The Lisa Nobody Knows

by Alan Anderson and Scott Knaster

You're reading yet another article about Lisa, Apple's latest and greatest entry into the world of personal computers. What else is there to say? When Lisa was launched last January, virtually every major computer magazine featured lots of stuff about Lisa and how revolutionary it was. **Apple Orchard**, *Byte*, *Personal Computing*, and *Popular Computing* featured the new Lisa on their covers. Even *Time* and *Newsweek*, not what you'd call typical computer journals, devoted space to the Lisa announcement, as did other publications.

If you read any of the magazine articles surrounding the Lisa introduction in January, you probably feel you have a pretty good idea of what all the fuss is about. Lisa's remarkable new features have been much-heralded: the ability to display multiple "windows" of different software applications; a pointing device called a mouse; extremely detailed graphics; data transfer between applications.

Since that announcement, other software products have been introduced which duplicate some of these features. The most well-known is VisiOn (guess who makes it), which has a mouse and windows and data transfer, as well as its own new applications. As of this writing, VisiCorp says that VisiOn will be available at the end of October. VisiOn was actually presented to the world last November, two months before Lisa, but Lisa has been shipping since June. Desq, from a new company called Quarterdeck, features a new twist: it takes existing applications like Wordstar and VisiCalc and lets you window them and transfer data between them.

When the computer press mentions "integrated software" these days, Lisa is usually lumped in with those others. How similar are these products to the Lisa? Should they be grouped together? Well, the natural human tendency is to pigeonhole and categorize, and things which defy categorization are troublesome, so we search for similarities between things which may not be so similar after all.

Lisa is one of those things that stands alone. A quick 20-minute demo by a knowledgable Lisa user shows how unique it really is. Its design and features are totally different from anything else that's available now. But if this is true, why don't most people in the computer industry recognize it? One answer is that Lisa's revolutionary design appeals mainly to two kinds of people: those who know a great deal about the human characteristics of designing software, and those who have never used a computer and wouldn't know a byte if it came up and byt them. Most of the people in the computer industry today don't fit into either of those categories.

If you think that most of the microcomputer industry today knows a lot about designing a good human interface to software, take a good hard look at the software you're using. If you've been using computers for more than a few months, it might be hard to see this inherent flaw in most of today's software because you've become accustomed to it. If you've only had your computer for a short time, you probably know exactly what I mean. Most of today's computer programs are like dictators, demanding that things be done *their* way, requiring an astonishing array of secret codes to perform functions, and worst of all, promoting the need to learn computerese in order to get anything done.

Hard-to-use software is not necessarily the fault of poor design of applications. Part of the blame is due to fact that most of today's operating systems are several years old. Another problem is in hardware limitations. Remember that Lisa costs $10,000 and features very impressive hardware specs that we'll discuss later.

With Lisa, Apple has taken a gutsy step, because Lisa abandons most of the current ways of doing things for a whole new world. This is dangerous for Apple because it requires those who know how to use computers already to forget all the black magic they've learned and take on a new, simpler way of doing things. Apple's premise is this: using a

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Lisa is considerably easier than using any other personal computer, and if you're one of the vast majority who've had limited experience with computers, you'll appreciate it immediately. But if you already know about DOS and CP/M and device drivers and control codes and all the other wonders of the personal computer age, it may take you a bit longer to appreciate it.

Family Trees

When Apple designed the Apple ///, it was constrained by the Apple II. The /// was an evolution of the Apple II. One of its features allows it to emulate the Apple II, and while it is certainly much more powerful than its predecessor, it performs basically the same functions as the II—faster, more powerfully, and with more memory, but fundamentally in the same way.

With the Lisa, this restraint was removed. No compatibility with previous systems was required. And so Lisa's designers took off. If you're a fan of fancy hardware, it would be hard to come up with much better specifica ions: MC68000 microprocessor, 1 megabyte of RAM, 1.7 megabytes floppy disk, 5 megabytes hard disk, 12 inch bit-mapped display with over 250,000 pixels, detachable keyboard, one-button mouse, real-time clock, 2 serial ports, and 3 expansion ports.

But the Lisa's hardware is only the foundation for the real breakthrough: the software. Apple likes to say that Lisa's hardware is only state-of-the-art, but the software is revolutionary. The more well-known features of this software, the mouse and the ability to run more than one application at a time by using windows, have already been mentioned. Now we're going to spend some time discussing some of the lesser-known features of the software, some of the more subtle things that make the Lisa so powerful and easy to use—and the things that truly set Lisa apart from the other "integrated software" packages.

In Figure 1 you see the Lisa Office System as it first appears. The thin white strip across the top is called the menu bar, and the gray remainder of the screen is called the Desktop. The pictures at the bottom of the Desktop are called icons. Icons are a fundamental part of the Lisa user interface. They represent some action or piece of data used by the Lisa. In Figure 1 you see the four icons which are always present on the Lisa. The first, ProFile, obviously rep-

resents the ProFile hard disk which is attached to the Lisa. The one that looks like a Lisa and is named Preferences is used to set things like the volume of the Lisa's speaker, how fast the keys repeat, and what devices you have connected, such as printers and modems. The Clipboard icon holds data which is being moved from one place to another. And the Wastebasket icon—well, it almost seems silly to have to say so, but of course, the Wastebasket is where you put something when you want to get rid of it.

One more very important thing that you can see on the Desktop is a small black arrow. This arrow (which points north-northwest, trivia buffs) is called the pointer, and it is intimately related to the mouse. When you move the mouse on the desktop, the pointer moves in a corresponding direction. The mouse and its arrow are used to point at things on the Desktop to select them for some action.

You may be wondering how you get an icon to perform a function, how to make it do something. Well, each icon represents a "location", a place where the Lisa's user can put things. In order to see into these places, each icon can be opened; that is, a sort of electronic magnifying glass can be placed on the icon, letting you look inside it. For example, we can look inside the ProFile icon and see what's there. This is where the mouse pointer comes in. First, we move the pointer so that the tