists of more than one cell, the highlighted region appears in reverse video, as in Figure 8-4.

The cursor is here

This is the selected region
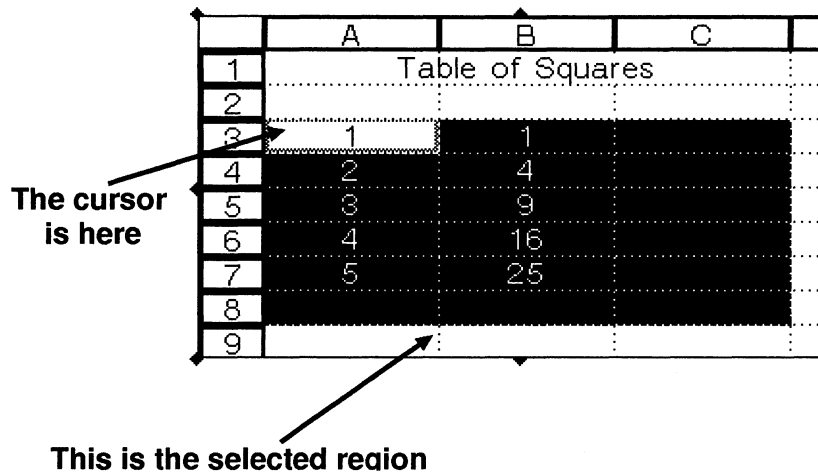
Figure 8-4   *Selecting a Region of a Spreadsheet*

8.2.2   **Entering Values**

You can change the contents of a cell in two ways:

1. Put in something entirely new.
2. Edit what is already there.

Replacing the Contents of a Cell

To replace the contents of a cell, simply select the cell and type any letter, digit, or punctuation mark. Typing a character clears the previous value in a cell and begins editing a new value for that cell. You can use the standard keyboard-editing commands when entering values. The standard keyboard-editing commands are listed in Chapter 2.

Once you start entering a value, **LEFT click** on any cell, row heading, or column heading to insert that item's name into the value. **LEFT drag** over a region to insert the name of that region. For instance, dragging from cell A5 to cell B12 inserts "A5:B12" into the value.

The name is followed by the last arithmetic operator used in the value, or by a plus sign (+) if no operator has been typed yet. Thus, to set a cell's value to the sum of five other cells, you could just type an equal sign (=) (to indicate that this cell contains a formula), then **LEFT click** on each of the five cells in turn, and press **Return** to finish.

You confirm your changes to a value by typing any cursor movement command, or by using **MIDDLE** or **RIGHT click**. You can cancel your changes with **^G.** In this case, the previous value of the cell is left unchanged.

Editing the Contents of a Cell

To edit the contents of a cell instead of replacing it, select the cell and then type ^A or ^E. Typing ^A places the text cursor at the beginning of the value; ^E places it at the end. Once you are in editing mode, you can use the same mouse and keyboard commands as you use to enter new values.

You can also **double LEFT click** to edit the contents of a cell.

8.2.3 Modifying a Chart

You may also wish to annotate the chart using the facilities of the graphics editor. You can do this by editing the chart as you would any other graphics element. However, you should be aware that when the spreadsheet generates the chart, it groups all the features of the chart and locks them down (using the grouping and locking features of the graphics editor).

You can modify the automatically generated features by first unlocking and ungrouping them. Once they are ungrouped, however, the spreadsheet editor can no longer tell the difference between automatically generated features and features that you have added using the graphics editor.

If you regenerate a chart that you have unlocked and modified, BBN/Slate will generate the new chart correctly, but will not be able to remove the old chart before replacing it with the new one. *New* graphics features can be added to the chart without affecting the ability of the spreadsheet editor to regenerate the chart.

8.3　　　　　　Menu Commands

This section contains a description of the commands available in the spreadsheet editor. Some commands apply to the spreadsheet as a whole; others operate only on the currently selected region. Refer to Section 8.2.1 for information about selecting regions of spreadsheets. Figure 8-5 shows the **Sheet** menu.

```
Sheet:
Edit          ⇒
Align         ⇒
Numbers...
Rulings...
Calculate     ⇒
Font...
Column Width
Graph         ⇒
File          ⇒
```
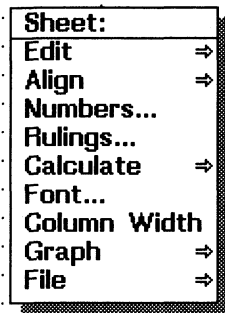
Figure 8-5　　　　　　*Spreadsheet Menu*

```
Sheet:
Edit         Cut
Align        Copy
Numbers...   Clear
Rulings...   Paste
Calculate    Move
Font...      Fill Down
Column Widtl Fill Right
Graph        Insert Rows
File         Insert Columns
             Delete Rows
             Delete Columns
             Sort...
```
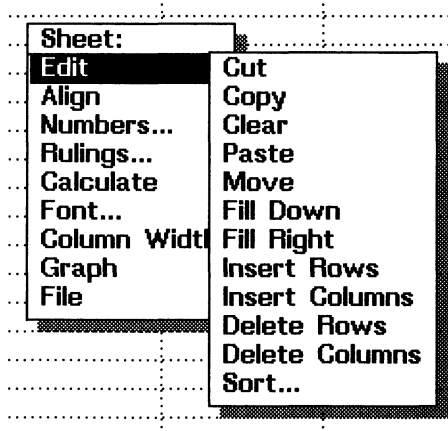
Edit　　　　　　Perform editing operations on the selected cells, rows, or columns. Choose the editing commands from a menu that contains the following choices:

Cut	Cut the values in the selected region to the clipboard.
Copy	Copy the values in the selected region to the clipboard.
Paste	Paste the contents of the clipboard into a part of the spreadsheet, replacing whatever is already there. The **Paste** command behaves differently depending on the size of the clipboard contents, and on the size of the selected region:

- If no region is selected, the clipboard contents are pasted into the spreadsheet beginning at the spreadsheet insertion point. If the clipboard contains a region with more than one cell, the entire region is pasted in, with its upper left corner placed at the insertion point.

- If a region is selected, and the clipboard contains a *single column*, the height of the region and the height of the clipboard contents must be the same. The column on the clipboard is pasted into every column in the selected region.

- If a region is selected, and the clipboard contains a *single row*, the width of the region and the width of the clipboard contents must be the same. The row on the clipboard is pasted into every row in the selected region.

- If a region is selected, and the clipboard contains more than one row and more than one column, the size (both width and height) of the region and the size of the clipboard must be the same. The area on the clipboard is pasted into the corresponding cells in the selected region.

Move   Change the location of a cell or range of cells, making sure that any formulas that reference the cells are updated to refer to the new location. Moving cells is a three-step process:

1. Cut or copy the region you want to move.
2. Select the upper-left corner of the new location.
3. Choose **Move**.

Move behaves slightly differently depending on whether you cut or copied the region being moved. If you cut the region, the editor updates formulas both inside and outside the region so that the formulas refer to the region's new location. If you copied the region, the editor updates only those formulas within its new location.

Fill Down   Replicate the first row of the selected region throughout the rest of the selected rows.

Fill Right   Replicate the first column of the selected region throughout the rest of the selected columns.

Insert Rows	Insert rows above the first selected row. The number of rows inserted is determined by the number of rows selected. The editor inserts rows only in the selected columns. It adjusts all formulas to reflect the movement of cells.
Insert Columns	Insert columns to the left of the first selected column. The number of columns inserted is determined by the number of columns selected. The editor inserts columns only in the selected rows. It adjusts all formulas to reflect the movement of cells.
Delete Rows	Remove the currently selected rows. Rows below the selected ones move up. The editor deletes rows only from the selected columns. It adjusts all formulas to reflect the changes caused by removing the rows, and puts the deleted rows on the clipboard.
Delete Columns	Remove the currently selected columns. Columns to the right of the selected ones move left. The editor deletes columns only from the selected rows. It adjusts all formulas to reflect the changes caused by removing the columns, and puts the deleted columns on the clipboard.
Sort...	Sort a region or an entire spreadsheet by column or row. This menu choice displays the dialog box shown in Figure 8-6.
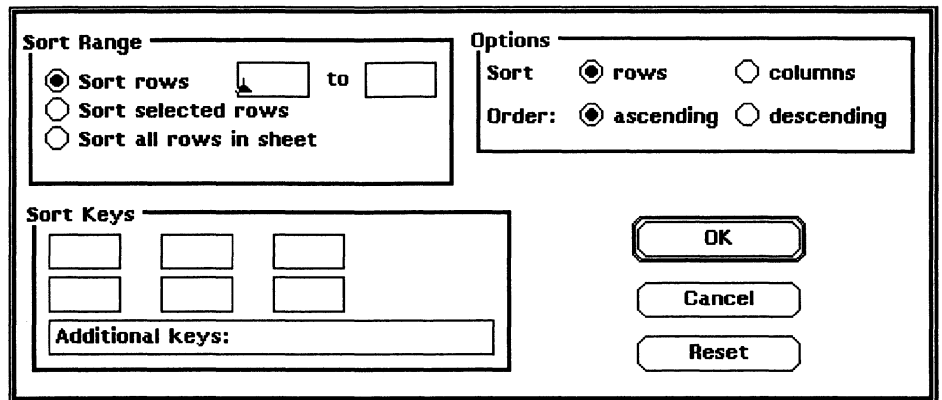
Figure 8-6   Sort Dialog Box

To sort, perform the following three steps:

1. Designate what part of the spreadsheet
    you wish to sort (rows or column ranges,
    highlighted regions, or the entire
    spreadsheet) and whether you want to list
    the results of the sort in ascending or
    descending sequence.

2. Select a key on which to base the sorting
    order.

3. **LEFT click** on **OK** to begin sorting.

To erase all the values for sort range and sort
keys, **LEFT click** on the **Reset** button. If you
want to stop before sorting the spreadsheet, **LEFT
click** on the **Cancel** button.

Sorting Ranges of Rows and Columns
To sort a range of rows or columns, first select
either the **rows** or **columns** button in the **Sort**
field of the **Options** area. In the **Order** field,
decide whether you want the results of the sort to
be arranged in **ascending** or **descending** sequence.

Next, choose the **Sort rows** (or **columns**) button in the **Sort Range** area and designate a starting and ending point for the sort in the blank boxes to the right of the button. For example, if you want to sort rows 2 through 9, then enter 2 and 9 in the boxes. For columns a through c, you would type a and c in the boxes.

Sorting Highlighted Rows and Columns

You can also sort either rows or columns in any region of the spreadsheet that you highlight, rather than designating specific row or column ranges. You can even sort several non-adjacent regions.

To do this, you must first highlight the region(s) of spreadsheet cells and then select the **Sheet-Edit-Sort** menu.

When the **Sort dialog** box appears, select either the **rows** or **columns** button in the **Sort** field of the **Options** area. In the **Order** field, decide whether you want the results of the sort to be arranged in **ascending** or **descending** sequence. Select the **Sort selected rows** (or **columns**) button.

Sorting an Entire Spreadsheet

You can also elect to sort an entire spreadsheet by either rows or columns.

Select either the **rows** or **columns** button in the **Sort** field of the **Options** area. In the **Order** field, decide whether you want the results of the sort to be arranged in **ascending** or **descending** sequence. Select the **Sort all rows** (or **columns**) **in sheet** button in the **Sort Range** area.

Choosing a Sort Key

Finally, you must designate a *key* for the sort. The system uses the key to determine the order for the sorted records. If you are sorting rows, enter a *column* letter in the **Sort Keys** field. If you are sorting columns, type a *row* number in the **Sort Keys** field.

For example, you may have a list of 10 employee records that you want to sort in ascending order by last name. The records comprise rows 1 through 10, and column b is the last name field as shown in Figure 8-7.

	A	B	C	D	E	F
1	John	Jacobs				
2	Doris	Hill				
3	Ted	Brown				
4	Jill	Furman				
5	Bob	Stein				
6	Brian	MacDonald				
7	Howard	Halpern				
8	Norman	Goodnough				
9	Joe	Reed				
10	Bill	Cox				
11						
12						
13						
14						
15						
16						
17						
18						
19						

Figure 8-7   *Example of Employee Records*

After selecting **rows** and **ascending,** then typing in rows **1** to **10** in the **Sort rows** field, type the letter **b** in the first box of the **Sort Keys** field as shown in Figure 8-8.

Figure 8-8   *Filling in the Sort Dialog Box*

When you **LEFT click** on **OK**, the records will be sorted by last name.

Figure 8-9   *Result of Sort on Last Name*

Sorting on Multiple Keys
In many spreadsheets, you need to order the information in more than one column or row. In BBN/Slate, you can do this by sorting on multiple keys.

To sort on multiple keys, you fill in appropriate boxes in the sort dialog box. For example, the spreadsheet in Figure 8-10 is sorted in alphabetical order by last name (column B).

	A	B	C	D	E	F	
1	Ted	Brown	36000				
2	Bill	Cox	12000				
3	Jill	Furman	45000				
4	Norman	Goodnough	64000				
5	Howard	Halpern	15500				
6	Doris	Hill	15500				
7	John	Jacobs	24000				
8	Brian	MacDonald	37000				
9	Joe	Reed	18000				
10	Bob	Stein	22000				
11							
12							
13							
14							
15							
16							
17							
18							
19							

Figure 8-10   *Spreadsheet Sorted by Last Name*

To sort the spreadsheet by salary (column C) and by last name, you name column C and column B as the sort keys and **LEFT click** on the **OK** button in the sort dialog box. BBN/Slate sorts first by the sort key you enter in the first box; by naming column C as the first key, you've told BBN/Slate to sort first by salary (Figure 8-11).

Figure 8-11   *Sorting on Multiple Keys*

After you **click** on the **OK** button, BBN/Slate
sorts the spreadsheet first by the values in column
C (salary) and then by those in column B (last
name). If the values in column C are the same,
BBN/Slate sorts the spreadsheet by the value in
column B. For example, Howard Halpern and
Doris Hill both have salaries of $15,500. Howard
Halpern appears before Doris Hill in the list
because his last name comes first in alphabetical
order (Figure 8-12).

	A	B	C	D	E	F	
1	Bill	Cox	12000				
2	Howard	Halpern	15500				
3	Doris	Hill	15500				
4	Joe	Reed	18000				
5	Bob	Stein	22000				
6	John	Jacobs	24000				
7	Ted	Brown	36000				
8	Brian	MacDonald	37000				
9	Jill	Furman	45000				
10	Norman	Goodnough	64000				
11							
12							

Figure 8-12   *Result of Sort on Multiple Keys*

You can also sort on selected rows. The spreadsheet in Figure 8-13 is divided into two sections, rows 1 through 5, and rows 7 through 12. The rows are sorted first by salary, and then by last name.

	A	B	C	D	E	F	
1	Bill	Cox	12000				
2	Howard	Halpern	15500				
3	Doris	Hill	15500				
4	Joe	Reed	18000				
5	Total		61000				
6							
7	Bob	Stein	22000				
8	John	Jacobs	24000				
9	Ted	Brown	36000				
10	Brian	MacDonald	37000				
11	Jill	Furman	45000				
12	Norman	Goodnough	64000				
13	Total		228000				
14							
15							
16							
17							
18							
19							

Figure 8-13   *Divided Spreadsheet*

To sort rows 7 through 12 by last name only, you can do so without affecting rows 1 through 4. In the sort dialog box, you name the rows you want to sort and the key you want to sort on (Figure 8-14).

Figure 8-14   *Sorting Selected Rows*

After you **LEFT click** on the **OK** button, BBN/Slate sorts rows 7 through 12 by column B, but leaves rows 1 through 5 as they were (Figure 8-15).

Figure 8-15   *Result of Sorting on Selected Rows*
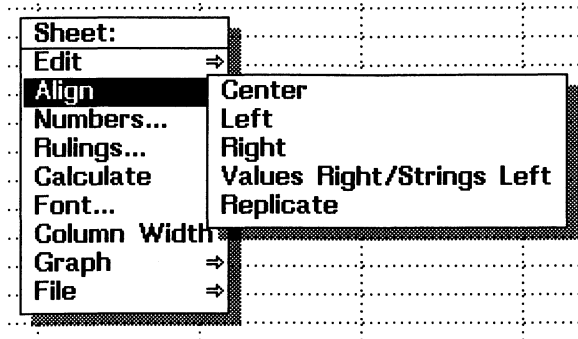
Align

Change the alignment of cells in the selected region. You can left-justify, right-justify, or center values and labels in their respective cells. You can also replicate a value within the cell so it fills its entire width.

The alignment for a particular cell is determined by the following rules:

- The spreadsheet has a default alignment.
- Each column may have its own alignment that overrides the spreadsheet default for every cell in that column.
- Each cell may have its own alignment that overrides both the spreadsheet default and the column default.

Note that you can select an entire row and align it, but that is just like selecting a region. Columns are different.

To change the alignment of any object (cell, row, column, region, or the whole spreadsheet), select the objects and then use the **Align** command. Possible values include:

Center   Center cells in the selected area.

Left   Left-justify cells in the selected area.

Right   Right-justify cells in the selected area.

Values Left /   Left-justify cells that contain numbers or
Strings   formulas, and right-justify cells that contain
Right   strings or labels.

Replicate   Repeat the value in the cell for the entire width
of the cell.

```
┌─────────────────────┐
│ Sheet:              │
│ Edit            ⇒   │
│ Align           ⇒   │
│ ███Numbers...██████ │
│ Rulings...          │
│ Calculate       ⇒   │
│ Font...             │
│ Column Width        │
│ Graph           ⇒   │
│ File            ⇒   │
└─────────────────────┘
```
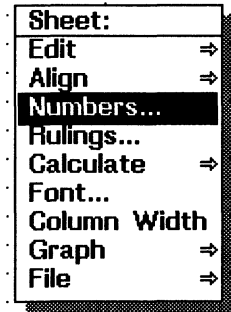
Numbers...

Change the way numbers are formatted in the selected region. You can display numbers as integers, real numbers, or dollar values in a variety of different styles. You can show the calculated result of a formula in a cell, or the formula itself.

To change the format of any object (cell, column, region, or the whole spreadsheet), select the object and then use the **Numbers...** command. A dialog box (shown in Figure 8-16) appears in which you can select a display format.

```
┌──────────────────────────────────────┐
│  ┌─ Numeric Format ────────────────┐  │
│  │  ⦿ General      ○ 1234          │  │
│  │  ○ 1234.23      ○ 1,234         │  │
│  │  ○ 1,234.23     ○ $1234         │  │
│  │  ○ $1234.23     ○ $1,234        │  │
│  │  ○ $1,234.23    ○ $123.4        │  │
│  │  ○ A1 + B2      ○ Precision     │  │
│  └─────────────────────────────────┘  │
│                                        │
│       ┌──────────┐  ┌──────────┐       │
│       │    OK    │  │  Cancel  │       │
│       └──────────┘  └──────────┘       │
└──────────────────────────────────────┘
```
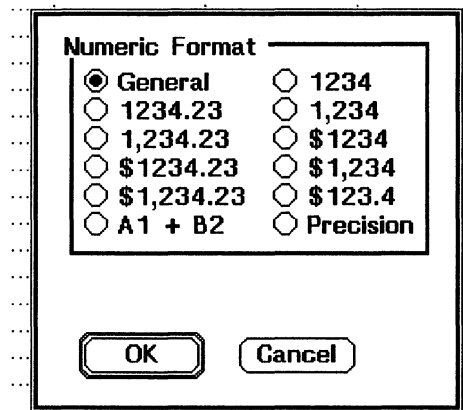
Figure 8-16   *Numeric Formats Dialog Box*

The numeric format for a particular cell is determined by the following rules:

- The spreadsheet has a default numeric format.

- Each column may have its own format that overrides the spreadsheet default for every cell in that column.

- Each cell may have its own format that overrides both the spreadsheet default and the column default.

With the **General** setting, the format of a cell varies depending or its value. Numbers are formatted as integers or real numbers, but very large or very small values are shown using scientific notation

For the numeric and dollar choices, cells appear as shown in the dialog box.

If you choose **A1 + B2**, cells that contain formulas will display th formula itself, rather than the value of the formula.

If you choose **Precision**, a **Digits** field appears and you may specify the number of digits that follow the decimal point. You may choose from 1 to 15 digits of precision.

```
┌─────────────────┐
│ Sheet:          ┊
│ Edit          ⇒ ┊
│ Align         ⇒ ┊
│ Numbers...      ┊
│ Rulings...      ┊
│ Calculate     ⇒ ┊
│ Font...         ┊
│ Column Width    ┊
│ Graph         ⇒ ┊
│ File          ⇒ ┊
└─────────────────┘
```
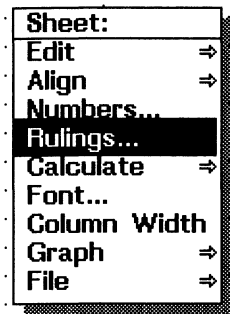
Rulings...

While you are editing a spreadsheet, the rows and columns are bordered by dotted lines. These lines disappear when you are not editing, leaving only the values for each cell displayed. Sometimes you may want to surround cells, rows, columns, or regions of the spreadsheet with borders even when you are not editing.

Rulings are solid lines that separate cells, rows, columns, or regions of the spreadsheet. They are displayed both during and after editing. You can use them to highlight certain parts of a spreadsheet, or to make a spreadsheet look more like a paper form. For instance, adding rulings can change a spreadsheet from this:

Quarterly Expenditures

	Food	Fuel	Entertainment
Jan - Mar	567.23	289.55	174.00
Apr - Jun	489.76	141.03	210.45
Jul - Sep	522.33	189.77	128.90
Oct - Dec	538.59	236.97	165.20

into this:

Quarterly Expenditures

	Food	Fuel	Entertainment
Jan - Mar	567.23	289.55	174.00
Apr - Jun	489.76	141.03	210.45
Jul - Sep	522.33	189.77	128.90
Oct - Dec	538.59	236.97	165.20

You can add or remove rulings on any of the borders of any region or create a grid that separates the region into individual cells. When you select a region and choose **Rulings...** the dialog box shown in Figure 8-17 appears.
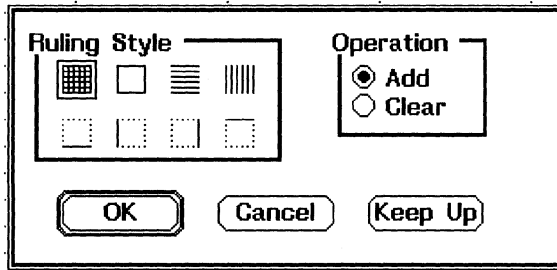
Add Rulings Dialog Box

You can select one of the icons in the **Style** field to indicate where you want the rulings, then select **Add** or **Clear** to add or remove rulings. **Click** on the **OK** button to make your changes take effect in the selected region.

```
 Sheet:
 Edit        ⇒
 Align       ⇒
 Numbers...
 Rulings...
 Calculate      Recompute
 Font...        Control...
 Column Width
 Graph       ⇒
 File        ⇒
```
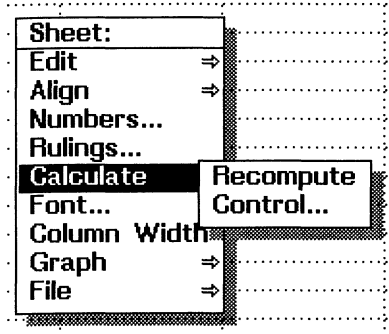
Calculate

Control how and when the editor evaluates the spreadsheet. Whenever the value of any cell changes, a spreadsheet automatically recalculates the values of every other cell that depends on it.

While working on a spreadsheet you may find it convenient to turn off this automatic recalculation. For example, once you have designed the dependencies within a large, complex spreadsheet, it may be necessary to reorganize the spreadsheet to present the information better. While you are cutting and pasting rows and columns, automatic recalculation (which can take several seconds for a large spreadsheet) can become very annoying. A similar situation can arise when you need to change the values of several cells, each of which results in the recalculation of many of the same formulas. In cases like these, you will want to turn off automatic recalculation, make your changes, then turn recalculation back on.

The **Calculate** commands include:

Recompute   Recalculate all formulas in the spreadsheet now.

Control...   Control how calculations are performed. When you select this command, the dialog box in Figure 8-18 appears.
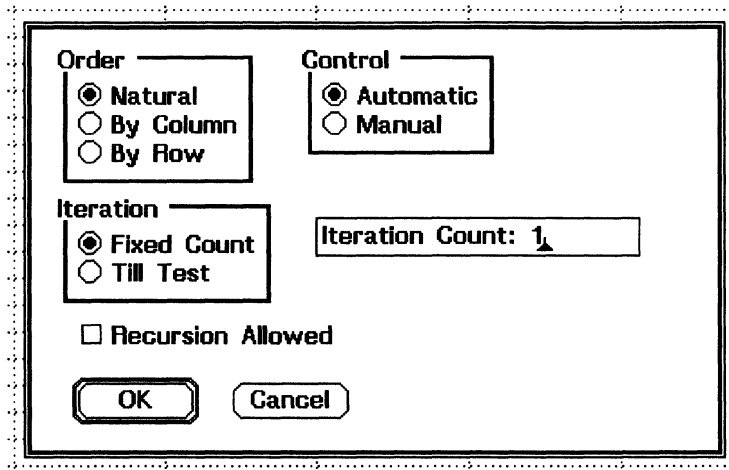
Figure 8-18   *Control Recalculation Spreadsheet*

The fields in the dialog have the following meanings:

Control   Specify whether the spreadsheet recalculates automatically when cell contents change, or whether is recalculates only when you request it. **Automatic** means it recalculates whenever a cell changes. **Manual** means it recalculates only when you choose the **Recalculate** command.

Order   Specify the order in which the spreadsheet is recalculated. **Natural** means the spreadsheet calculates dependent cells *after* the cells that they reference. **By Column** means it recalculates by columns starting with the first column, re-calculating each cell down the sheet and then moving to the second column, etc. **By Row** means it recalculates the sheet by rows.

Unless you are trying to achieve a specific effect (e.g., doing a simulation involving multiple iterations and recursive formulas) you should always use **Natural** order.

Recursion Allowed

In normal evaluation mode, recursive formulas are considered an error. For example, if the cell A1 contains the formula =B1+1 and the cell B1 contains the formula =A1+1, then these two cells are mutually recursive and have no well-defined value. The spreadsheet editor detects this condition and gives the formulas the special value **RECURSIVE**. Typically this indicates an error in the design of the spreadsheet, and the formulas should be rewritten to correct this condition.

In certain applications, such as simulations, recursive formulas may be useful. Therefore, the spreadsheet editor allows you to control whether recursive formulas are allowed and what the termination condition should be. If you choose **Recursion Allowed**, recursive formulas are not flagged as errors.

Iteration

Specify whether recalculation is performed a fixed number of times or until no cell changes by more than some maximum amount.

If you choose **Fixed Count**, the spreadsheet iterates a fixed number of times on each recalculation. If you choose **Till Test**, it recalculates until no cell changes by more than the value of the **Maximum Delta** field described below, or until a maximum number of iterations has occurred (to avoid infinite loops).

Unless you are using recursive formulas, you should always use a **Fixed Count** of 1.

Iteration Count	If you select **Fixed Count**, this field determines how many times the spreadsheet will recalculate.
Maximum Iterations	If you select **Till Test**, this field gives the maximum number of iterations that will be performed.
Maximum Delta	If you select **Till Test**, this field gives the threshold level at which the spreadsheet stops calculating. It stops when no cell changes by more than this value during one iteration.

```
 Sheet
 Edit            ⇒
 Align           ⇒
 Numbers...
 Rulings...
 Calculate       ⇒
 Font...
 Column Width...
 Graph           ⇒
 File            ⇒
```
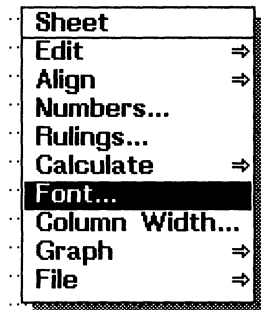
Font...   Change the font used to display values in the spreadsheet. The dialog box appears (Figure 8-19), letting you select the font for this spreadsheet.

```
┌─────────────────────────────────────┐
│  Font ──────────────────────────     │
│    Family  ◯ helvetica          │    │
│    Face    ◯ Bold               │    │
│    Size    ◯ 14 pt              │    │
│    ─────────────────────────────     │
│                                      │
│    ╭──────────╮   ╭──────────╮       │
│    │    OK    │   │  Cancel  │       │
│    ╰──────────╯   ╰──────────╯       │
└─────────────────────────────────────┘
```
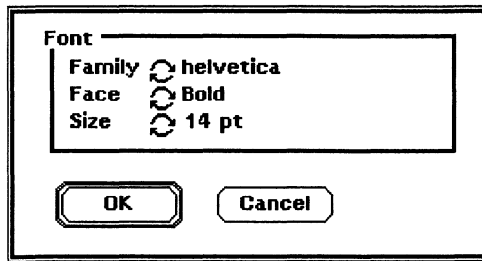
Figure 8-19   *Fonts Dialog Box*

```
┌──────────────────┐
│ Sheet            │
│ Edit          ⇒  │
│ Align         ⇒  │
│ Numbers...       │
│ Rulings...       │
│ Calculate     ⇒  │
│ Font...          │
│█Column Width...█ │
│ Graph         ⇒  │
│ File          ⇒  │
└──────────────────┘
```
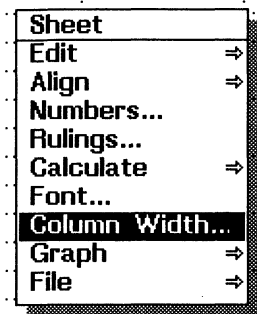
Column Width   Adjust the width of the selected columns. A dialog box appears in
which you can type the new column width. The width is specified
in characters, using the current spreadsheet font. For instance, a
width of "10" means "10 characters in the current font". If the
current font is a proportionally spaced font, the width of a char-
acter is taken to be the width of the character "A".

You can adjust the width of a single column graphically by
positioning the mouse pointer inside that column's heading and
using **MIDDLE drag**. The nearest column separator jumps to the
pointer and you may drag it to any desired position.

```
┌──────────────────────┐
│ Sheet:               │
│ Edit            ⇒    │
│ Align           ⇒    │
│ Numbers...           │
│ Rulings...           │
│ Calculate       ⇒    │
│ Font...              │
│ Column Width         │
│ Graph         ┌──────────────┐
│ File          │ Create       │
└───────────────│ Generate  ⇒ │
                │ Modify    ⇒ │
                │ Delete    ⇒ │
                │ Follow    ⇒ │
                │ Break Link ⇒│
                └──────────────┘
```
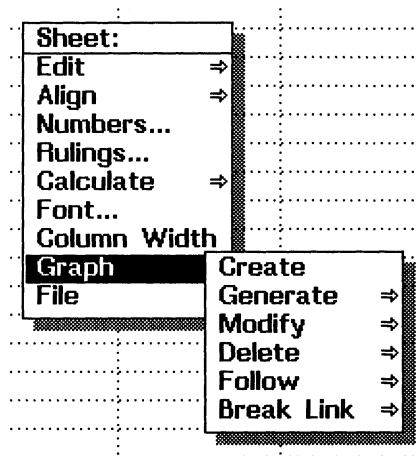
Graph...

You can generate a bar chart, pie chart, line graph, or scatter plot directly from a spreadsheet. The chart is created as a graphics element, and placed immediately after the spreadsheet. Charts appear as graphics elements; you can modify or annotate them using the graphics editor. They maintain their links to the spreadsheet, however, and you can regenerate them (maintaining any of your own modifications) when you change values in the spreadsheet. The description of how to generate the chart is stored with the spreadsheet. You can modify it to customize the appearance of the chart.
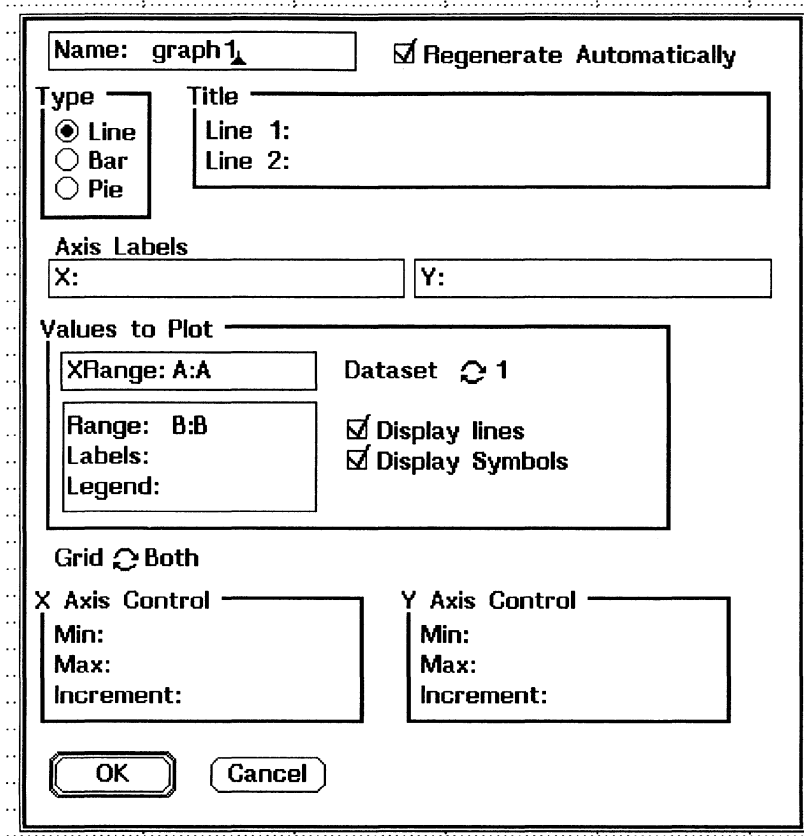
Figure 8-20   *Graph Dialog Box*

The commands available from the **Graph...** menu are as follows.

Create   Create new chart description. The chart is created as a graphics element, and placed immediately after the spreadsheet within the document. The dialog box shown in Figure 8-20 appears. The various fields that may be specified in the dialog box are as follows.

Name	A name by which you can refer to the chart. The editor will provide a default name, but you are free to change it to something more meaningful. If you are going to create multiple charts from a single spreadsheet, be sure to give them names that will help you identify them (the default names are graph1, graph2, etc.).
Regenerate Automatically	If this is on, every time you modify the chart description, the chart regenerates automatically. The chart does *not* automatically regenerate if values in the spreadsheet change.
Type	Specifies whether to generate a line, bar, or pie chart.
Title1	The first line of the title, up to 40 characters long.
Title2	The second line of the title, up to 40 characters.
XLabel	A label centered under the x axis.
YLabel	A label centered over the y axis.
XRange	The range of cell coordinates to use as values for x coordinates. In a bar or pie chart, these are the labels on the chart.
Dataset	When creating charts, you may want to display more than one set of values in a single chart. Each set of values is referred to as a *data set*.

Each data set specifies a region of the spreadsheet (the **Range**) whose data is graphed against the single set of values in **XRange**. Each data set may also have its own **Labels** and **Legend** information.

Line charts and bar charts may include up to six different data sets each. Pie charts are limited to a single data set.

When you choose a data set, the associated information for that data set appears in the other fields of the dialog box.

Range

The spreadsheet range where the data for this data set appears.

Labels

The spreadsheet range where labels for the individual graph points appear. Labels are superimposed on the graph, aligned with the points they are labeling according to the **Label Alignment** setting. If you request labels on your chart, make sure the **Xrange** region and the **Labels** region are the same size so that every point on the graph has a label.

Display Lines

Specifies whether lines should be drawn connecting the data points. This is only relevant for line charts.

Display Symbols

Specifies whether symbols should be drawn to mark the data points. This is only relevant for line charts.

Grid	Indicates what kind of grid to put on the background of the chart. You may select horizontal grid lines, vertical grid lines, both, or neither.
XMin, XMax, X Increment YMin, YMax, Y Increment	Specifies how to label the axes. The editor does not graph data points outside the **Min** and **Max** limits. If you leave the limits unspecified, the editor will choose values based on the data you are graphing. If you do not specify an increment, or if you specify a value for the increment that results in too many intervals, the editor will override your value and choose a value that gives reasonable results.
Generate	Explicitly regenerates a chart. A submenu lets you specify which chart to regenerate.

Note: You can cut and paste a chart to move it to a new location in the document. However, once you have cut and pasted it, the chart is no longer linked with the spreadsheet. This means it is impossible to update the chart when the spreadsheet values change, or to modify the charting parameters using the **Modify** command described below.

An alternative approach to moving the chart is to cut the contents of the document between the chart and where you would like it to appear in the document, then paste those contents back in between the spreadsheet and the chart. This approach is slightly awkward, but it does preserve the link between the chart and the spreadsheet, allowing the chart to be regenerated if the data or charting parameters change.

Modify	Modifies the description of an existing chart. The chart specification dialog appears, and you can change the characteristics of the chart. If you select **Regenerate Automatically**, the editor regenerates the chart as soon as you **click** on the **OK** button. Otherwise, use the **Generate** command to regenerate the chart explicitly.
Delete	Deletes the description of a chart. This command deletes only the description; the chart itself stays in the document, though it is no longer linked to the spreadsheet.
Follow	Finds the chart generated from a particular description and makes it the currently selected media element. This may involve scrolling the viewport and moving to another part of the document. **Follow** can be helpful if the chart is not located near the spreadsheet in the document or if there are several charts generated from the same spreadsheet, and you are not sure which graphics element is linked to each chart description.
Break Link	Breaks the link between the spreadsheet and the chart. This freezes the chart, keeping it from being modified even if the spreadsheet values change. Cutting the chart and then pasting it back in will also break the link. Once broken, the link cannot be reestablished.

```
Sheet
Edit        ⇒
Align       ⇒
Numbers
Rulings
Calculate   ⇒
Font...
Column Width
Graph       ⇒
File          Read Text
              Write Text
              Read Lotus
              Write Lotus
```
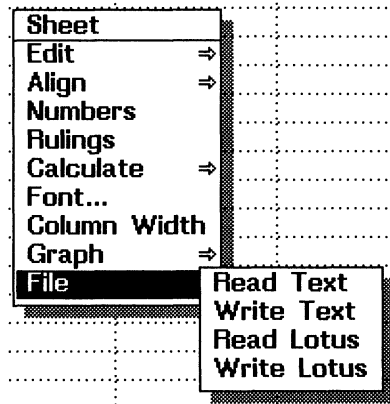
File...

These commands are used for reading and writing spreadsheets separately from the rest of the document. The commands are:

Read Text   Reads a text file as a spreadsheet. Columns in the text file should be separated by tabs, and each row should start on a separate line. You can include formulas in the text if you begin them with an equal sign (=).

Write Text   Writes a spreadsheet as a text file. This command writes the entire spreadsheet, not just the visible portion. Each row appears on a separate line; columns are separated by tabs. If a cell contains a formula, the formula itself is written out, instead of its value.

To save only the visible portion of a spreadsheet, and to save values rather than formulas, use the **File-Write as Text** command in the menubar.

Read Lotus   Read a Lotus 1-2-3™ .wk1 file into the spreadsheet.

Write Lotus   Write the spreadsheet as a Lotus 1-2-3 `.wk1` file. There are some mathematical functions in the BBN/Slate spreadsheet that are not present in Lotus. If your spreadsheet includes formulas that use these functions, Lotus 1-2-3 may not be able to read the resulting file.

8.4   Mouse Usage

The spreadsheet editor interprets the mouse buttons as follows.

LEFT click   Select the cell the pointer is indicating. Any cells that were previously selected are deselected.

If the pointer is in the row or column heading, select the entire row or column.

If the pointer is in the small box in the upper left corner, where the row and column headings intersect, select the entire spreadsheet.

If you have started entering a value, **LEFT click** on any cell, row heading, or column heading to insert that item's name into the value.

LEFT drag   Select a region beginning at the cell where you press the mouse button, and ending at the cell where you release it. These two cells form the opposite corners of a rectangle. All cells within the rectangle are selected. Any cells that were previously selected are deselected.

If the pointer is dragged over row or column headings, select entire rows or columns.

If you have started entering a value, **LEFT drag** over a region to insert the name of that region.

shift LEFT click   Select a region like **LEFT click,** except that the previously selected region is not deselected.

shift LEFT drag   Select a region like **LEFT drag,** except that the previously selected region is not deselected.

MIDDLE click   Deselect any selected region.

If you have just changed a value, confirm the change.

MIDDLE drag   If the pointer is in the column headings at the top of the spreadsheet, **drag** on the vertical line that separates two column headings. This increases the width of one column and decreases the width of the adjacent column.

RIGHT click   If you have just changed a value, confirm the change.

RIGHT hold   Display the media-specific **Sheet** menu. The Spreadsheet **Sheet** menu commands are described in Section 8.3.

8.5   Keyboard Commands

Although the system of menus, mouse buttons, and mouse pointer positioning is useful for many beginning users and for many spreadsheet activities, some operations on spreadsheets are much more convenient when performed from the keyboard. There are keyboard equivalents for many menu operations in spreadsheet editing. Therefore, you do not need to use only the mouse or pop-up menus when editing spreadsheets.

There are two kinds of keyboard commands for spreadsheets: one kind moves between cells and the other edits values within cells. To switch from cell editing to moving between cells, you can type **Return** to confirm your changes to the cell, or **^G** to cancel them. Either one will end the cell-editing mode and allow you to move to a different cell.

Table 8-1 lists all spreadsheet menu commands, their equivalent default key commands, and the underlying functions that are invoked by the commands. In general, you can assign a key command for every operation in BBN/Slate. If you want to add or change keyboard equivalents, the *Customizing Manual* describes how to bind keys to functions.

Table 8-1   *Spreadsheet Editing Keyboard Commands*

```
Keystroke      Function

!              sheet-compute
ESC-w          sheet-copy
ALT-w          sheet-copy
^N             sheet-cursor-down
ESC-[          sheet-cursor-keys
^B             sheet-cursor-left
^J             sheet-cursor-next
^M             sheet-cursor-next
^F             sheet-cursor-right
^I             sheet-cursor-right
^P             sheet-cursor-up
^D             sheet-cut
^K             sheet-cut
^W             sheet-cut
^A             sheet-edit-cell
^E             sheet-edit-cell
ESC-c          sheet-flush-center
ALT-c          sheet-flush-center
ESC-l          sheet-flush-left
ALT-l          sheet-flush-left
ESC-r          sheet-flush-right
ALT-r          sheet-flush-right
^Y             sheet-paste
```

9   Speech

BBN/Slate lets you record your verbal comments and place them at a specified position within a document. The speech media type is useful for expressing comments on drafts and proposals and for reviewing analyses. For example, you draft a document to send to others for comment. Your reviewers can easily express their opinions to you by recording their spoken comments in appropriate places in your draft document. Then they can return a copy of your document with the annotations. When you receive the draft document, you can search for voice annotations to hear reviewers' comments.

Note: To use the speech capabilities of BBN/Slate, you need a speech digitizer for your workstation. Some workstations have a "built in" speech digitizer. Other workstations need to have an external board or speech server added. Contact your system administrator or workstation vendor if you need a speech digitizer.

Speech elements in BBN/Slate consist of two parts: a digitized speech passage, and an icon (with optional text caption) that appears in the document. The default icon is a loudspeaker with sound coming from it. The default caption includes the person's name who created the speech element, the date and time it was created, and the speech passage length in seconds. Although suitable defaults exist, you can use any image you like as the icon, and any string as the caption.

Figure 9-1 shows an example of a speech element in a document.

| ◁◁|◁ | Remark by Kathryn Ellis on 04/27/90, 1:49 pm |

Figure 9-1   *A Speech Passage Represented in a BBN/Slate Document*

To listen to a speech passage in a document, **LEFT click** with your mouse pointer over the icon or caption. While the editor is playing speech, you can click any mouse button to interrupt the playback.

This chapter describes how to use the speech media type in the following ways:

- entering speech passages (Section 9.1)
- cutting and pasting speech segments (Section 9.2)
- mouse usage (Section 9.3)
- using the menu commands specific to the speech editor (Section 9.4)
- controlling the recordings and playback variables (Section 9.5)
- **Speech** menu command variables (Section 9.6)

9.1   Entering Speech

To add a speech passage to a document, select **Add-Speech**. A speech element (Figure 9-1) is added to the document and the speech editing dialog box (Figure 9-3) appears.

When you **RIGHT hold** over the speech element, a **Speech** menu appears (Figure 9-2).
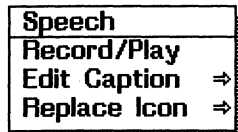
Figure 9-2   Speech Menu

When you select the **Record** or **Playback** options from the **Speech** menu, BBN/Slate displays a speech editing dialog box (Figure 9-3). It is modeled after a simple tape recorder. Use it to record and edit digitized speech. The control panel buttons invoke the various speech-editing commands. Section 9.4 describes each of these commands in detail.
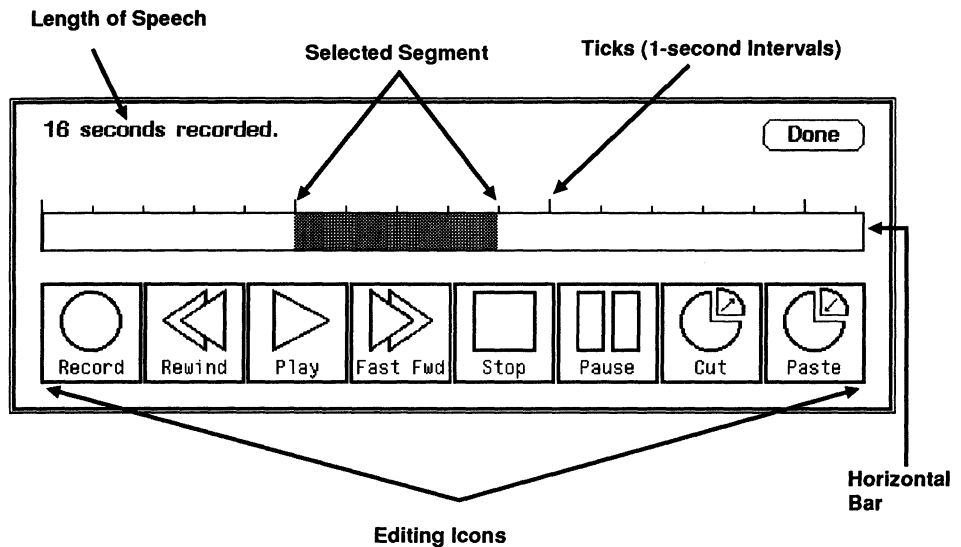
Figure 9-3   Speech Editing Dialog Box

You can record speech in two different ways, called *start/stop* mode and *continuous* recording mode.

- **To record in** *start/stop* **mode:**

  Pick up your microphone or telephone handset, move the mouse pointer to the **Record** button, then **LEFT hold**. The control panel changes to show only the **Record, Stop,** and **Done** buttons, and you can begin speaking. Speech is recorded until you **release** the mouse button. Start/stop mode is useful for recording short spoken annotations to a document.

- **To record in** *continuous* **mode:**

  Pick up your speech digitizer microphone or telephone handset and **LEFT click** on the **Record** button. The control panel changes to show only the **Record, Stop,** and **Done** buttons, and you can begin speaking. Speech is recorded until you **LEFT click** on the **Stop** command. Continuous recording mode is useful for recording extended spoken commentary.

When you add speech to a document, the editor inserts the default speech icon into the document with a caption indicating who recorded the speech, the date and time at which the speech was added, and the passage length in seconds. You can change the icon and the caption using the commands described in Section 9.4.

9.2 Editing Speech (Cutting and Pasting)

The dialog box (Figure 9-2) tells you the length of the speech and gives you editing icons to alter the speech. To use the icons on the dialog box, first select the segment of speech you want to modify on the horizontal bar.

- To select the segment of speech to modify, **LEFT hold** on the starting point and **drag** to the end point. You can then alter the selected segment by clicking on the appropriate icon. (For example, to select seconds 6 - 9, as in Figure 9-2, **LEFT click** on the sixth tick and drag to the ninth tick.)

- To cut this segment, **LEFT click** on the **Cut** icon.
- To paste this icon, **LEFT click** on the **Paste** icon.

9.3   Mouse Usage

You control the speech editor almost entirely through pop-up dialog boxes. Therefore, the rules for using the mouse to edit speech are identical to the rules for operating menus and dialog boxes, with the following exceptions:

- When no dialog box is displayed, **LEFT click** on a speech icon or caption to play back the speech.
- When playing speech back in this manner, *any* **click** aborts the playback.
- When the speech-editor control panel is displayed, **LEFT click** on the **Record** button records speech until you **click** ofn the **Stop** button. If you **LEFT hold** instead of **LEFT click**, BBN/Slate records speech until you release the mouse button.

In all other respects, the control panel behaves exactly like any other pop-up dialog box.

9.4   Menu Commands

This section describes commands available in the speech editor.

```
Speech
Record/Play
Edit Caption    ⇒
Replace Icon    ⇒
```
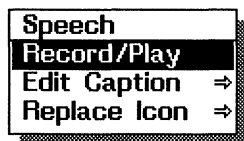
Record/Play   Add, play, or edit a speech passage. The speech editor maintains an *insertion point* like the cursor in a text editor. When you add new phrase, the editor places it immediately *after* the insertion point. When you delete a phrase, it is the phrase immediately *before* the insertion point that the editor removes.

Normally the insertion point is at the end of the speech passage, s(the editor appends new phrases to the existing speech. You can use the speech-editing commands described below to move the insertion point to any phrase in the passage. The status line at the top of the control panel lists the total number of phrases in the speech and indicates where the insertion point is.

Phrases are combined when you save a document. Therefore, when you edit an existing document, each speech object contains only *one* phrase, no matter how many individual phrases you used in creating it.

When you select the **Speech-Record/Play** command, the control panel shown in Figure 9-4 appears. It displays a status line indicating the current speech passage size and the insertion point position.
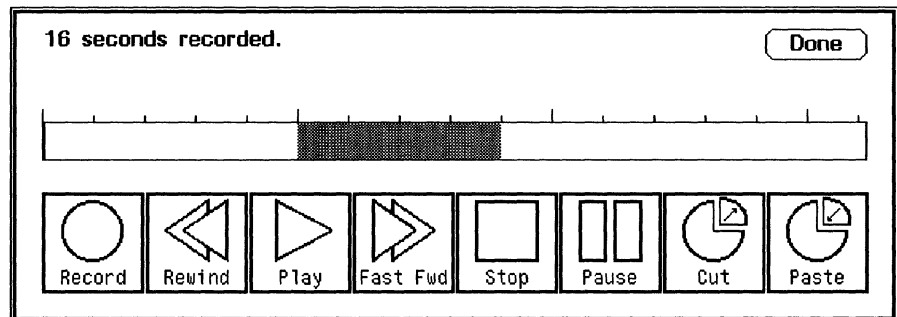
Figure 9-4   *Speech Control Panel*

The speech control panel provides access to the following editing commands:

Record	Add a new phrase immediately after the insertion point, and advance the insertion point to the end of the new phrase.
	If you **LEFT click** on the **Record** button, the speech editor enters continuous recording mode, and records speech until you choose **Stop** or **Done**.
	If you **LEFT hold** on the **Record** button, the speech editor enters start/stop mode, and records speech until you release the mouse button.
	While the editor is recording, it disables all commands except **Stop** and **Done**.
Rewind	Move the insertion point backward in the speech passage.
Play	Play back the *entire* speech passage. Playback stops when it has played the complete passage, or when you choose the **Stop** or **Done**. The editor disables all other commands.
Fast Fwd	Move the insertion point forward in the speech passage.
Stop	Stop recording or playback of speech, but do *not* take down the control panel.
Pause	Temporarily halt record or playback.
Cut	Copy the phrase immediately before the insertion point onto the clipboard and remove it from the speech passage.

Paste   If there is a speech phrase on the clipboard, add it after the insertion point, and advance the insertion point to the end of the new phrase.

Done   Stop recording or playback of speech, confirm all changes, and take down the control panel.

```
┌─────────────────────┐▪
│ Speech              │
│ Record/Play         │▪
├─────────────────┬───┴─────────┐
│ Edit Caption    │ Edit Text   │
│ Replace Icon    │ Change Font │▪
└─────────────────┴─────────────┘
```

Edit Caption   Change the text, layout, or font of a passage's caption. The caption appears in the document along with the icon that indicates the presence of speech.

Edit Text...   Display a dialog box for selecting the caption **Text** and **Position**. The dialog box is shown in Figure 9-5.

```
┌──────────────────────────────────────────────────────┐
│ ┌──────────────────────────────────────────────────┐ │
│ │ Caption: mment from J. Abbott 12/20/88, 8:28 am▙ │ │
│ └──────────────────────────────────────────────────┘ │
│ Position        ↻ above                              │
│ Justification ↻ left                                 │
│                                                      │
│                        ┌────────┐  ┌────────┐        │
│                        │   OK   │  │ Cancel │        │
│                        └────────┘  └────────┘        │
└──────────────────────────────────────────────────────┘
```
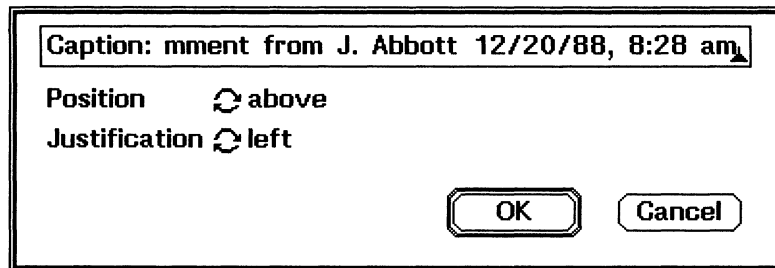
Figure 9-5   *Caption Dialog Box*

The **Text** field specifies the text to be displayed, and the **Position** field specifies whether the text is to be placed above, below, to the left, or to the right of the icon. If **Position** is above or below, you may also specify **Justification**, causing the text to be left-justified, right-justified, or centered with respect to the icon.

**Change
Font...**

Display a dialog box (Figure 9-6) for selecting the Font Family, Face, and Size used for the caption text.

```
┌─────────────────────────────────┐
│  ┌─ Font ──────────────────────┐ │
│  │  Family  ⟳ helvetica        │ │
│  │  Face    ⟳ Bold             │ │
│  │  Size    ⟳ 10 pt            │ │
│  │                             │ │
│  └─────────────────────────────┘ │
│                                  │
│   ╭──────────╮   ╭──────────╮    │
│   │   OK     │   │  Cancel  │    │
│   ╰──────────╯   ╰──────────╯    │
└─────────────────────────────────┘
```
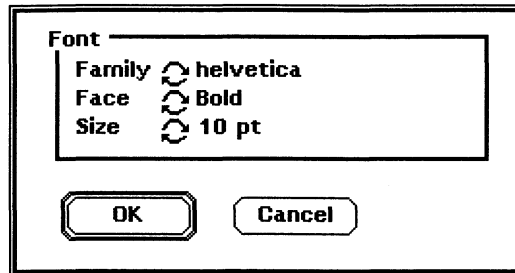
Figure 9-6   *Selecting Fonts Dialog Box*

```
┌────────────────┐
│ Speech         │
│ Record/Play    │
│ Edit Caption ⇒ │
│ Replace Icon   │─┬─────────────────┐
└────────────────┘ │ Use Default     │
                   │ From File       │
                   │ From Clipboard  │
                   └─────────────────┘
```
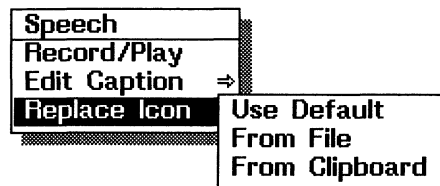
Replace Icon

Change the image that represents the presence of a speech element. Each speech element may have its own icon.

Use Default   Use the default loudspeaker icon.

From File   Use an image from a BBN/Slate image file. A dialog box asks you for the file name.

**From
Clipboard**   Use an image from the clipboard, if one is available.

9.5 Preference Variables for Built-in Audio Hardware Users

BBN/Slate lets you use the audio hardware built into selected workstations to record and play back speech messages as part of multimedia documents. Before you can use this BBN/Slate feature, you must connect a microphone to your workstation. See your workstation documentation for information on connecting microphones to your workstation.

You can control the recording and playback volume of speech. You can also decide whether to play back speech through headphones or through a speaker. To control these elements, you set preference variables in your `.slate_editor.init` file or by using the **Set Variable** option under the **BBN** menu.

First decide how you want to set the variables. To keep the same variables from session to session, set the variables in your `.slate_editor.init` file. Otherwise, set them using the **Set Variable** option.

The next subsections explain how to choose the values for these preference variables and set them using whichever method you have chosen.

9.5.1 Deciding on Values for Preference Variables

The preference variables that you can set affect recording level (audio-record-level), playback level (audio-playback-level), and audio output (audio-output).

audio-record-level To define recording level, set the audio-record-level variable to a number between 0 and 100. The higher the number, the louder the recording volume. For example, to specify an average volume, set the variable to 50.

To select a volume that works well for most recordings, set this value to **default**.

audio-playback-level

Define the playback level by setting the audio-playback-level variable to a number between 0 and 100. The higher the number, the louder the playback volume. For example, to specify an average volume, set the variable to 50.

To select a volume that works well under most conditions, set this value to **default**.

audio-output

To choose whether to play back speech through headphones or through a speaker, set the audio-output variable to `speaker`, `headphones`, or `default`. If you select the default, the audio output goes to the speaker.

9.5.2   **Setting Preferences**

You can set preferences either in your `.slate_editor.init` file (to save them from session to session) or by using the **Set Variable** item on the **BBN** menu (to use the settings for one session only).

Saving Preferences from Session to Session

To keep the preference variable settings from one session to the next, set them in your `.slate_editor.init` file as described in the *Customizing Manual*.

Setting Preferences for Current Session Only

To set the preference variables for one session only, follow these steps:

1. Select the **Set Variable** option from the **BBN** menu on the menu bar (Figure 9-7).

```
┌──────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor      │
├──────────────────────────────────────────┤
│ ▓▓  Add   Edit   File   Mail   Print   Classify │
│ About BBN/Slate...                        │
│ Help                    ⇒                 │
│ Set Variable                              │
│ Invoke Function                           │
│ Load SEL Commands                         │
└──────────────────────────────────────────┘
```
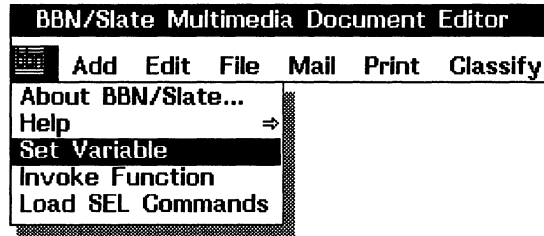
Figure 9-7   *Selecting the Set Variable Option*

2. When a dialog box appears, select the desired variable by scrolling through the list or by typing in its name. **LEFT click** on **OK**, and a second dialog box appears (Figure 9-8).

```
┌──────────────────────────────────────────────────────────────┐
│  Set:                                                         │
│                                                               │
│  SLATE_DIR                               ▲    ┌──────────┐    │
│  audio-input                             │    │    OK    │    │
│  audio-output                            │    └──────────┘    │
│  audio-playback-level                    │    ┌──────────┐    │
│  audio-record-level                      │    │  Cancel  │    │
│  auto-backup                             ▼    └──────────┘    │
│                                                               │
│  ┌──────────────────────────────────────┐                    │
│  │ audio-playback-level                 │                    │
│  └──────────────────────────────────────┘                    │
└──────────────────────────────────────────────────────────────┘
```
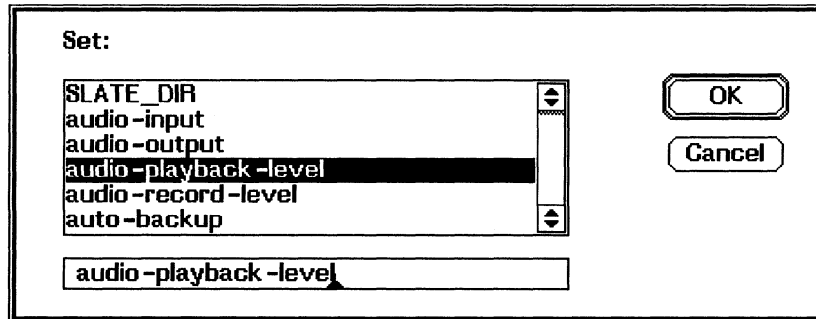
Figure 9-8   *Set Variable Dialog Box*

3. Type in the new value of the variable. **LEFT click** on **OK**. You can select a setting that works well under most conditions by typing in `default` (Figure 9-9).

```
┌─────────────────────────────────────────────────────────┐
│ ┌─────────────────────────────────────────────────────┐ │
│ │                                                     │ │
│ │                                                     │ │
│ │                                                     │ │
│ │ ┌─────────────────────────────────────────────────┐ │ │
│ │ │Value: default▖                                   │ │ │
│ │ └─────────────────────────────────────────────────┘ │ │
│ │                            ╭─────────╮  ╭────────╮   │ │
│ │                            │   OK    │  │ Cancel │   │ │
│ │                            ╰─────────╯  ╰────────╯   │ │
│ └─────────────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────────────┘
```
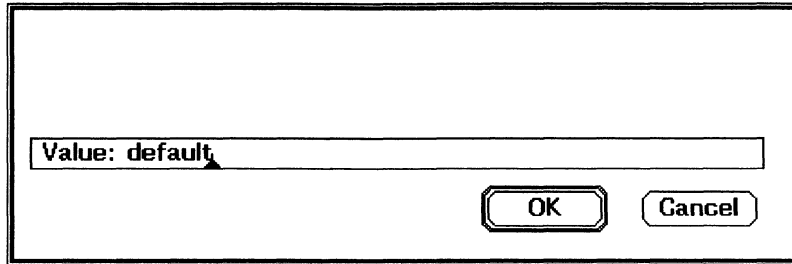
Figure 9-9   *Dialog Box for Setting Preferences*

For more information about using the Set Variable option, see Chapter 4.

9.6   Speech Menu Command Variables

Table 9-1 lists all **Speech** menu commands and the underlying functions that are invoked by the commands. BBN/Slate does not supply any default key commands for speech, but you can create them as described in the *Customizing Manual*.

Table 9-1   *Speech Editing Commands and Functions*

Menu Command	Function
Record	audio-edit
Playback	audio-listen
Edit Caption	
Edit Text...	audio-edit-caption
Change Font...	audio-edit-font
Replace Icon	
Use Default	audio-use-default-icon
From File	audio-use-file-icon
From Clipboard	audio-use-clipboard-icon

10 Enclosures

One of the advantages of using BBN/Slate is the ease with which you can communicate a complex package of information using your electronic mail system. The package, a BBN/Slate document, can include an *enclosure*, which is an uninterpreted data file. You can use the document as the "envelope" in which the enclosure is encapsulated, and the recipient can separate the enclosure from its envelope and use it normally. BBN/Slate makes it easy to enclose a file within a document, to identify it within the document, and to extract it from the document and put it into the UNIX file system. It is also easy to specify your own tools for manipulating enclosures.

A powerful way to use enclosures is to enclose executable programs within documents. The enclosures function in BBN/Slate includes the ability to create your own menu commands, such as **Execute** and **Debug**. By embedding "live" programs within a document and creating customized command buttons, you can effectively turn a document into a control panel to access other programs.

This chapter is organized in the following sections:

- overview (Section 10.1)
- **Enclosure** menu commands (Section 10.2)
- **Enclosure** menu command variables (Section 10.3)

10.1 Overview

10.1.1 Enclosure Representation

The default icon for an enclosure is an envelope. The user specifies the icon's caption, which includes the type of file enclosed, an optional one-line description, and, optionally, the file size. Figure 10-1 displays two examples of the way enclosures are represented within a document.

GANT/Pert Chart: 1993 Project Plan. [2000 bytes]

Data: Gate Array Design
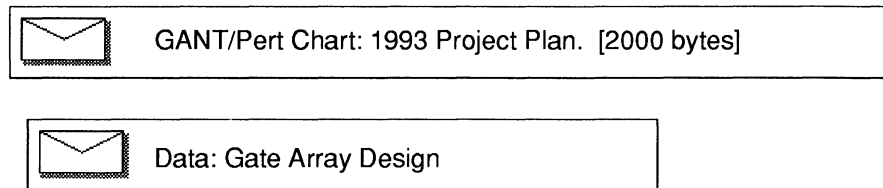
Figure 10-1   *Screen Representation for Enclosures*

Like other media types in BBN/Slate, you can insert an enclosure at any point within a document.

10.1.2 Copies and References

There are two basic types of enclosures: file copies and file references. When you define an enclosure in a document, BBN/Slate lets you either **Include Copy** or **Include Reference**.

The default is to include a copy of a file. BBN/Slate copies the entire contents of the file into your document. The resulting enclosure is a static "snapshot" of the original file, snapped at the time you create the enclosure. If the original file later changes, the enclosed copy of it will not; there is no link between them.

You can alternatively include a reference to a file and your document will not actually contain any enclosed data. The enclosure will consist of only a pointer, or reference, to the file. Whenever you or another user uses the Document Editor to access the contents of the document's enclosure, BBN/Slate reads from and writes into the file itself, rather than a copy of it. By including a reference, you create a dynamic enclosure; any changes in the referenced file are reflected in the enclosure, and vice-versa. This method saves disk space by not having multiple copies of the same file. However, it assumes your file system and file locations will not be changed during the relevant life of the enclosure.

If you enclose a file reference within a document or mail message, make sure the recipient has access to the referenced file, or use the **Copy When Mailed** option described in Section 10.2.

You may want to enclose a copy of a file in a document today, but mail it sometime in the future. BBN/Slate offers a solution to the problem of the enclosed file being out of date by the time you mail the document. The **Copy When Mailed** enclosure option maintains a reference to a file until you actually mail the document, at which time it copies the file into the document.

10.2   Enclosure Menu Commands

This section describes the commands available for enclosures. Figure 10-2 shows the **Enclosure** menu.

```
┌─────────────┐
│ Enclosure   │
├─────────────┤
│ Define   ⇒ │
│ File     ⇒ │
│ Edit        │
│ Execute     │
│ Print       │
└─────────────┘
```
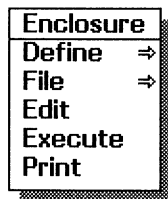
Figure 10-2   *Enclosure Menu*

```
┌─────────────┐
│ Enclosure ▓ │
├─────────┬───────────────────┐
│ Define  │ Edit Specification ▓│
│ File    │ Modify Layout      ▓│
│ Edit    │ Change Font        ▓│
│ Execute ▓└───────────────────┘
│ Print   │
└─────────┘
```
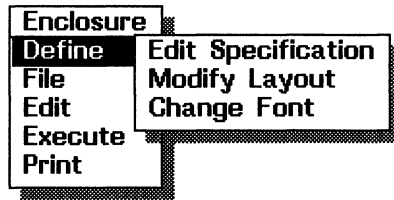
Define   Modify the attributes of this enclosure. The **Define** submenu
                          includes three commands that let you alter the enclosure's
                          underlying specifications as well as its appearance in the document.
                          Define subcommands are described below.

                          Edit   Define or alter an enclosure's attributes. You
                          Specification   must define an enclosure that you create yourself,
                                                and you can edit the specifications of an
                                                enclosure in a document mailed to you by
                                                someone else. When you use **Define-Edit
                                                Specification**, the dialog box shown in Figure
                                                10-3 appears.

```
┌─────────────────────────────────────────────────────────────┐
│ Enclosure                                                    │
│     From File:    ▲                                          │
│     Description:                                             │
│     Type:         ♻ Data                                     │
├─────────────────────────────────────────────────────────────┤
│ Options                                                      │
│     ♻ Include Reference                                      │
│              ☐ Copy When Mailed                              │
├─────────────────────────────────────────────────────────────┤
│ Operations                                                   │
│         Edit:  [                                        ]    │
│      Execute:  [                                        ]    │
│        Print:  [                                        ]    │
│     [       ]: [                                        ]    │
│     [       ]: [                                        ]    │
│     [       ]: [                                        ]    │
│     [       ]: [                                        ]    │
├─────────────────────────────────────────────────────────────┤
│                                    ⟨  OK  ⟩   ⟨ Cancel ⟩     │
└─────────────────────────────────────────────────────────────┘
```

Figure 10-3   *Enclosure Specifications*

The fields in the dialog box are described below:

Enclosure   Enclosure fields are: **From File:, Description:,**
Fields   **and Type:.**

From File: Name of the file you would like to enclose.

                       As in many dialog box fields throughout
                       BBN/Slate that require a file name, you need not
                       explicitly type out the pathname of the file (see
                       the Section "Moving Through the Directory
                       Structure of Files" in Chapter 4 for information
                       about file completion). However, if you use ~/ or

an environment variable such as $HOME to save keystrokes in specifying a pathname, you could achieve an unexpected result. The following paragraphs explain why.

When you define an enclosure as a copy of a file (see Section 10.1.2), BBN/Slate turns the contents of the **From File:** field into an absolute pathname, locates the specified file, and copies it into the document. The pathname is unambiguous.

If, on the other hand, you define a document's enclosure as a reference to a file (see Section 10.1.2), you might inadvertently specify an ambiguous pathname for the file you intend to include by reference. BBN/Slate does not check for the existence of a referenced file until someone actually tries to access the contents of the enclosure.

For example, BBN/Slate will interpret the string ~/file1.data as a reference to a file named file1.data located in your home directory. But if someone else loads the document into the Document Editor and tries to look at the enclosure, BBN/Slate will search for a file named file1.data *in that person's home directory.*

You can avoid ambiguity in a reference simply by using the spacebar to expand the ~/ into an explicit pathname.

Description: Text describing the enclosure's contents. Type a one-line description; it appears in the caption of the enclosure icon.

Type:

Type of file contained by the enclosure. Possible values include:

- Text
- Data
- PostScript
- Program
- Other

If you select **Other**, the dialog prompts you to type in another type of file. The type appears in the caption of the enclosure's icon, along with the description.

Options Fields

Options fields are: **Include Copy** and **Include Reference** (one toggle), **Copy When Mailed** (appears only if you select **Include Reference**), and **Show Size** (appears only if you select **Include Copy**).

Include Copy

Enclose a copy of the enclosure file, rather than a pointer to it. If you are mailing the document with the enclosure to someone who does not have access to the enclosure's source file, then you must send them a copy of that file, using either **Include Copy** or **Copy When Mailed** (described below). **Include Copy** toggles with **Include Reference**.

Include Reference

Include a pointer to the enclosure file, rather than the file itself. If you are mailing the document with the enclosure to someone who has access to the enclosure's source file, then you do not need to send a copy of the source file itself. You can save disk space by selecting **Include Reference**,

which puts a reference pointer into the document, telling BBN/Slate where to find the enclosure file. Another advantage in referring to a file rather than copying it is that if the enclosure's source file ever changes, the enclosure will reflect the changes. **Include Reference** toggles with **Include Copy**.

Copy When Mailed

Copy the enclosure source file into the document when the document is mailed, not before. This option appears only if you select **Include Reference**, and it offers a halfway alternative between **Include Reference** and **Include Copy**. If you plan to mail your document to someone who does not have access to the enclosure source file, this option will ensure that you send the most up-to-date copy of the file. A reference to the source file remains in your document, so you can simply remail the document later if the enclosure source changes.

Show Size

Show the size of the enclosure in the caption of its icon. This option appears only if you select **Include Copy**.

Operations Fields

Operations fields let you define optional menu commands that act upon the enclosure. These default command labels are provided: **Edit:**, **Execute:**, and **Print:**. You can optionally add labels and associated commands in the four blank spaces provided.

Warning! Do not execute, edit, or print any enclosure if you do not know what it does.

Because enclosures can contain any executable commands, it is possible that other users could send shell scripts designed to alter or destroy your files.

Edit:

UNIX command to invoke an editor. BBN/Slate consults this field whenever someone selects the **Edit** command from the main **Enclosure** menu. If the command in this field contains a %s, %s is replaced by the name of the enclosure file when the command is passed to the operating system.

You should set the value of **Edit** to the command that invokes the editor used by the person who will be doing the editing. If you receive a mail message with an enclosure that you want to edit, and the **Edit** field is empty or is set to invoke an editor you do not want to use, you can use the **Define-Edit Specification** command to change it.

The **Edit** operation is optional; you don't have to assign it a value. You may not want to assign it a value if you do not know what text editor the recipient of the enclosure normally uses.

If you leave the **Edit** field empty, the **Edit** command in the main **Enclosure** menu is dimmed, indicating that it not available.

Execute:

UNIX command to execute the enclosure. Whenever someone selects the **Execute** command from the main **Enclosure** menu, BBN/Slate consults this field and passes the specified command to the operating system. If the

command contains a %s, %s is replaced by the name of the enclosure file. If the enclosure is itself a program, you can simply use %s as the value for the **Execute** field.

If the enclosure is not an executable file, you should leave the **Execute** field empty. If you do leave it empty, the **Execute** command in the main **Enclosure** menu is not available.

Print: UNIX command to print the enclosure. Whenever someone selects the **Print** command from the main **Enclosure** menu, BBN/Slate passes the value of this field to the operating system. If the value includes the placeholder %s, the placeholder is replaced by the name of the enclosure file.

If you leave the **Print** field value empty, the **Print** command in the main **Enclosure** menu is dimmed, indicating that it is not available.

Other: UNIX commands to perform any operations you define. Below the **Edit**, **Execute**, and **Print** fields in the dialog box are four blank fields that you can fill in with operations that you want to perform on the enclosure.

For example, you could insert the field name **Debug** in the small box on the left side of a colon, and on the right put a UNIX command to invoke a debugger. (If the UNIX command includes the placeholder %s, the placeholder is replaced later by the name of the enclosure file.) The command **Debug** then appears on the main **Enclosure** menu, just below **Edit**, **Execute**, and **Print**.

If you fill in any optional field names, the field values are *not* optional. You must define every operation you specify on the menu.

**Modify
Layout**

Alter the appearance of this enclosure icon and the box that surrounds the icon and its caption. When you use **Define-Modify Layout**, the dialog box shown in Figure 10-4 appears.

```
Icon
    Appearance:  ⟳ Load From File
    Filename:␣
    Width:              Height:

Internal Border Width
    Top:     5          Left:    5
    Bottom:  5          Right:   5

External Border Width
    Top:     10         Left:    10
    Bottom:  10         Right:   10

                            ┌──────┐  ┌────────┐
                            │  OK  │  │ Cancel │
                            └──────┘  └────────┘
```

Figure 10-4   *Modifying the Enclosure Icon and Its Box*

The **Modify Layout** command enables you to tailor the amount of white space surrounding the icon, the caption, and their box, which can be very useful when an enclosure is embedded in text. You can modify three attributes of the icon and its box:

Icon

Select the source for this enclosure's icon. Your three choices are: **Use Current Icon, Use Default Icon**, and **Load From File**. Select one as the

value for the **Appearance** field. If you choose the current icon, the icon does not change. If you select the default icon, BBN/Slate replaces the current icon with the default icon.

If you choose to load an icon from a file, you must supply the name of a file you previously created using the icon-editing program available on your operating system. You can also specify how many pixels wide the icon is, measured from the left edge of the file. If you leave the **Width** field empty, BBN/Slate will use the entire width of the file as the icon's width. Similarly, you may specify the icon's **Height**, measured in pixels from the top of the file; otherwise BBN/Slate will use the entire file height.

Internal Border Width

Specify the amount of white space between the icon and caption and the box surrounding them. The four numbers you supply are interpreted as widths in pixels. Widths are measured from the top, bottom, and left edge of the icon, and from the right edge of the caption.

External Border Width

Specify the amount of white space surrounding the box. The four numbers you supply are interpreted as widths in pixels, measured from the four sides of the box.

Change Font

Alter the font for the caption of this enclosure's icon. A dialog box appears when you use this command, enabling you to change the **font family**, **face**, and **size**.

```
┌─────────────┐
│ Enclosure  ▓│
│ Define    ⇒▓│
│ File  ▓│ Save Data        ▓│
│ Edit  │ Reload Data       ▓│
│ Execute│ Show Filename    ▓│
│ Print │▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓│
│▓▓▓▓▓▓▓▓▓│
└─────────────┘
```
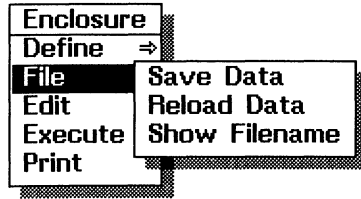
File   Save or reload enclosure data in a file. The three commands on this submenu work only for an enclosure that includes an actual copy of the source file; they do not work for an enclosure that includes a reference to the file (see **Define-Edit Specification** above).

       Save Data   Save the enclosure data into a file. When you use this command, a dialog box appears and prompts you for the pathname of the file in which you would like to save the data.

       Reload Data   Load the contents of the enclosure's source file into the enclosure. Use this command to obtain the latest version of the enclosure data. **Reload Data** works only if the enclosure includes a copy of the file *and* you have access to the original source file. (If the enclosure includes a reference to the file rather than a copy of it, BBN/Slate automatically reloads the enclosure file every time the document is read into the Document Editor.)

       Show Filename Show the pathname for the source file of the enclosure.

```
┌─────────────┐
│ Enclosure   │░
├─────────────┤░
│ Define    ⇒ │░
│ File      ⇒ │░
│ Edit        │░
│ Execute     │░
│ Print       │░
└─────────────┘░
  ░░░░░░░░░░░░░░░
```
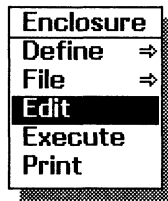
Edit

Warning! Do not edit any enclosure if you do not know what it
does. Because enclosures can contain any executable commands, it
is possible that other users could send shell scripts designed to
alter or destroy your files.

When you use this command, BBN/Slate asks you to confirm that
it will execute whatever command it finds in the **Edit** field of the
enclosure specification (Figure 10-5). See **Define-Edit
Specification**, above.

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│            Confirmation for execution of 'Edit' command:          │
│   ┌───────────────────────────────────────────────────────────┐  │
│   │ textedit  /tmp/Encl-a03427▮                                │  │
│   └───────────────────────────────────────────────────────────┘  │
│                  ┌──────────┐      ┌──────────┐                   │
│                  │    OK    │      │  Cancel  │                   │
│                  └──────────┘      └──────────┘                   │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```
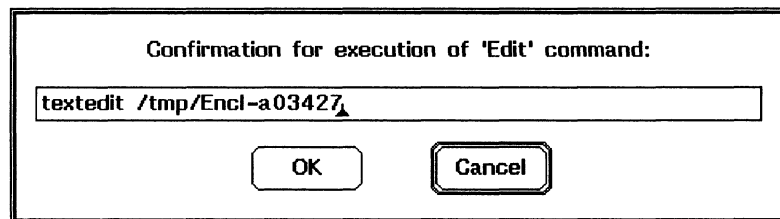
Figure 10-5   *Define-Edit Specification Confirmation Box*

If you are not sure what text editor this command will invoke,
check the enclosure's specification before you try to edit it.

If the **Edit** field in the enclosure specification is empty, the **Edit**
command is dimmed on the main menu, indicating that it is
inoperable. Use the **Define-Edit Specification** command to
specify the command you would like to use to invoke an editor.

```
┌─────────────┐
│ Enclosure   █│
│ Define    ⇒│
│ File      ⇒│
│ Edit        │
│▐ Execute   ▌│
│ Print       │
│░░░░░░░░░░░░░│
└─────────────┘
```
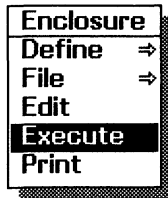
Execute

Warning! Do not execute any enclosure if you do not know what
it does. Because enclosures can contain any executable commands,
it is possible that other users could send shell scripts designed to
alter or destroy your files.

Execute the program contained in the enclosure. When you use
this command, BBN/Slate asks you to confirm the command. If
you answer yes, it takes the command found in the **Execute** field
of the enclosure specification and passes it to the operating system
(see **Define-Edit Specification** above).

If the **Execute** field in the enclosure specification is empty, the
Execute command is dimmed on the main menu, indicating that it
is inoperable. Use the **Define-Edit Specification** command to
specify the command you would like to use to execute the
enclosure.

```
┌─────────────┐
│ Enclosure   █│
│ Define    ⇒│
│ File      ⇒│
│ Edit        │
│ Execute     │
│▐ Print     ▌│
│░░░░░░░░░░░░░│
└─────────────┘
```
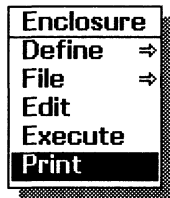
Print

Warning! Do not print any enclosure if you do not know what it
does. Because enclosures can contain any executable commands, it
is possible that other users could send shell scripts designed to
alter or destroy your files.

Print the contents of the enclosure. When you use this command, BBN/Slate asks you to confirm the command. If you answer yes, it takes the command found in the **Print** field of the enclosure specification and passes it to the operating system (see **Define-Edit Specification** above).

If the **Print** field in the enclosure specification is empty, the **Print** command is dimmed on the main **Enclosure** menu, indicating that it is inoperable. Use the **Define-Edit Specification** command to specify the command you would like to use to print the enclosure.

Other

Warning! Do not execute a command on an enclosure if you do not know what it does. Because enclosures can contain any executable commands, it is possible that other users could send shell scripts designed to alter or destroy your files.

Invoke a user-defined operation. There may be other commands at the bottom of the **Enclosure** menu, immediately following **Print**, depending upon whether the creator of the enclosure defined any operations in the enclosure specification. You can examine or change any user-defined operation before invoking it by using the **Define-Edit Specification** command.

10.3 Enclosure Menu Command Variables

BBN/Slate does not supply any default key commands for enclosures, but you can create them. The *Customizing Manual* describes how to bind keys to functions.

Table 10-1 lists all **Enclosure** menu commands and the underlying functions that are invoked by the commands.

Menu Command	Function
Define	
Edit Specification	enclosure-edit-description
Modify Layout	enclosure-edit-layout
Change Font	enclosure-change-font
File	
Save Data	enclosure-write-data-to-file
Reload Data	enclosure-reload-data
Show Filename	enclosure-show-filename
Edit	enclosure-edit-data
Execute	enclosure-execute-command
Print	enclosure-print
Other	enclosure-user-command-1
	enclosure-user-command-2
	enclosure-user-command-3
	enclosure-user-command-4

11   Printing and Previewing

Printing is basic to all document systems. BBN/Slate implements a number of functions supporting quality hard copy output. BBN/Slate's **Preview** function lets you view the document layout and pagination on the screen before you actually print. This function helps you get the exact document layout you need before generating hard copy.

BBN/Slate supports printing to PostScript®-capable laser printers. Generally these printers are available as spooled devices within the network. When BBN/Slate is installed, your system administrator should make sure the default printing device is set correctly.

This chapter includes the following information about printing and previewing:

- printing from the Document Editor or Document Manager (Section 11.1)
- about page breaks (Section 11.2)
- **Print** menu commands (Section 11.3)
- mouse usage and keyboard commands (Sections 11.4 and 11.5)

11.1   Printing from the Document Editor or Document Manager

You can print a document either by using the Document Manager's **print** button (described in Chapter 3), or by using the Document Editor's **Print** menu commands (described next in this chapter).

- **Using the Document Manager *print button*:**

  The **print** button shows you the document in the Document Editor and prints it to the default printing device. This is the version of the document that is stored on the disk. Alternatively, this button will print the version of the document as shown in the Document Editor if the document is already in the Document Editor buffer.

- **Using the Document Editor *Print menu*:**

  The Document Editor's **Print** menu prints the document as it currently exists in the Document Editor.

  The **Print** menu also gives you the option of printing the document, previewing it, or spooling it to a file (whereas the **print** button always spools the document directly to the default printing device).

11.2   About Page Breaks

When you display or edit a document on the workstation screen, it is a continuous vertical "galley" that reflects the multiple media you have used. When you preview or print the document, the BBN/Slate Document Editor uses information specified in text styles and in the attributes of non-text elements to intelligently split the document into pages. To override this formatting, you can explicitly insert page breaks in two ways:

- by setting the **Text-Styles-Local Change** Page break attribute for text (discussed in Chapter 5), or

- by setting the **Edit-Change Attributes** Break Page attribute for other media types (discussed in Chapter 4)

When you print non-text elements, only the portion of the element that is visible in its viewport actually prints. For example, to print a complex 1000-row spreadsheet, you only see the rows visible in the Document Editor without using the spreadsheet's internal scrolling features.

11.3   Print Menu Commands

You invoke the **Print** menu from the Document Editor menu bar (Figure 11-1).

BBN/Slate Multimedia Document Editor

   ⊞ **Add Edit File Mail Print Classify Document**

Preview / Print...
Preview Now
Print Now
Define Tables...
Generate Tables
Repaginate

Figure 11-1   *Print Menu*

```
┌─────────────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor            │
└─────────────────────────────────────────────────┘
   ▦  Add  Edit  File  Mail  Print  Classify  Document
                            ┌──────────────────┐
                            │ Preview / Print...│
                            │ Preview Now       │
                            │ Print Now         │
                            │ Define Tables...  │
                            │ Generate Tables   │
                            │ Repaginate        │
                            └──────────────────┘
```
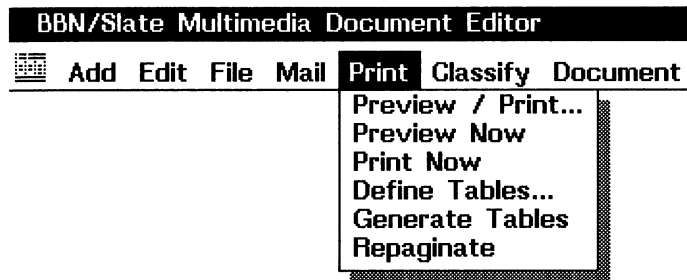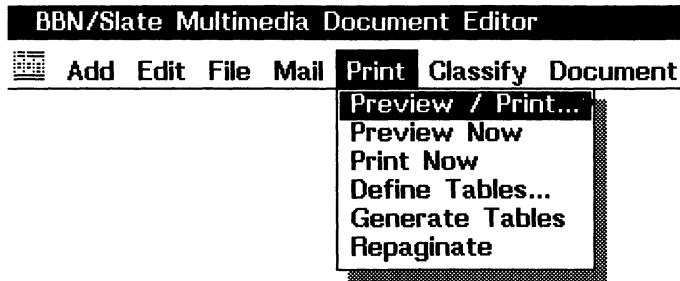
Preview/Print   This command lets you alter the printing parameters of a document
and then select a print-spooling operation. You can send the
document to a printer, a file, or the previewer, or simply use the
dialog to set up printing parameters for future reference.

The **Preview/Print** command displays the dialog box shown in
Figure 11-2. This dialog contains specifications for all parameters
directly related to printing and previewing. Once these parameters
have been set, they are stored with the document. It is not
necessary to invoke the dialog to print or preview with the current
parameter values; simply use the **Print Now** or **Preview Now**
commands.

```
┌─────────────────────────────────────────────────────────────────────┐
│ ┌─ Page Dimensions ─┐  ┌─ Margins ──────────────────────────────┐   │
│ │ Width:   8.5i     │  │ Top:     .75i        Left:  .75i       │   │
│ │ Height:  11i      │  │ Bottom: .75i         Right: .75i       │   │
│ └───────────────────┘  └────────────────────────────────────────┘   │
│ ┌─ Orientation ─┐   ┌─ Page Numbers ────────────────────────────┐   │
│ │ ◉ Portrait    │   │ Start page number:      1                 │   │
│ │ ○ Landscape   │   │ Unnumbered title pages: 0                 │   │
│ └───────────────┘   └───────────────────────────────────────────┘   │
│      ☐ Generate Table of Contents    ☑ Print Headers                │
│      ☐ Odd-Even Page Layout                                         │
│ ┌─ Header ──────────────────────────────────────────────────────┐  │
│ │ Both Pages:                                                    │  │
│ │                                                                │  │
│ └────────────────────────────────────────────────────────────────┘  │
│ ┌─ Footer ──────────────────────────────────────────────────────┐  │
│ │ Both Pages:                                                    │  │
│ │                                                                │  │
│ └────────────────────────────────────────────────────────────────┘  │
│ ┌─ Columns ──────────────────────┐  ┌─ Header/Footer Font ──────┐   │
│ │ Columns per page: 1            │  │ Family ⟳ helvetica        │   │
│ │ Gutter: .5i                    │  │ Face   ⟳ Normal           │   │
│ └────────────────────────────────┘  │ Size   ⟳ 10 pt            │   │
│ ┌─ Spooling ─────────────────────┐  └───────────────────────────┘   │
│ │ ◉ To Printer   ○ To Previewer  │                                  │
│ │ ○ To File      ○ Setup Only    │   ┌──────────┐  ┌──────────┐     │
│ │ Spooler: lpr %s                │   │    OK    │  │  Cancel  │     │
│ └────────────────────────────────┘   └──────────┘  └──────────┘     │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 11-2   *Preview/Print Dialog Box*

The parameters in the **Preview/Print** dialog are as follows:

**Page
Dimensions**

Page **Width** and Page **Height**: the default values are a page width of 8.5 inches and a page height of 11 inches. The default units are inches.

Orientation	There two possible page orientations are: **Portrait** and **Landscape**. In **Portrait** mode, the document is printed vertically; in **Landscape** mode, the document is printed horizontally. The default is **Portrait**.
Margins	**Top, Bottom, Left,** and **Right** margins: The default value is ".75i" (3/4 of an inch). The default units are inches.
Page Numbers	The **Start page number** attribute is the page number of the first page: the default is 1. The **Unnumbered title pages** attribute is the number of pages that should be printed at the start of the document without page numbers. The default is 0. For example, to have the first page unnumbered and the second page numbered 2, **Start page number** should be 2 and **Unnumbered title pages** should be 1.
Generate Table of Contents	Controls whether a table of contents should be generated when the document is printed. The default is not to generate a table of contents. See the descriptions that follow of the commands **Print-Define Tables** and **Print-Generate Tables** for further details.
Print Headers	Controls whether electronic mail headers are printed with the document. The default is to print headers.
Odd-Even Page Layout	Specifies whether or not the odd and even pages should have different headers and footers. The default is for all pages to have the same headers and footers.

Header,
Footer

The headers and footers that should appear on each page. If the **Odd-Even Page Layout** is enabled, you can specify separate odd page and even page headers and footers; otherwise there is one header and footer for both types of pages.

The format of the headers and footers is:

left text~center text~right text

(Where *left text* is the text to be placed on the left side of the page; *center text* is the text to be centered on the page; and *right text* is the text to be placed on the right side of the page.) Use tildes (~~) to separate the left, center, and right text sections. BBN/Slate interprets the notation @1 as a page number, and a dollar sign ($) as a new line (use $ to specify a header or footer that spans multiple lines).

Instead of @1 to get page numbers with Arabic numerals, you can specify @A, @a, @I, or @i to get uppercase alphabetic, lowercase alphabetic, uppercase Roman, and lowercase Roman numbering, respectively.

You can use @date to include the date in the header or footer. The default format is "Mon Jun 19, 1989". You can modify the format by using the notation @date(format). *Format* is a string that can include format specifiers preceded by the % character. Legal format specifiers are:

```
D    date as in mm/dd/yy
G    hour - 1 to 12 (12 hour clock)
H    hour - 00 to 23 (24 hour clock
M    minute - 00 to 59
S    second - 00 to 59
T    time as HH:MM:SS
j    day of year - 1 to 366
w    day of week - Sunday = 0
a    abbreviated weekday - Sun to Sa
h    abbreviated month - Jan to Dec
x    4 digit year - 1900 to 1999
y    last 2 digits of year - 00 to 9
l    month of year - 01 to 12
m    month of year - 1 to 12
c    day of month - 01 to 31
d    day of month - 1 to 31
A    meridian indicator (am or pm)
```

The default format for date is %a %h %d, %x.

In addition to date replacement, @variable is replaced with the value of the document variable named. See the command **set-doc-variable** in the *Customizing Manual* to learn how to set a document variable. Also see the **Print Values** text attribute to learn how to change document variables dynamically during printing.

Columns

The **Columns per page** attribute specifies the number of vertical columns per page. The default is 1. The **Gutter** attribute determines the amount of white space to use between columns when printing multiple columns.

Header/Footer Font

Specifies the font to use for headers and footers.

Spooling

There are four possible spooling operations in the **Spooling** box at the bottom of the dialog:

To Printer	Sends the PostScript commands to the printer using the command in the **Spooler** line in the dialog. The default value for this line is determined by the setting of the variable `print-spooler`. This is the default spooling operation.
To File	Sends the PostScript commands to the file named in the **File** line that appears when this option is selected.
To Previewer	Sends the PostScript commands to the BBN/Slate document previewer. See the **Print-Preview Now** command description for more information.
Setup Only	This choice records any changes to the printing attributes, but does not print the document.

BBN/Slate Multimedia Document Editor

▦ Add Edit File Mail Print Classify Document

Preview / Print...
Preview Now
Print Now
Define Tables...
Generate Tables
Repaginate
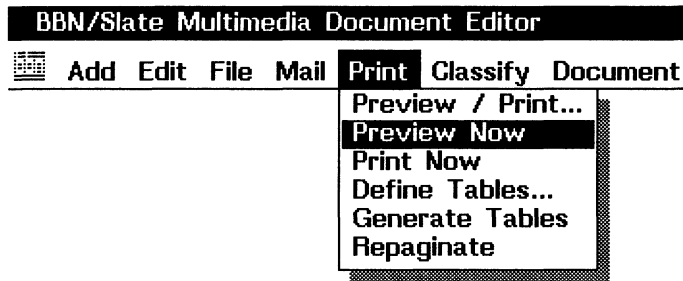
Preview Now

Previews a copy of the document, for page layout and pagination, with the current parameter values.

When you preview a document, another window pops up and shows an accurate representation of the layout of the document on a printed page. Due to the difference in resolution of the workstation display from the printer, the previewer presentation

may be difficult to read. However, you can see a high-level view of the document layout to determine where page and line breaks occur and how figures fall on the page. Figure 11-3 illustrates the previewer displaying the second page of a four-page document.

The previewer is designed to give a quick view of the layout of the document. Therefore, some fine details are not displayed by the previewer. For example, images are represented by a grey box where the image will appear. In addition, line-drawing graphics are shown in one line weight with no filling.

To make an adjustment to your document, you can edit the document in the BBN/Slate Document Editor and then preview the document again. The corrected document will replace the previous version in the previewer.
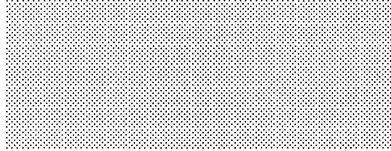
> **Cancel** Cancel a **Forward** or **Reply** operation. BBN/Slate deletes the associated buffer.   There is no default keybinding for this command.
>
> See Chapter 12 for more information about using BBN/Slate's electronic mail capabilities.
>
> **4.4.8 Print Menu**
>
> BBN/Slate supports printing to PostScript™ capable printers. A preview function is also available to assist in production of high quality hard copy output. You can also automatically generate a Table of Contents for a document as part of a printing operation.
>
> **Print** menu command functions are briefly described below. For a full description of BBN/Slate printing and previewing capabilities, see Chapter 11.
>
> **Preview/Print**
>> Put up the print style-setting dialog. You can alter the printing parameters of a document and then select a print spooling operation. Documents are printed using the PostScript™ page description language.
>
> **Print Now**
>> Print a copy of the document with the current settings.
>
> **Preview Now**
>> Preview a copy of the document with the current settings.
>
> **Define Tables**
>> Define tables of contents that are associated with the current document.
>
> **Document Editor**   **Reference Manual 4-31**

Figure 11-3   *Printing Previewer*
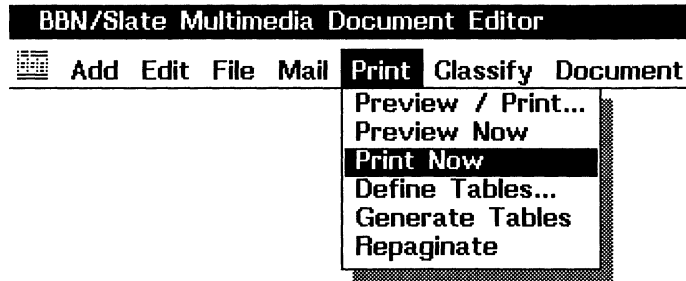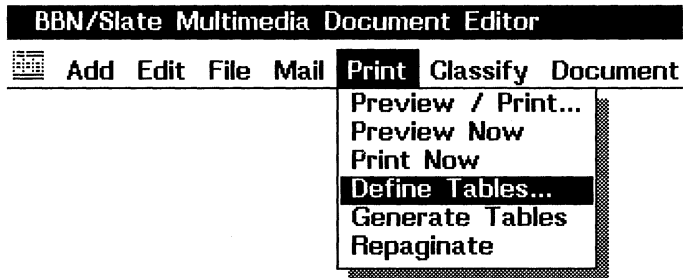
```
┌────────────────────────────────────────────────┐
│  BBN/Slate Multimedia Document Editor          │
└────────────────────────────────────────────────┘
    ▦  Add  Edit  File  Mail  ▐Print▌ Classify  Document
                              ┌──────────────────┐
                              │ Preview / Print... │
                              │ Preview Now        │
                              │▐Print Now         ▌│
                              │ Define Tables...   │
                              │ Generate Tables    │
                              │ Repaginate         │
                              └──────────────────┘
```

Print Now   Print a copy of the document with the current parameter values.


```
┌────────────────────────────────────────────────┐
│  BBN/Slate Multimedia Document Editor          │
└────────────────────────────────────────────────┘
    ▦  Add  Edit  File  Mail  ▐Print▌ Classify  Document
                              ┌──────────────────┐
                              │ Preview / Print... │
                              │ Preview Now        │
                              │ Print Now          │
                              │▐Define Tables...  ▌│
                              │ Generate Tables    │
                              │ Repaginate         │
                              └──────────────────┘
```

Define Tables   Define tables of contents that are associated with the current
                       document.

                       The BBN/Slate Document Editor supports the automatic production
                       of tables of contents. The mechanism is very general and can be
                       used in many different ways to create a wide variety of such
                       tables. The table-of-contents mechanism is based on *counters* (see
                       Chapter 5).

                       Although you can adjust the table-of-contents mechanism, the
                       Document Editor includes default settings for counters, text styles,
                       and table-of-contents definitions. Consequently, when you specify
                       chapter, section, subsection, caption-figure, and **caption-table**

formatting styles, appropriate tables of contents, figures, and tables are automatically produced. To change these default settings, use the **Print-Define Tables** command. The dialog box shown in Figure 11-4 appears.

This dialog may be used to specify Tables of Contents, Figures, or any other table based on the counter mechanism. These tables are generated when the document is printed.

Select from one of the existing tables to change its style, or type a new table name and define how it is made.

Existing tables:

Table of Contents

Title: Table of Contents

Filename:

Select Counters to Base Table On:

section
figure

section ⟳ 1 (Delete)
figure ⟳ 1 (Delete)

(OK)   (Cancel)

Figure 11-4   *Table of Contents Dialog Box*

You can use this dialog to examine, edit, or define a table of contents. Each table has the following adjustable components:

Title   The name of the table to appear on the first page of the table.

Filename	The name of a file to store the table. If the **Generate Table of Contents** print attribute is enabled when a document is printed, or if you ι the **Print-Generate Tables** command, the table contents is produced in this file. If this field is empty, the table of contents is generated in a file that has a name based on the name of the document -- if the document is named `document.slt`, the table of contents is named `document.toc.slt`.
Counters to Base Table On	A list of counters to be included in the table. For each counter in the list, you can specify the depth of entry into the table of contents.

The contents of the title field is first entered into the table of contents and formatted according to the **toc-title** formatting style. When an instance of a counter occurs in the document, the entire contents of the text block in which the counter resides, followed by a **Tab** character and the page number on which the counter occurred, is appended to the table of contents and formatted in the **toc-body1** formatting style for level 1 counters or **toc-body2** formatting style for other levels of counters.

The table-of-contents document is generated either when the document is printed (if the **Generate Table of Contents** attribute is selected in the **Preview** dialog box), or when you issue the **Print-Generate Tables** command. In both situations, the table-of-contents document is created after the document has been repaginated. This results in correct page numbers in most situations. Very occasionally, where a reference to a page number of a counter in the text of a document causes another counter to move to another page, this one pass repagination does not generate the proper page numbers in the table of contents. To correct this situation, use the **Print-Repaginate** command before printing the document or generating the table of contents to get correct page numbers.

You can view and edit the table-of-contents document with the Document Editor and format it to your liking. Note that if successive **toc-body1** or **toc-body2** formatting styles appear as one paragraph in the table-of-contents, you can separate them using the **text-split** function.
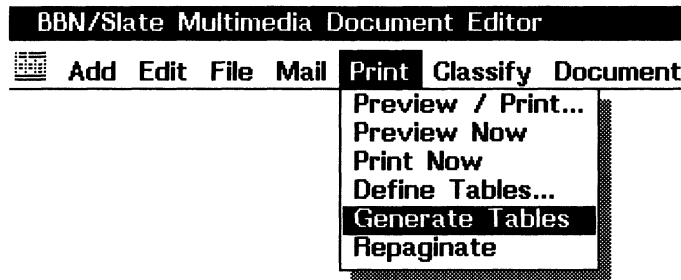
```
┌──────────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor         │
├──────────────────────────────────────────────┤
│ ▦  Add  Edit  File  Mail  Print  Classify  Document │
│                          ┌──────────────────┐│
│                          │ Preview / Print... ││
│                          │ Preview Now       ││
│                          │ Print Now         ││
│                          │ Define Tables...  ││
│                          │ Generate Tables   ││
│                          │ Repaginate        ││
│                          └──────────────────┘│
```

Generate Tables   Generate any tables of contents that are defined for the current document.

```
┌──────────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor         │
├──────────────────────────────────────────────┤
│ ▦  Add  Edit  File  Mail  Print  Classify  Document │
│                          ┌──────────────────┐│
│                          │ Preview / Print... ││
│                          │ Preview Now       ││
│                          │ Print Now         ││
│                          │ Define Tables...  ││
│                          │ Generate Tables   ││
│                          │ Repaginate        ││
│                          └──────────────────┘│
```
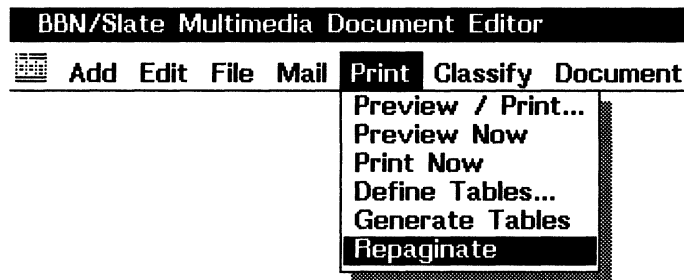
Repaginate   Determine where page breaks occur in the current document and update page number references in the text.

11.4   Mouse Usage

When you are working in the previewer, several mouse operations take on special meaning. These available commands are as follows.

RIGHT hold	Display a menu of commands: **Next Page**, **Previous Page**, and **Exit**.
MIDDLE click	Do this on the scroll bar to display the page at that relative position in the document.
LEFT click	Do this in the scroll bar to show the next page.
RIGHT click	Do this in the scroll bar to show the previous page.

11.5 Keyboard Commands

Although the system of menus, mouse buttons, and mouse pointer positioning is useful for many beginning users and for many print activities, some print operations are more convenient when performed from the keyboard. You do not always need to use the mouse or pop-up menus when printing and previewing documents.

The **Print** menu is accessible through the menu bar at the top of the Document Editor and the editor-level menu. Table 11-1 lists all print menu commands, their equivalent default key commands, and the underlying functions that are invoked by the commands. In many cases you will notice that no default key command exists, but you can create them. The *Customizing Manual* describes how to bind keys to functions.

Table 11-1   *Print Keyboard Commands*

Menu Command	Key	Function
Print		
Preview/Print	Esc-p	putup-print-dialog
Preview Now		preview-current-buffer
Print Now		print-current-buffer
Define Tables		
Generate Tables		generate-tables
Repaginate		paginate-current-buffer

12 Electronic Mail

When you want to exchange ideas with your associates, you have several choices -- you can generate a printed copy of your document and hand it to them, you can send it to them using electronic mail (the subject of this chapter), or you can confer with them in real-time over a replicated view of the document (the subject of the next chapter).

BBN/Slate lets you send any multimedia document as electronic mail to another person or a work group. You can send documents in their complete multimedia form, or you can send them in a text-only form if the recipient is someone who does not have access to BBN/Slate. You can even send a single document to several different people, and have BBN/Slate determine automatically who among them should receive multimedia documents and who should receive text messages.

Because BBN/Slate uses your existing text mail system for multimedia mail, you do not need to learn a lot of new information to use BBN/Slate's mail facilities. You can send multimedia mail to the same addresses you normally use for text mail. As long as the recipient's machine has a copy of BBN/Slate installed, your mail is automatically delivered to the correct multimedia mailbox. The multimedia message you send is automatically converted to a compressed text-only format and is sent via the normal mail system. When it reaches the recipient, it is automatically decoded into its original multimedia form.

Similarly, when you receive mail from other users, BBN/Slate multimedia messages are automatically recognized, decoded, and

delivered to your multimedia mailbox. When you receive text messages, you have a choice; you can have them delivered to your normal text mailbox, or you can have them converted to multimedia messages and delivered to your BBN/Slate mailbox.

This chapter describes how to use the electronic mail system in the following sections:

- establishing and editing document headers (Section 12.1)
- sending text or multimedia mail and using mail aliases (Section 12.2)
- reading mail with the Document Manager (Section 12.3)
- **Mail** menu commands (Section 12.4)
- mouse usage and keyboard commands (Sections 12.5 and 12.6)

12.1   Document Headers

Before you can send a document as electronic mail, you must add a *document header*. A document header consists of a set of *header fields*, each of which has a name and a value. These fields specify the recipients to whom a document should be sent, an optional subject that summarizes the document's contents, and any other information you choose to include.

The Document Manager also uses the **Subject:** field when it lists the documents in a directory or folder (this is described in Chapter 3). You may find it useful to include headers with **Subject:** fields in documents even when they are not going to be sent as electronic mail, so that the Document Manager can display a meaningful summary of each document. When searching for an existing document, using descriptive subjects makes it easy to find the particular document you are looking for.

Document headers can look quite complex on documents received via electronic mail (as illustrated in Figure 12-1), but they are easy to create.

Date:	Thu, 19 Jan 89 11:42
From:	CHAAS@rcca.bbn.com
To:	FORSDICK@rcca.bbn.com
Subject:	BBN Slate Sales
Cc:	MSOUZA@rcca.bbn.com, HLISON@rcca.bbn.com, PGAZLEY@rcca.bbn.com
Received:	from rcca.bbn.com by diamond.BBN.COM (AA20024); Thu, 19 Jan 89 11:45:28 EST
Resent-From:	CHAAS@rcca.bbn.com
Resent-Message-Id:	<8901191645.AA20024@diamond.BBN.COM>
Message-Id:	<8901191645.AA20024@diamond.BBN.COM>
Resent-Date:	Thu, 19 Jan 89 11:43 EST
Resent-To:	pgazley@diamond.bbn.com, hlison@diamond.bbn.com, forsdick@diamond.bbn.com
Translated:	From Textmail on Thu Jan 19 11:45:30 1989

Figure 12-1   A Header in a Document

If you try to mail someone a document that does not have a header, BBN/Slate prompts you for the header before sending the document. You can also add a header to a document explicitly using the **Add-Header** command. In either case, BBN/Slate inserts an empty header at the top of the document, and then displays a dialog box like that shown in Figure 12-2.

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────────────────┐  │
│  │ To: mlandau                                                │  │
│  ├───────────────────────────────────────────────────────────┤  │
│  │ Subject: Progress on Documentation                         │  │
│  ├───────────────────────────────────────────────────────────┤  │
│  │ CC: tcrowley, hlison                                       │  │
│  └───────────────────────────────────────────────────────────┘  │
│   Alternate fields (name: value)                                 │
│  ┌─────────────────────┐   ┌─────────────────────────────────┐   │
│  │ Priority            │ : │ Normal                          │   │
│  └─────────────────────┘   └─────────────────────────────────┘   │
│  ┌─────────────────────┐   ┌─────────────────────────────────┐   │
│  └─────────────────────┘ : └─────────────────────────────────┘   │
│  ┌─────────────────────┐   ┌─────────────────────────────────┐   │
│  └─────────────────────┘ : └─────────────────────────────────┘   │
│  ┌─────────────────────┐   ┌─────────────────────────────────┐   │
│  └─────────────────────┘ : └─────────────────────────────────┘   │
│  ┌─────────────────────┐   ┌─────────────────────────────────┐   │
│  └─────────────────────┘ : └─────────────────────────────────┘   │
│  ┌─────────────────────┐   ┌─────────────────────────────────┐   │
│  └─────────────────────┘ : └─────────────────────────────────┘   │
│  ┌─────────────────────┐   ┌─────────────────────────────────┐   │
│  └─────────────────────┘ : └─────────────────────────────────┘   │
│  ┌─────────────────────┐   ┌─────────────────────────────────┐   │
│  └─────────────────────┘ : └─────────────────────────────────┘   │
│  ┌─────────────────────┐   ┌─────────────────────────────────┐   │
│  └─────────────────────┘ : └─────────────────────────────────┘   │
│                                    ( OK )      ( Cancel )         │
└─────────────────────────────────────────────────────────────────┘
```

Figure 12-2   *Add-Header Dialog Box*

The dialog box prompts you for the values of the three standard
header fields: **To:**, **Subject:**, and **CC:**. Figure 12-2 shows these
fields with some sample values filled in.

12.1.1   Editing Header Fields

You can edit the value of each header field using the standard
keyboard editing commands described in Chapter 2. You can also
add new fields with any names and values you choose. **LEFT
click** on **OK** in the **Alternate Fields** category to have BBN/Slate
update the document header to reflect your changes. If you **LEFT
click** on **Cancel** instead, the document header is not changed.

The meaning of each of the standard fields is summarized below.

To: The primary list of recipients to whom this document should be
sent. The **To:** field contains a list of electronic mail addresses or
mail aliases separated by commas. Mail aliases are described in
the *Customizing Manual.*

The format of a mail address varies depending on the mail system used at your site, and where the mail is going. BBN/Slate uses the same mail addresses as your text mail system, however, so if you know how to send someone text mail, you can send them multimedia mail as well.

If you don't know how to specify text mail addresses, consult your local mail system documentation or check with a local system administrator for help.

Subject: A one-line summary of the document. The Document Manager and related tools use this field when listing the documents in a directory, folder, or mailbox.

CC: An additional list of recipients to whom this document should be sent. This field contains a list of electronic mail addresses or aliases, just like the **To:** field. **CC:** stands for "Carbon Copy" recipients.

When you send a document as electronic mail, the mail system automatically adds two additional header fields named **From:** and **Date**. The **From:** field contains the name and electronic mail address of the person who sent the mail. The **Date:** field contains the date and time at which it was sent.

In addition to the standard header fields, you can add additional fields by entering their names and values in the **Alternate fields** part of the dialog. For each new field you want to add, type the field's name in the small box to the left of a colon, and the corresponding value in the larger box to the right. For example, Figure 12-2 shows a alternate field named **Priority** whose value is the string "Normal".

You can use such fields to provide information to the message's recipients, or to take advantage of special features that might be provided by your mail system. For instance, some mail systems support the idea of "blind" carbon copies. People named as blind

carbon copy recipients receive copies of the message, but their names do not appear in either the **To:** or **CC:** fields. If your mai system supports such recipients, you can send blind carbon copies by including a field named **BCC** whose value is a list of addresse: to which blind copies should be sent.

To edit an existing header, position your mouse pointer over the header box at the beginning of a document, and **LEFT click**. The header-editing dialog appears, displaying all the header fields in the document. You add new fields and change the value of existing fields as previously described. In addition, you can delete alternate fields by deleting their names from the dialog. When you **LEFT click** on **OK**, any field whose name you deleted disappears from the document header.

12.1.2   Header Menu Commands

RIGHT hold while pointing to a header to display a menu containing the media-specific operations that apply to headers. The menu is shown in Figure 12-3.

```
Header
Edit...
Name Font...
Value Font...
```
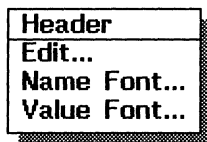
Figure 12-3   *Header Menu*

The **Header** menu commands are as follows.

Edit...   Displays a dialog box used to edit the header fields.   A dialog box similar to the one shown in Figure 12-2 appears and you can change the header. (Section 12.1.1 describes what the various header fields mean and how to change them.)

Name Font...   Displays a standard font selection dialog box that lets you choose the font used to display header field names.

Value Font...   Displays a standard font selection dialog box that lets you choose the font used to display the header field values.

12.2   Sending Mail

A document is sent as electronic mail when you select one of the Document Editor **Mail** commands. **Mail** commands let you send original documents, reply to documents that you have received as electronic mail, and forward mail messages to additional recipients.

You can also send a document as mail by composing or displaying it with the Document Manager, then using **LEFT click** on the Document Manager's **send** button. (The Document Manager is described in detail in Chapter 3.)

When you have specified the recipients, BBN/Slate encodes the document in a form acceptable to your text mail system, and submits it to the mail system for delivery.

12.2.1   Sending Mail as Text or Multimedia

BBN/Slate lets you send documents as multimedia messages or as text-only messages (for recipients who do not have access to BBN/Slate). It can also determine the best format automatically for each recipient, based on a history of who has sent you multimedia mail in the past.

To give you this choice, the Document Editor and the Document Manager each provide three different options when sending mail: **Mail-Send-Send Message, -Send As Multimedia**, and **-Send As Text.**

The **Send As Multimedia** and **Send As Text** commands force mail to be sent in the specified form to all recipients. The **Send Message** command, on the other hand, looks up each recipient's name in a list of known BBN/Slate multimedia mail users. If a recipient's name is found in the list, BBN/Slate sends that person multimedia mail. Otherwise, it sends text-only mail, assuming that the person does not have access to BBN/Slate.

The list of known multimedia mail users is derived from both of these two files:

• `/usr/slate/lib/slate_mail.addrs` is a sitewide file which is usually maintained by a mail system administrator (or whoever installed your copy of BBN/Slate)

• `.slate_mail.addrs` is a personal file that is kept in your home directory

Each of these files contains a list of mail addresses, one address per line. If an address appears in one of these files, it means that multimedia mail can be sent to that address. If an address does *not* appear in one of these files, multimedia mail can *not* be sent to that address.

Some additional mail address list features should be mentioned here. These include a wildcard syntax that lets you include all users at a particular site or one user at a collection of sites, and a negation syntax that lets you specifically exclude users who would otherwise receive multimedia mail. The complete file format is described in detail in the *Customizing Manual*.

The BBN/Slate Document Manager helps you keep this list up to date. Each time you read your multimedia mail, the Document Manager scans your mailbox looking for new multimedia message and checks to see if their senders are on your list of known BBN/Slate users.

If it finds that someone new has sent you a multimedia message, it displays a dialog that offers to add that person to your private .slate_mail.addrs file (Figure 12-4). In this way, the Document Manager maintains a history of everyone who has ever sent you multimedia mail, so you automatically send them multimedia mail, too.

These users sent you multimedia mail and are not on your list of default multimedia mail recipients.

You may add them to your list by confirming this dialog.

forsdick

delete
undelete
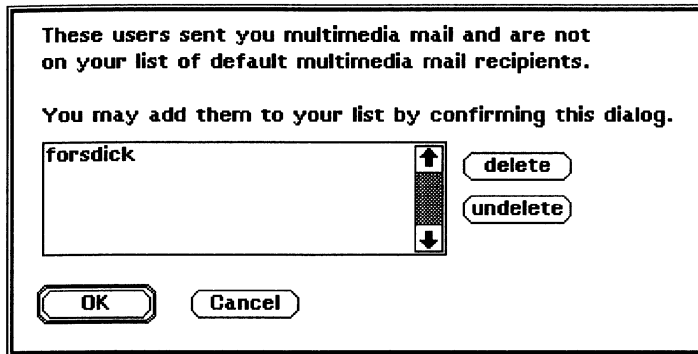
OK   Cancel

Figure 12-4   *Dialog Box When a New BBN/Slate User Sends You Mail*

If you **LEFT click OK** in the dialog, the addresses listed are added to the .slate_mail.addrs file in your home directory. If you **LEFT click** on **Cancel**, the addresses are not added to your list of BBN/Slate users.

To include only *some* of the addresses listed, remove the others from the dialog before you **LEFT click** on **OK**. To remove an address, select it with **LEFT click**, then **LEFT click** on the **delete** button. If you remove an address by accident, **LEFT click** on the **undelete** button to restore the last address you deleted.

12.2.2　Using Mail Aliases

As you use the BBN/Slate mail facilities, you may find that you are often sending mail to the same people, or groups of people. When typing mail addresses in **To:** and **CC:** header fields, it is convenient to be able to use short mnemonic abbreviations to represent complicated addresses, or lists of addresses.

A *mail alias* is a shorthand notation for an electronic mail address or list of addresses. You can use aliases to represent names that are hard to remember or type, or to represent lists of people to whom you often send mail as a group.

Your mail system may already provide some sitewide aliases that you can use when sending text mail. You can use these aliases when sending mail from BBN/Slate, too. In addition, you can create your own private aliases for use with BBN/Slate. Your private aliases *only* apply to mail that *you* send from BBN/Slate.

You create mail aliases in BBN/Slate by including alias commands in your `.slate_editor.init` file. The editor initialization file is described in more detail in the *Customizing Manual*.

Alias commands have the form:

```
alias("name", "address, address...")
```

You use the word `name` to refer to the `addresses` listed in the alias.

If you had an alias command like the following example, you could send a message whose **To:** field simply says `joe` and it will automatically be sent to `jsmith23b@shire.bbn.com`:

```
alias("joe", "jsmith23b@shire.bbn.com")
```

Similarly, an alias like the following example sends mail to a list of people, just by typing cohorts in the **To:** field of your message:

```
alias("cohorts", "beth, bruce, kathryn@isi.edu")
```

Addresses in an aliases can be aliases themselves. In the following example, friends is equivalent to all the people listed in both the joe and cohorts aliases, plus scott at saber.com:

```
alias("friends", "cohorts, joe, scott@saber.com")
```

The **Mail-Send** command is discussed in Section 12.4. It lets BBN/Slate determine whether each mail recipient should receive a multimedia message, or a text-only version. When you use mail aliases, BBN/Slate expands the aliases *before* checking to see what kind of mail to send each recipient. This has two implications:

1. Your .slate_mail.addrs file should contain actual electronic mail addresses, not aliases.
2. If an alias expands to a list of people, BBN/Slate correctly determines the best mail format for each of them individually.

12.3   Reading Mail with the Document Manager

Multimedia mail messages are received by your mail system, just like text messages, and deposited in a special multimedia mailbox. You can also choose to have your text messages automatically converted to multimedia messages and placed in your multimedia mailbox, or you can tell BBN/Slate to ignore simple text messages and deliver them to your existing text mailbox instead.

Your multimedia mailbox is a directory called Slate/Mailbox, which is located beneath your home directory. Because it resides

in your BBN/Slate directory, you can also refer to it using the BBN/Slate folder name +Mailbox. Each message you receive is placed in a separate file in your multimedia mailbox directory (i.e., each message is a document in the +Mailbox folder).

You use BBN/Slate's Document Manager to list the contents of your mailbox, read your messages, file them in folders, reply to them, discard them, and so on. Use of the Document Manager is described in detail in Chapter 3.

When you start the Document Manager, it examines the messages in your multimedia mailbox to see if you have any new mail. If you do have new mail, the Document Manager automatically selects the first new message and displays it in the Document Editor window. To view subsequent messages, **LEFT click** on the **next** button in the Document Manager command pane.

While you are working in BBN/Slate, the Document Manager checks your mail box every five minutes or so, to see if any new mail has arrived. If new mail arrives while you are working, the Document Manager displays the words **[New Mail]** at the top of the window. It also changes its icon from an empty inbox to an inbox with a letter in it, so you can see when new mail arrives even if the Document Manager window is closed.

To read new mail when it arrives, **LEFT click** on the **new mail** button in the Document Manager's command pane. The Document Manager switches to your +Mailbox folder, lists new mail documents in the message summary pane with the **N** status field set, and displays the first new message in the Document Editor window.

12.4　Mail Menu Commands

Mail commands are available both in the Document Editor and the Document Manager. The commands used to send and receive mail with the Document Manager are described in Chapter 3; this section describes the Document Editor Mail menu commands.
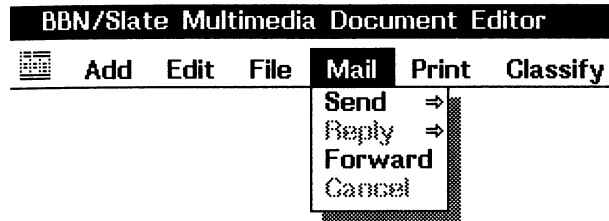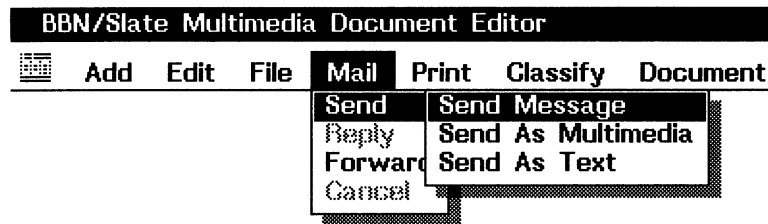
```
┌──────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor      │
├──────────────────────────────────────────┤
│ ▦   Add   Edit   File  │Mail│ Print  Classify │
│                        ┌────────────┐
│                        │ Send    ⇒ │
│                        │ Reply   ⇒ │
│                        │ Forward   │
│                        │ Cancel    │
│                        └────────────┘
```

Figure 12-5　　　　　　Mail Menu

```
┌──────────────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor              │
├──────────────────────────────────────────────────┤
│ ▦   Add   Edit   File  │Mail│ Print  Classify  Document │
│                        ┌───────┬──────────────────┐
│                        │ Send  │ Send Message     │
│                        │ Reply │ Send As Multimedia│
│                        │ Forward Send As Text     │
│                        │ Cancel └──────────────────┘
│                        └───────┘
```

Send　　　　　Send the document using the electronic mail system to the recipients on the **To:** and **CC:** fields of the document's header. If the document does not have a header, a header is added and you are prompted for the field's values. Several options for mailing a document are listed here.

Send Message　　　Send the document, selecting the format of the mail -- text or multimedia -- based on the identity of each recipient. As you receive multimedia mail from others, the Document Manager asks if

you want to add the no senders of those message to your list of people who can receive multimedi mail (Figure 12-6). You can edit this list directl with a text editor; it is stored in the file $HOME/.slate_mail.addrs.

```
These users sent you multimedia mail and are not
on your list of default multimedia mail recipients.

You may add them to your list by confirming this dialog.

 forsdick                                   ↑   ( delete )
                                                (undelete)
                                            ↓

  (   OK   )      ( Cancel )
```
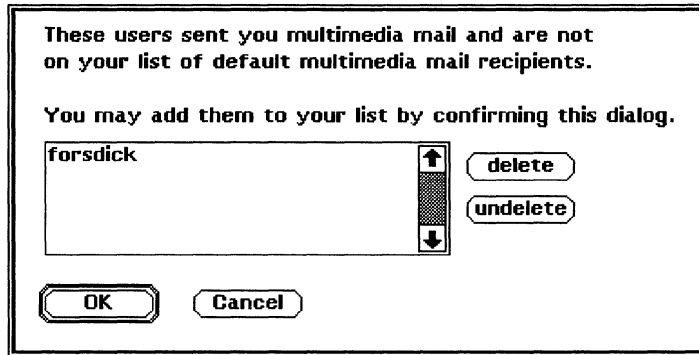
Figure 12-6   *Creating a List of Multimedia Mail Recipients*

When you choose the **Send Message** command, the mailing system either sends the document as a multimedia document or translates it into a text-only form, depending on whether the recipients (in the header's **To:** or **CC:** field) are on your list of people who can receive multimedi mail. This lets you use BBN/Slate as your only mail system, but still communicate with a mixed community of multimedia and text-only mail recipients.

Send As Multimedia

Send the document in multimedia format to all recipients whose names appear in the document header's **To:** or **CC:** fields. Use this command to override the settings in your list of multimedia mail recipients.

Send As Text	Send the document formatted as text-only mail. The presence of graphics, images, and speech elements are indicated in the text-only message.

```
┌──────────────────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor                 │
└──────────────────────────────────────────────────────┘
 ▦    Add    Edit    File    Mail    Print    Classify    Document
                          ┌───────────┐
                          │ Send    ⇒▌│
                          │ Reply   ┌─────────────────────────────┐
                          │ Forwar│ To Sender                    │
                          │ Cancel│ To Sender, Include Copy       │
                          └───────│ To All                       │
                                  │ To All, Include Copy          │
                                  └─────────────────────────────┘
```
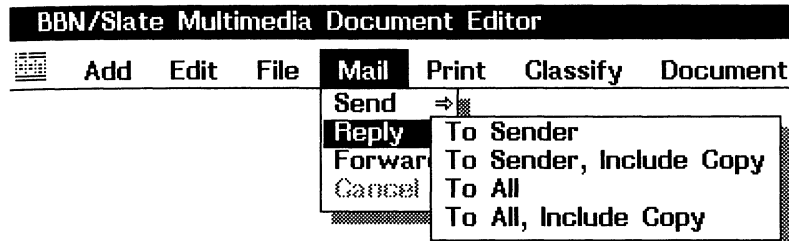
Reply

Compose a document that is a reply to the current document. The headers will be derived from the headers in the current document. The options within this command are listed here.

To Sender	Reply to the sender of a document. The received document appears in one pane, and a new buffer appears in another to let you compose a reply.
To Sender, Include Copy	Same as above, except include a copy of the received document in the reply.
To All	Reply to the sender and all recipients (i.e., all the names in the **To:** and **CC:** fields) of a document. The current document appears in one pane, and a new buffer appears in another to let you compose a reply.
To All, Include Copy	Same as above, except include a copy of the message in the reply.

When you finish composing the reply, use the **Send** command to send the document.
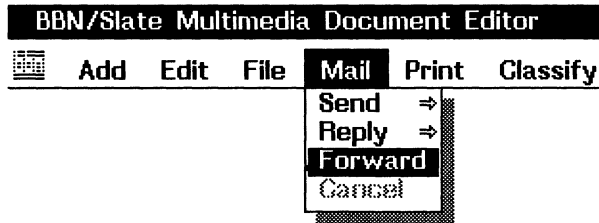
```
┌─────────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor        │
└─────────────────────────────────────────────┘
  ▦   Add   Edit   File  │ Mail │ Print   Classify
                          ┌──────────────┐
                          │ Send    ⇒│
                          │ Reply   ⇒│
                          │ Forward  │
                          │ Cancel   │
                          └──────────────┘
```

Forward   Forward the document to someone else. A new buffer is created
                  containing the document contents and an empty header appears tha
                  you can edit to specify the recipients of this message.

                  When you finish editing the empty header, use the **Send** command
                  to forward the document.

```
┌─────────────────────────────────────────────┐
│ BBN/Slate Multimedia Document Editor        │
└─────────────────────────────────────────────┘
  ▦   Add   Edit   File  │ Mail │ Print   Classify
                          ┌──────────────┐
                          │ Send    ⇒│
                          │ Reply   ⇒│
                          │ Forward  │
                          │ Cancel   │
                          └──────────────┘
```
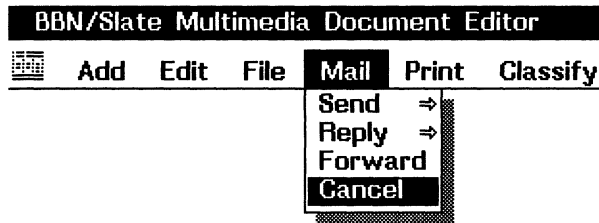
Cancel   Cancel a Forward or Reply operation. BBN/Slate deletes the
                  associated buffer.

12.5   Mouse Usage

There is only one mouse operation unique to headers and mail. You can edit a header by pointing to it with the mouse and using **LEFT click**. A dialog box like the one shown in Figure 12-2 appears, enabling you to change the header fields.

12.6   Keyboard Commands

Although the system of menus, mouse buttons, and mouse pointer positioning is useful for many beginning users and for many mail activities, it is more convenient to perform some mail operations from the keyboard. You do not need to always use the mouse or pop-up menus when preparing, delivering, or receiving mail.

12.6.1   Header Keyboard Commands

Table 12-1 lists the **Header** menu commands and the underlying functions that are invoked by the commands. BBN/Slate does not supply any default key commands for headers, but you can create them if you want to. The *Customizing Manual* describes how to bind keys to functions.

Table 12-1   *Header Editing Commands and Functions*

Menu Command	Function
Edit...	edit-headers
Name Font...	hdr-edit-name-font
Value Font...	hdr-value-name-font

12.6.2 Mail Keyboard Commands

The mail menu is accessible through the menu bar at the top of the Document Editor and the editor-level menu. Table 12-2 lists all mail menu commands, their equivalent default key commands, and the underlying functions that are invoked by the commands. In many cases no default key command exists, but in general you can assign a key command for every operation in BBN/Slate. If you want to add or change keyboard equivalents, the *Customizing Manual* describes how to bind keys to functions.

Table 12-2   *Mail Keyboard Commands*

Menu Command	Key	Function
Mail		
Send		
Send Message	^X^M	send-message
Send As Multimedia		send-multimedia-message
Send As Text		send-text-message
Reply		
To Sender		reply-to-message
To Sender, Include Copy		reply-to-message-include
To All		replycc-to-message
To All, Include Copy		replycc-to-message-include
Forward		forward-message
Cancel		

13   Conferencing

BBN/Slate document conferencing facility enables users at different workstations, and even at different sites, to view the same document simultaneously and to take turns editing it. When used with a telephone or with BBN/Slate's Conversation Window, this facility supports cooperative work on a document. For example, time-consuming cycles of drafts, reviews, and revisions can be replaced by a session in which the writer and reviewer discuss a BBN/Slate document while both view it on their workstations. This new approach to cooperative work on a document can have a major positive impact on the way organizations manage the document preparation process.

Note: To use conferencing, the conferencing system must be installed as described in the *BBN/Slate Installation Instructions*.

BBN/Slate conferencing includes the following features:

* You initiate conferencing from the BBN/Slate Document Manager.

* Copies of conferencing documents are automatically sent to conferees.

* The Conference Manager has a graphical interface, including icons that indicate whether or not you have the floor as well as a status dialog.

* You can control a conference in two ways: conferees can take the floor by clicking in the Document Editor, or by explicitly requesting to take the floor.

* You can confer with other BBN/Slate users without sending a document.

This chapter is organized as follows:

- overview (Section 13.1)
- starting a conference (Section 13.2)
- using the Conference Manager window (Section 13.3)
- conferring without a document (Section 13.4)
- receiving conference invitations (Section 13.5)
- conference document handling conventions (Section 13.6)
- adding a document to a conference (Section 13.7)
- ending a conference (Section 13.8)

13.1 Overview

You can confer in two different ways. You can:

- confer over a document using the Document Editor and a telephone
- have a keyboard conference by using the **Conversation Window** option instead of the telephone

When you confer over documents, each person in the conference sees a copy of the document in the Document Editor. The conferees can take turns changing or commenting on the document

If you want to communicate to someone using your keyboard rather than your telephone, you use the **Conversation Window** option. When you use this option, you see a new window divided into as many panes are there are conferees. Conferees can type in messages in their own panes.

You can use the **Conversation Window** option simultaneously with a document conference, allowing you to type messages to other conferees without affecting the document.

13.2   Starting a Conference

Once the initial conferencing setup (such as a telephone connection or Conversation Window) has been arranged, you begin a conference session by selecting a document. After highlighting the document, **LEFT click** on the **conf** button in the lower-left corner of the Document Manager, as shown in Figure 13-1. (To confer without a document, see Section 13.4.)

```
BBN/Slate: Folder -- +refman        1 of 29 selected
26:  U    20 Apr 90    ebritt      00.outline              ◆
 1:        09 Feb 90    kulrich     00.preface
27:        27 Apr 90    unknown     01.introduction         ◆

( show )   (compose) ( send )  ( cancel )   ( done )   +Mailbox      ◆
(forward)                                  (new mail)  +customize
                                                       +ellis
( print )                                  ( filter )  +getstart
                                                       +installation
( sort )                                               +intro        ◆
( select )                                   Folder: +refman
( conf )   ( next )  ( reply ) ( delete )            ( folder )  ( save )
```
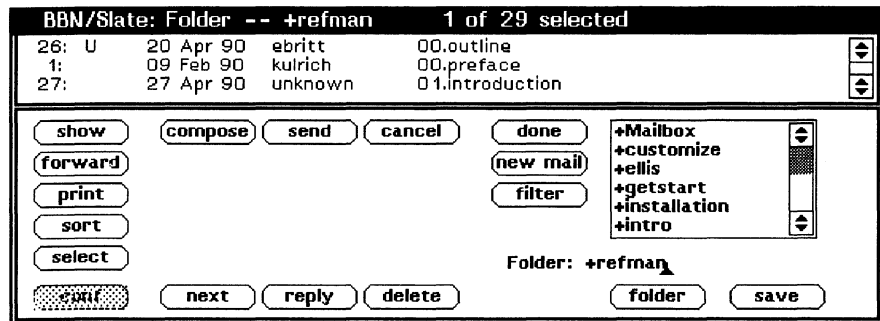
Figure 13-1   *The conf Button Location*

A window appears that prompts you for the users that you want to invite to the conference (Figure 13-2).

```
Users to confer with (user@host [user@host...]):


Users: ▲

                              ( OK )      ( Cancel )
```
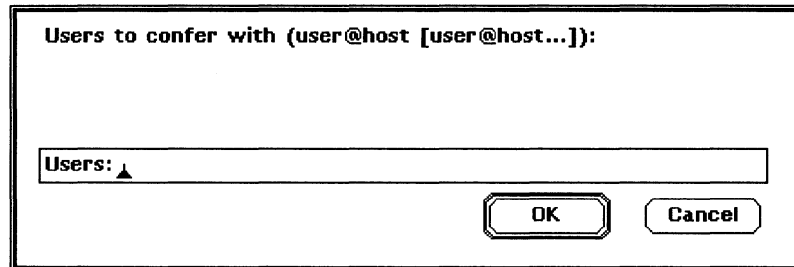
Figure 13-2   *Summoning Conferees*

Move your cursor into the window and enter the names with host-addresses of the people with whom you want to confer. Separate each conferee's name/host-address with a space before entering the next. For example, you would enter the following lir to start a conference with "champion" and "stulken":

```
champion@sys1.exw.com stulken@ccd.unl.edu
```

After entering the list of names, either press a **Return,** or **LEFT click** on the **OK** button. If you change your mind about the conference, you can **LEFT click** on the **Cancel** button.

You can save typing effort by setting up aliases for the people with whom you confer often. To do this, set up a file in your home directory called `.slate.conf.init.`

For example, your `.slate_conf.init` file might contain the following lines:

```
suzanne = "champion@sys1.exw.com"
don = "stulken@ccd.unl.edu"
```

With these lines in your `.slate_conf.init` file, you can initiate the conference with champion and stulken using just the aliases suzanne and don.

13.3 Using the Conference Manager Window

When you initiate the conference, the Conference Manager windo appears on your screen as shown in the left half of Figure 13-3.
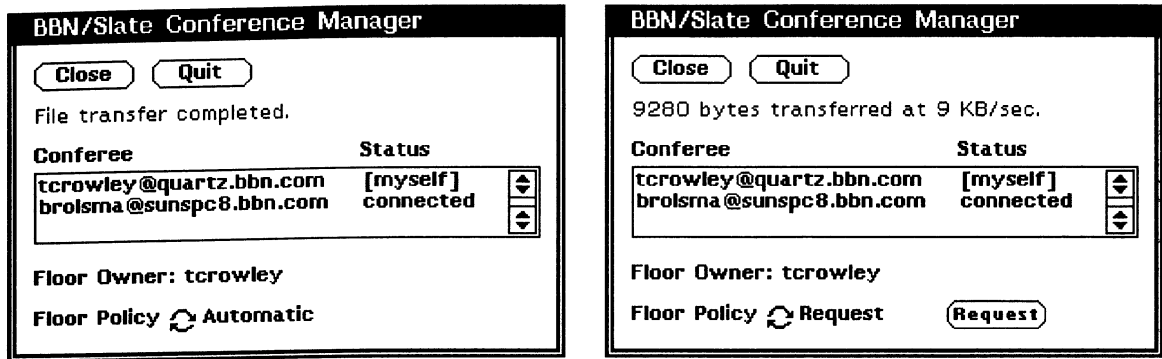
Figure 13-3   Conference Manager Window

Conference Manager Window Fields

The Conference Manager window (Figure 13-3) has the following fields:

Close and Quit
buttons

- **Quit** button -- use at any time to exit from the conference

- **Close** button -- closes the Conference Manager display window to its icon form (Figure 13-4)

Conferee

In this window you see the name of the conferee and their status.

Floor Owner:

This field tells you who currently has control of the conference.

Floor Policy:

In the **Floor Policy** field, you can choose how a conferee can take control of the conference.

- **Automatic** -- a conferee can take control by performing any action within the conferencing Document Editor.
- **Request** -- a conferee must **LEFT click** on this button to get control (right half of Figure 13-3).

In its icon form, the Conference Manager window is a face with an open or closed mouth (Figure 13-4):
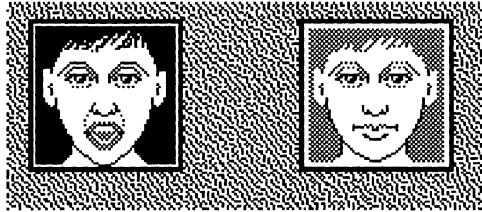
Figure 13-4   Conference Manager Window in Icon Form

An icon with an *open* mouth:
This means that you currently have the *floor*, that is, you have
control of the keyboard and mouse.

An icon with a *closed* mouth:
This means that some other conference participant has the floor.

These changing icons are intended to make the conference run
more smoothly by giving you feedback about what is happening at
any time.

Note that you can open the Conference Manager window at any
time should you want to quit the conference. You can also quit th
conference using the window manager menu options while the
Conference Manager window is in its icon form.

13.4   Having a Keyboard Conference

If you want to communicate with another BBN/Slate user by
typing in your messages rather than talking over the phone, you
can use the **Conversation Window** option (Figure 13-5). You ca
use this option simultaneously with a document conference, lettin
you communicate with other conferees without changing the
document.

show   compose   send   cancel   done   +customize
                                                       +getstart
forward   new mail   +info
                                                       +installation
print   filter   +new
                                                       +newfeat
sort
                                          Folder: +newfeat
select   Document Conference
          Conversation Window   te   folder   save
  conf   Close Conference
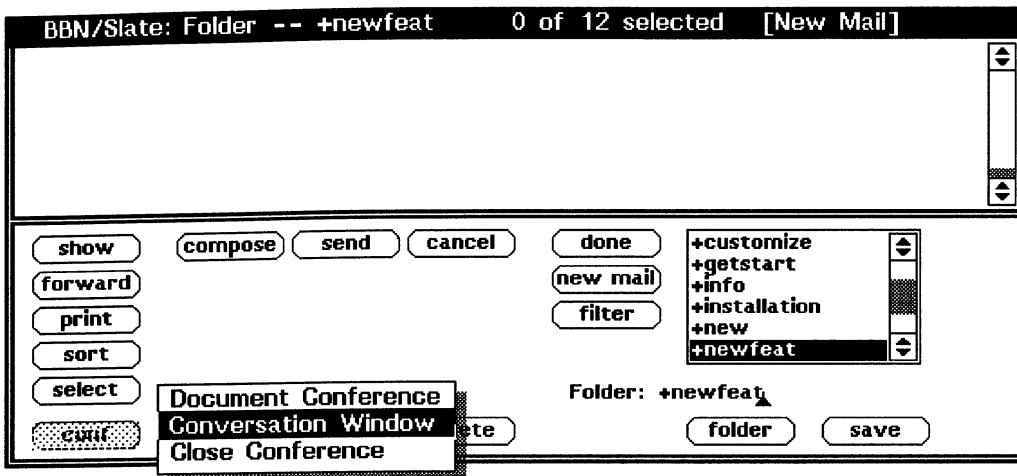
Figure 13-5   Conferencing Without Documents

BBN/Slate displays a dialog box asking you for the name of the
user to confer with (Figure 13-6). Type in the name and **LEFT**
click on the **OK** button or press **Return**.

Users to confer with (user@host [user@host...]):

Users:

OK   Cancel
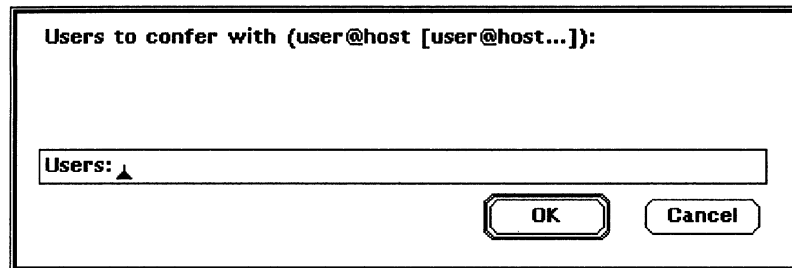
Figure 13-6   Naming a User to Confer With Dialog Box

The users you have asked to confer with will receive a confer-
ence invitation. For information on responding to conference
invitations, see Section 3.5.

When you use the **Conversation Window** option, BBN/Slate creates a new window for you to type your conversation in. The window is divided into as many panes as there are conferees. In Figure 13-7, two people are taking part in the conference, so the window is divided into two panes.

```
┌──────────────────────────────────────────────────────────────┐
│ BBN/Slate Conference Dialog                                    │
│ ┌────────────────────────────────────────────────────────────┐│
│ │                    Terry Crowley                           ││
│ ├────────────────────────────────────────────────────────┬──┤│
│ │ Hi, what do you think the impact of this paragraph will│ ▲ ││
│ │ be on Q3 earnings?                                     │  ││
│ │                                                        │  ││
│ │ ▲                                                      │  ││
│ │                                                        │  ││
│ │                                                        │  ││
│ │                                                        │ ▼ ││
│ ├────────────────────────────────────────────────────────┴──┤│
│ │                    Bruce Brolsma                           ││
│ ├────────────────────────────────────────────────────────┬──┤│
│ │ Hi, Terry. I think the improved production efficiency  │ ▲ ││
│ │ will result in a 12% increase over what we had         │  ││
│ │ projected.                                             │  ││
│ │ ▲                                                      │  ││
│ │                                                        │  ││
│ │                                                        │  ││
│ │                                                        │ ▼ ││
│ └────────────────────────────────────────────────────────┴──┘│
└──────────────────────────────────────────────────────────────┘
```
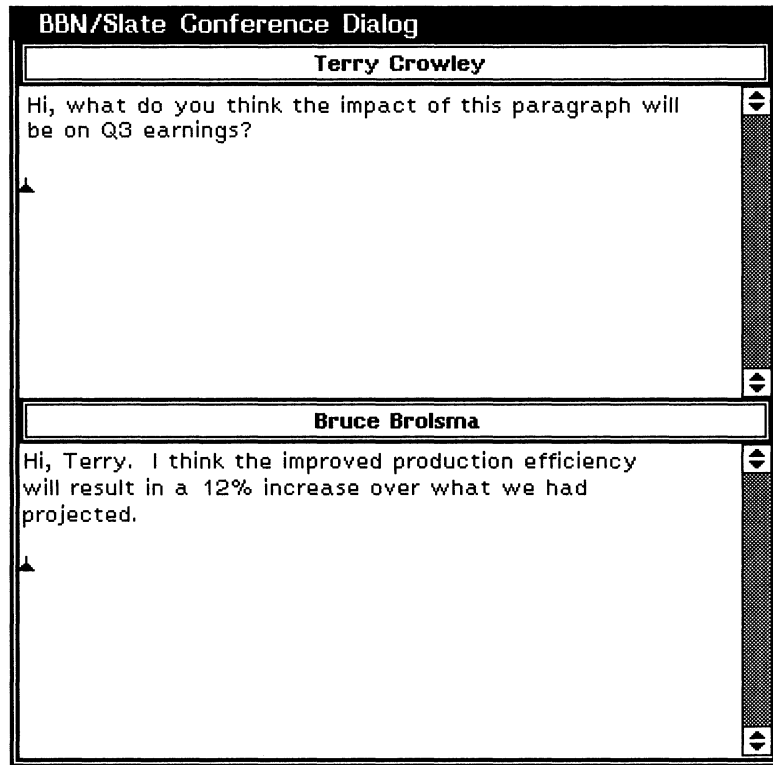
Figure 13-7   *Conference Dialog Window*

To use your portion of the window, position your cursor within it and type in your message.

13.5   Receiving Conference Invitations

When a conference is initiated, conferees at the remote
workstations receive invitations to the conference.

If you are a conferee and are logged in at the workstation, a
conference invitation window appears, as shown in Figure 13-8.

```
┌─────────────────────────────────────────┐
│  ┌─────────────────────────────────┐     │
│  │       Conference Invitation      │    │
│  │               for                │    │
│  │             brolsma              │    │
│  │              from                │    │
│  │            tcrowley              │    │
│  └─────────────────────────────────┘     │
│  To confer, press OK.                    │
│     ┌─────────┐  ┌─────────┐             │
│     │   OK    │  │ Cancel  │             │
│     └─────────┘  └─────────┘             │
└─────────────────────────────────────────┘
```
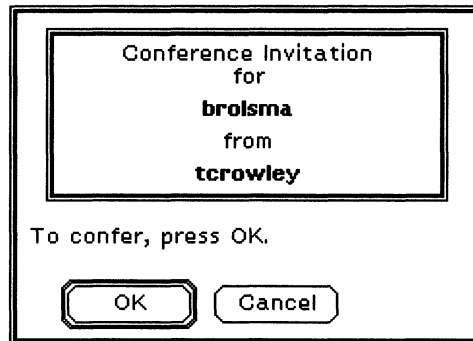
Figure 13-8   *Conference Invitation Window*

To join the conference, **LEFT click** on the **OK** button or press
Return. If you do not want to confer, **LEFT click** on the **Cancel**
button, and the conference initiator is notified.

If the conferee is *not* the person logged in at the workstation, the
conference invitation includes a request for the conferee's
password, as in Figure 13-9.
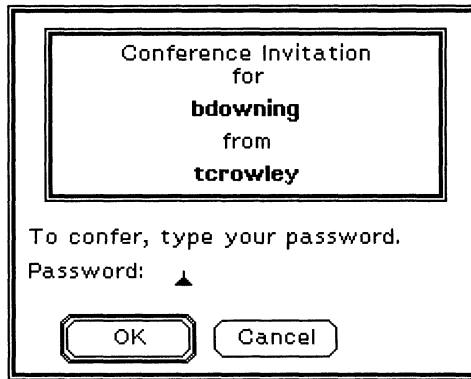
Figure 13-9   *Conference Invitation Window with Password*

In this case, you must enter the conferee's password before you can select the **OK** button. This precaution helps to ensure that the conferee is legitimately entitled to participate in the conference an share the documents.

13.6   Conference Document Handling Conventions

After everyone responds to the invitations, each conferee will see the Conference Manager window appear and close into its icon form. Copies of the document originally selected by the conferenc initiator are displayed in the Document Editor window of each conferee.

13.6.1   Conference Pointer

The participant who has the floor has all the facilities of the BBN/Slate Document Editor available to him. The conferee can scroll through a document to find a paragraph, or a graphic, or a spreadsheet that he or she wishes the conference to focus on. The conferee can use a special conference pointer to direct the

participants' attention to a particular item such as a sentence, spreadsheet cell, or graphic element. This is done by using **MIDDLE hold**. All participants will see this special, larger pointer move on their screens (Figure 13-10).

Private   **Public**
Pointer   **Conference**
                 Pointer
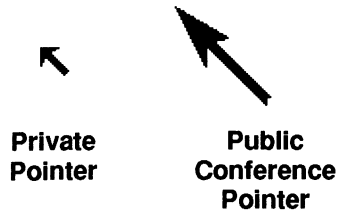
Figure 13-10   *Conference Pointer*

The participant who has the floor might then choose to edit the item. Throughout this activity, all the participants see the same section of the document as the participant who has the floor as well as any changes he or she makes to the document. When the person who has the floor uses **MIDDLE hold** he/she also sees the public conference pointer.

13.6.2   Editor Operation

When a participant takes the floor, he or she has access to all the capabilities of the BBN/Slate Document Editor. This includes access to all media and all styles. Changes made can range from putting a word in italics, to changing the formula in a spreadsheet cell, to adding a new graphics element to illustrate a particular point. The conferee also has access to other documents, so he or she can display another document or insert another document into the current document. If the document is something such as a weekly report, that includes sections prepared separately by each of the participants, the participants can have those sections ready as documents and read them into the document editor when they have

the floor. The BBN/Slate conferencing facility supports a wide range of interactions; as you become increasingly familiar with BBN/Slate capabilities, you will probably develop new technique for cooperative work.

13.6.3   Ownership of Files

The original owner of the file maintains the master copy; that is the one copy that BBN/Slate will not explicitly delete at the enc the conference session. This copy reflects any changes made to by other conferees during the session, but it is up to the origina owner to then save the file.

A similar rule is followed for other conferees whose documents distributed during the conference. If a conferee who has the floc selects a document and then **Left clicks** on the **conf** button, the original document remains with that conferee. The other participants will see temporary copies in their Document Editor windows.

A conferee can also **Left click** on the **show** button to examine a document locally (in any Document Editor window) and then us the **conf** button to enter the document into the conference.

If you are not certain whether the document displayed in your Document Editor window is the original or a temporary copy, examine the status area at the bottom of the window. If the pathname begins with /tmp, then you are accessing the tempor copy. For example:

```
/tmp/4_909183.slt
```

Participants can make their own copies of temporary documents any time during the conference by using the **New File** command from the **Write** submenu.

Note: When a conference participant uses the **Write-New File** command, this saves the current version of the file for *all* conferees. A conferee can save a private copy by entering a UNIX shell and explicitly copying the file to another directory before the conference is closed.

13.6.4 Editor Configuration Files

During conferencing, a conferee's local editor configuration file (`.slate_editor.init`) does *not* apply to temporary conference copies. This may mean, for example, that local keyboard bindings, which the conferee is used to accessing, do not work during a session with a temporary conference file.

If further work is required on the document and it can be done outside of the conferencing environment, you can make a copy of a temporary conferencing document. You then own this copy and can work on it separately with your normal editor configuration in effect. You may want to coordinate this work with the original owner so that the most up-to-date file version can be tracked.

13.7 Adding a Document to a Conference

To add a document to a conference already under way, highlight the document in the Document Manager and **LEFT click** on the **conf** button.

BBN/Slate shows the document in the Document Editor.

13.8 Ending a Conference

A conferee can leave the conference at any time by taking any one of these actions:

- Open the Conference Manager window and select the **Quit** button.

- **RIGHT hold** on the **conf** button and select **Close Conference** from the menu.

- Use the window manager menu options while the Conference Manager window is in its icon form and select **Quit** from the menu.

A conference is not completely closed until all participants explicitly quit.

A   QuickStart Menus

This appendix describes QuickStart menus, which are shorter versions of the standard menus. These menus are primarily for the new user who needs to learn BBN/Slate as quickly as possible and plans to employ the most commonly used BBN/Slate features. Since QuickStart menus contain most of the functionality available in standard menus, you can create all but the most complex documents in QuickStart mode.

Note: The previous chapters of this *Reference Manual* document the BBN/Slate standard menus. This appendix shows only the abbreviated QuickStart menus.

This appendix is organized as follows:

* setting up QuickStart menus (Section A.1)
* QuickStart menu functions (Section A.2)
* restoring standard menus (Section A.3)
* QuickStart menu formatting styles (Section A.4)
* a graphical listing of QuickStart menus (Section A.5)

A.1   Setting Up QuickStart Menus

BBN/Slate is initially set up for standard menus. To invoke QuickStart menus, you must add a line to your `.slate_editor.init` file (or create the file if it does not exist) before bringing up BBN/Slate, as described in the following steps:

1. At the UNIX system or shell prompt, enter a command to edit your `.slate_editor.init` file. If the file does not exist, you need to create it and save it in your home directory. For example, if your editor is vi, switch to your home directory and type the following:

```
% vi .slate_editor.init
```

2. Add the following line to the file:

```
quick-menus = 1;
```

3. Save the file and exit the editor.

When you next start up BBN/Slate, it automatically loads the QuickStart menus instead of the standard menus.

A.2   QuickStart Menu Functions

QuickStart menus are organized and operate in exactly the same manner as standard menus. However, there are fewer choices available on QuickStart menus (for example, the **Editor** menus such as **Buffer**, **Window**, and **Directory** are not included in QuickStart mode) and a smaller set of default text-formatting styles.

Appendix A contains a complete listing of all the QuickStart menus and default text formatting styles. Refer to appropriate parts of the *Reference Manual* for information about using the standard menus functions that are common to QuickStart menus.

A.3   Restoring Standard Menus

If you want to use a function that is not available in QuickStart menus or you are ready to use the full BBN/Slate functionality, you can easily restore the standard menus. To bring back standard menus:

1. Exit from BBN/Slate Document Editor by selecting the **Exit** menu item.

2. At the UNIX system or shell prompt, enter a command to edit your `.slate_editor.init` file. For example, if your editor is vi, switch to your home directory and type the following:

```
% vi .slate_editor.init
```

3. Delete (or comment out, by inserting the pound sign (#) at the start of the line) the following line from the file:

```
quick-menus = 1;
```

4. Save the file and exit the editor.

Whenever you restart the Document Editor, it will automatically load the standard menus instead of the QuickStart menus.

A.4   QuickStart Formatting Styles

The following formatting styles are available in QuickStart mode (from, for example, the **Add-Text** menu). You can also invoke this short list of formatting styles from standard menu or QuickStart mode by using **RIGHT hold** on the **compose** button and selecting **QuickStart** from the list of system templates.

The following formatting styles are available in QuickStart mode (from, for example, the **Add-Text** menu).

Text Style	Description
Center	Centered text
Figure	Automatically numbered figure captions (bold, centered)
Itemtag	Labels used in itemization and enumeration styles
Noindent	Non-indented text
Paragraph	Text with initial indentation
Section	Automatically numbered section headings (bold, left-justified)
Verbatim	Unformatted style from which all other styles are descended
Enumeration	Automatically numbered lists
Itemization	Bulleted lists

A.5   Listing of QuickStart Menus

The figures on the following pages show the menu functions available from QuickStart Menus. The **Editor** menus can be selected from the menu bar. **Text**, **Spreadsheet**, **Image**, and **Graphics** menus are submenus of the **Add** menus.

Note that QuickStart **Classify**, **Keycaps**, and **Exit** menus are identical to standard menus.

A.5.1   QuickStart Editor Menus
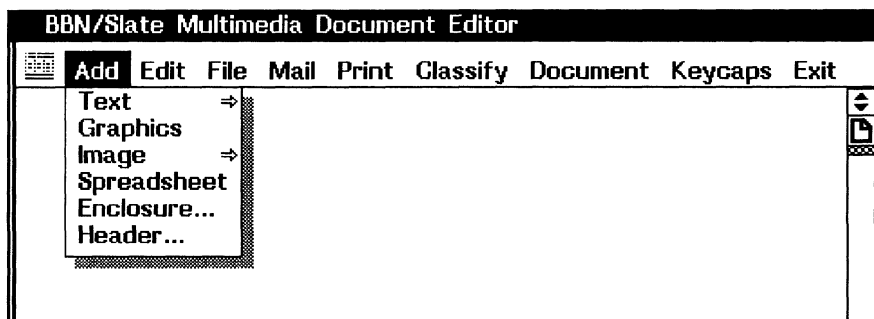
Figure A-1   QuickStart Editor-Add Menu
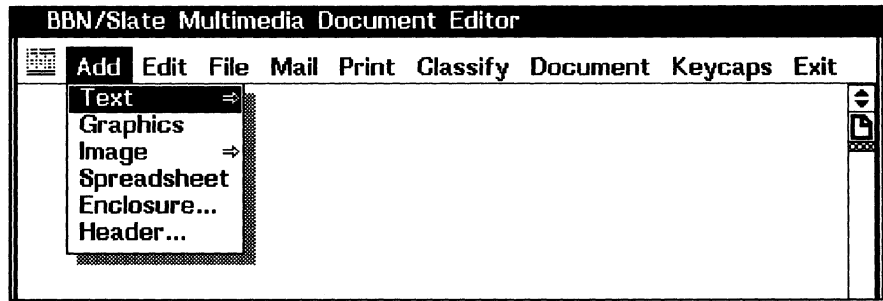
Figure A-2   QuickStart Editor-Add-Text Menu
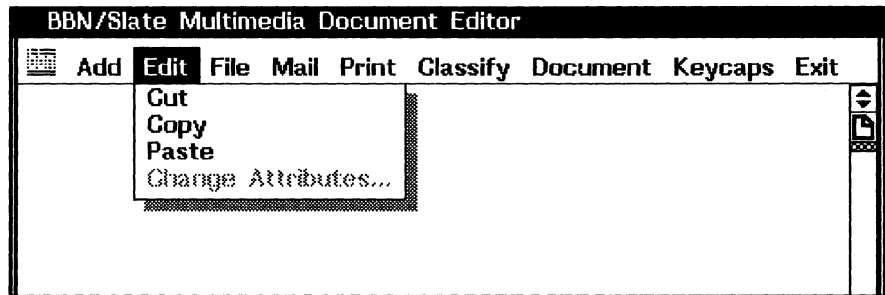
Figure A-3   QuickStart Editor-Edit Menu
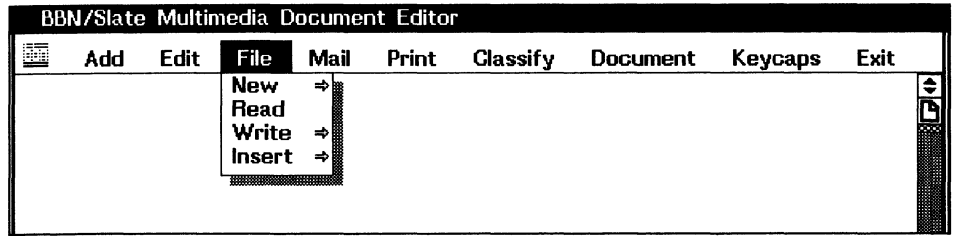
Figure A-4   QuickStart Editor-File Menu
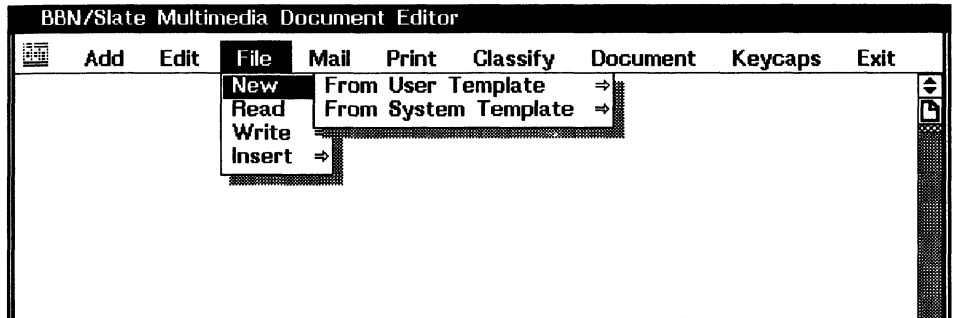
Figure A-5   QuickStart Editor-File-New Menu
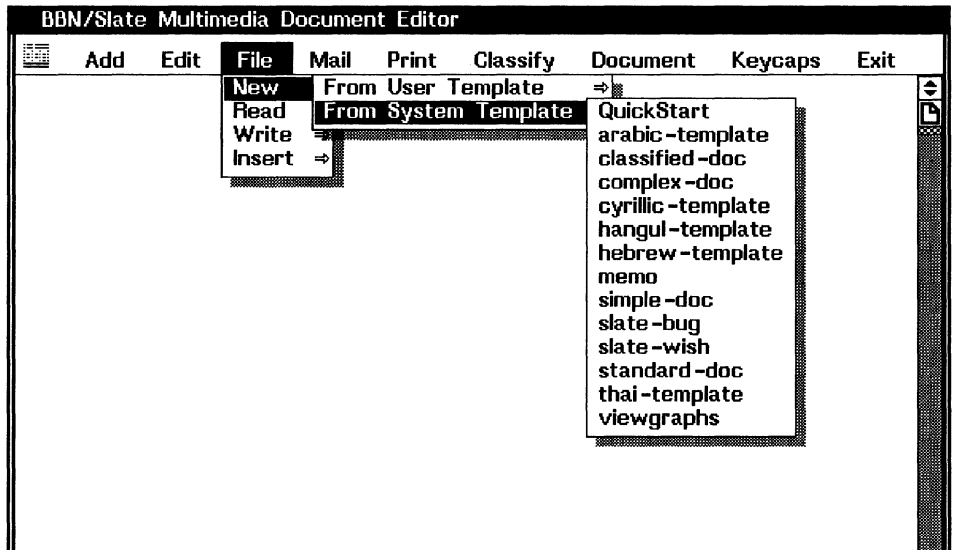
Figure A-6   *QuickStart Editor-File-New-From System Template Menu*
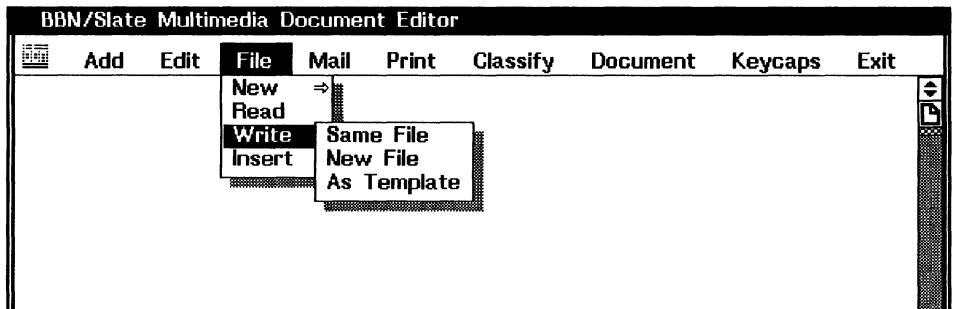
Figure A-7   *QuickStart Editor-File-Write Menu*
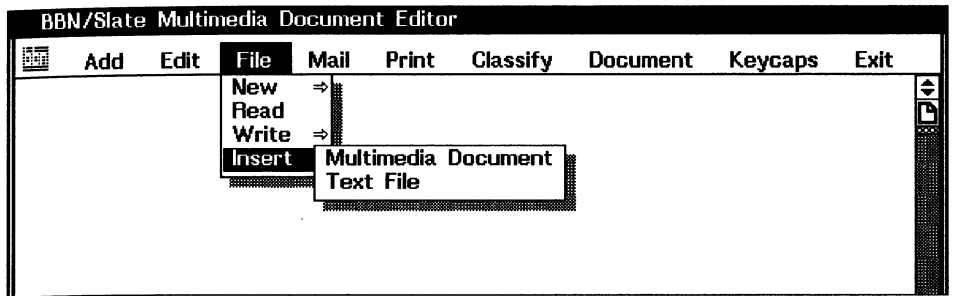
Figure A-8   *QuickStart Editor-File-Insert Menu*
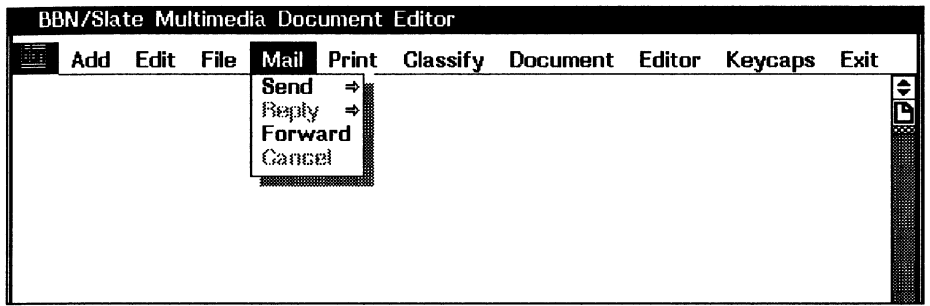
Figure A-9   *QuickStart Editor-Mail Menu*
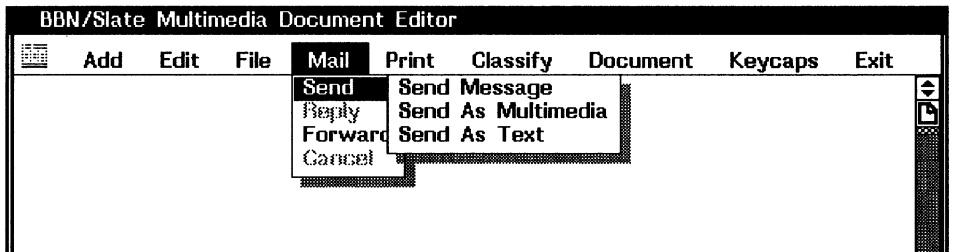
Figure A-10   *QuickStart Editor-Mail-Send Menu*
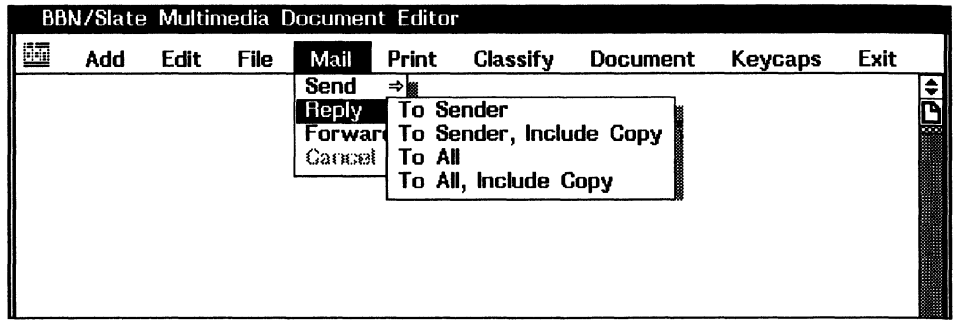
Figure A-11   *QuickStart Editor-Mail-Reply Menu*
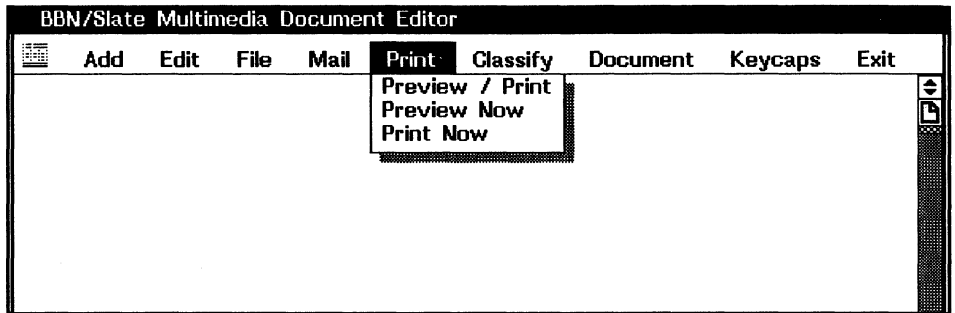
Figure A-12   *QuickStart Editor-Print Menu*
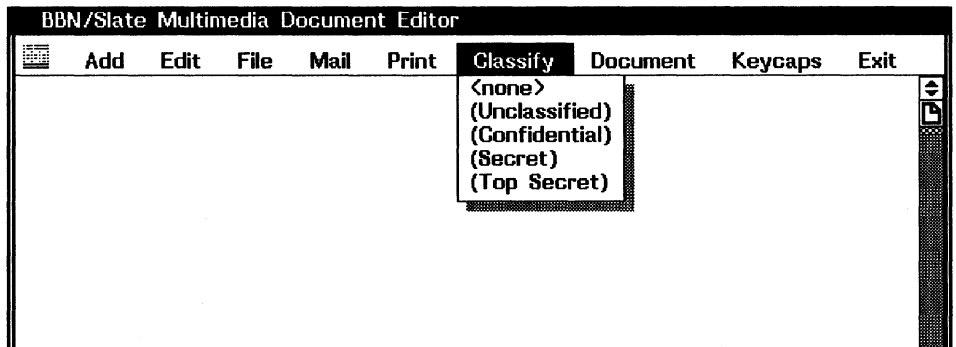
Figure A-13   *QuickStart Editor-Classify Menu*
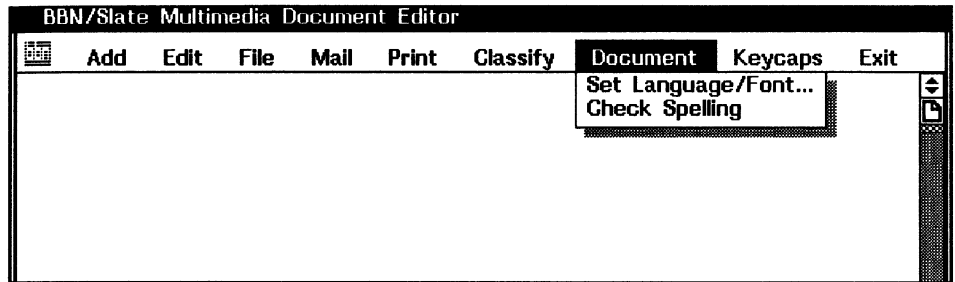
Figure A-14   *QuickStart Editor-Document Menu*
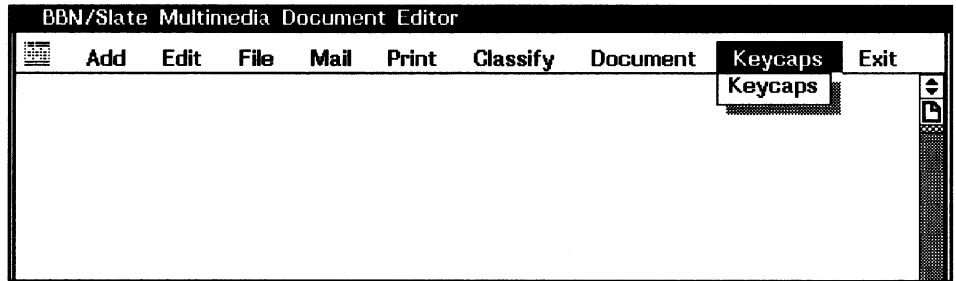
Figure A-15   *QuickStart Editor-Keycaps Menu*
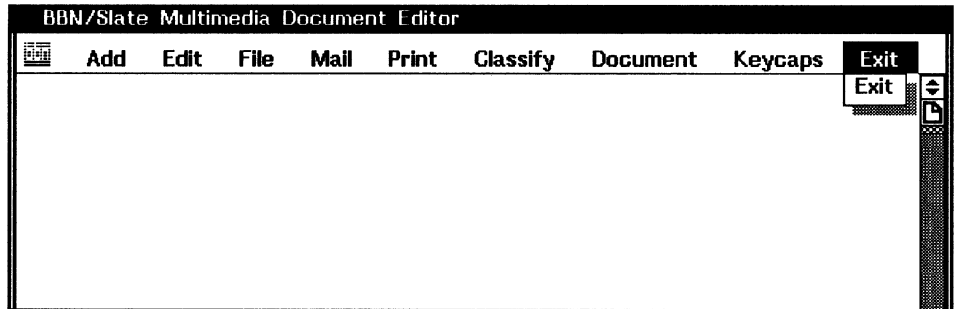
Figure A-16   *QuickStart Editor-Exit Menu*

A.5.2   QuickStart Text Menus

center
figure
itemtag
noindent
paragraph
section
verbatim
enumeration
itemization

Italic
Bold
Bold
Italic
Normal

Text
Add
Fonts
Language
Styles
Edit
Group
Ungroup
Search...
Describe Item...

Face
Family
Size
Lines

timesroman
helvetica
tv

smaller
larger

English
Arabic
Hangul
Hebrew
Russian
Thai

Underline On
Underline Off

Local Change
Global Change
Create
Switch

center
figure
itemtag
noindent
paragraph
section
verbatim
enumeration
itemization

Cut
Copy
Paste
Copy To Selection
Paste From Selection

center
figure
itemtag
noindent
paragraph
section
verbatim
enumeration
itemization

Figure A-17   *QuickStart Text Menus*

A.5.3   **QuickStart Graphics Menus**

Graphics
Palette...
Style
Placement
Edit
Preferences
Group
Ungroup
Undo

Text Justification
Arrow Style
Font...
Rulers...
Grid...

Left
Right
Center

None
At Start
At End
Both

To Front
To Back
Align Features...

Cut
Paste
Copy
Duplicate

Show Rulers
Hide Grid
Grid Mode Off
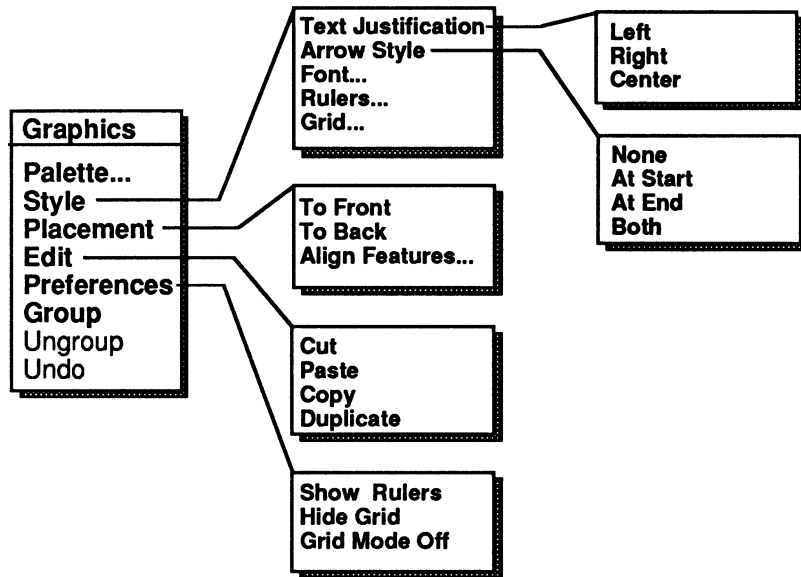
Figure A-18   *QuickStart Graphics Menus*

A.5.4   QuickStart Spreadsheet Menus
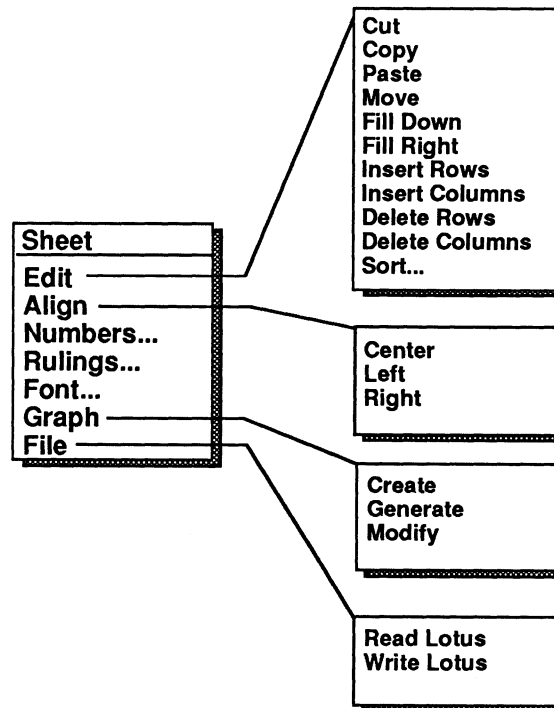
Figure A-19   *QuickStart Spreadsheet Menus*

A.5.5   **QuickStart Image Menu**

```
┌─────────────┐
│ Image       │
├─────────────┤
│ Palette...  │
│ Paint       │
│ Edit ───────┼──────┬──────────┐
│ Scale...    │      │ Cut      │
│ Undo        │      │ Copy     │
│             │      │ Paste    │
└─────────────┘      │ Crop     │
                     └──────────┘
```
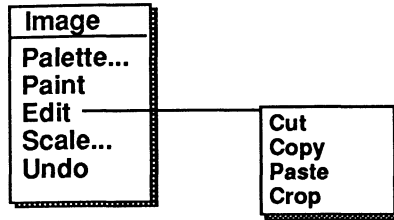
Figure A-20   *QuickStart Image Menus*

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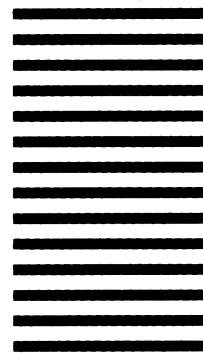XWD file
    converting into rasterfile 7–4

Z

zoom *see* window

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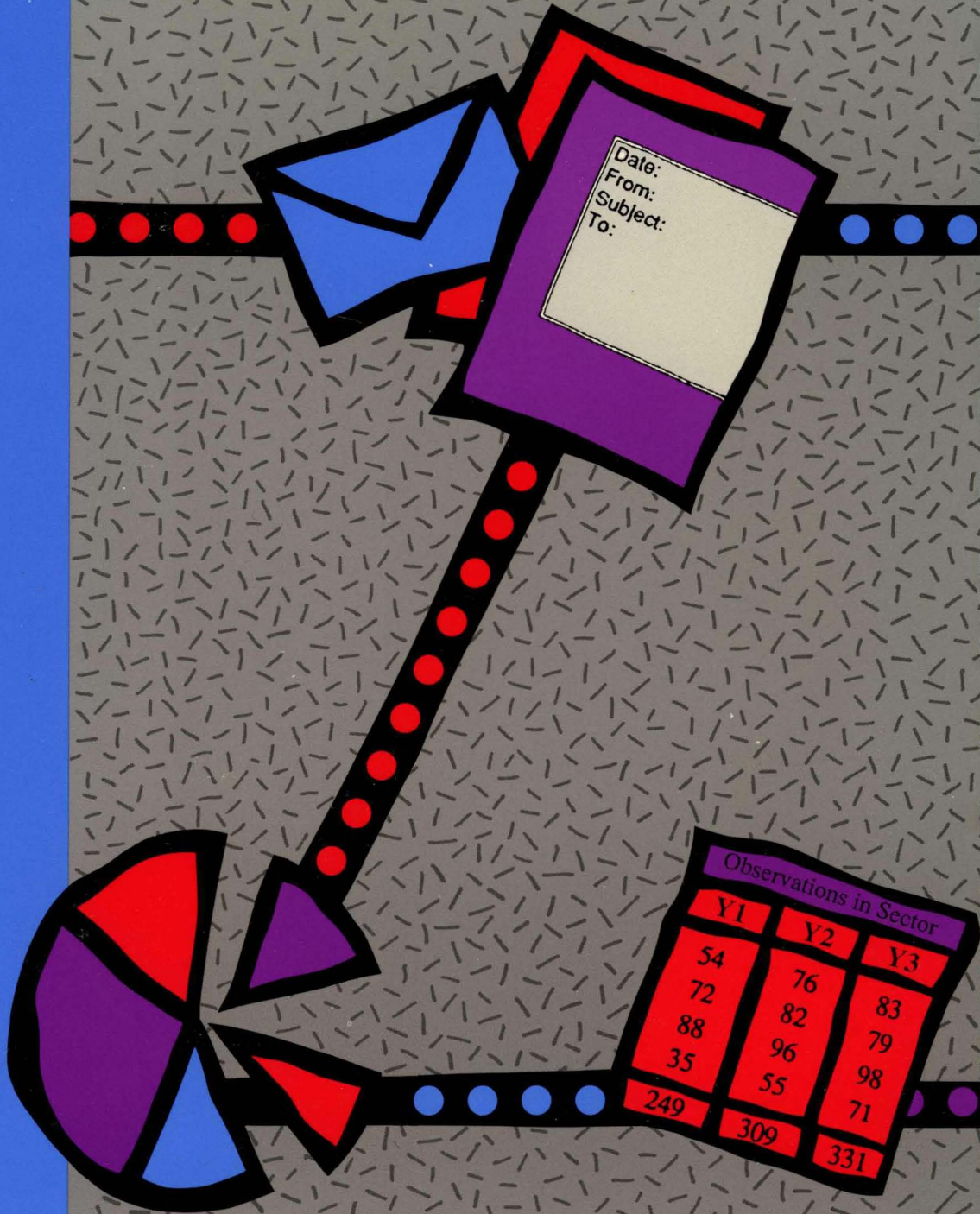
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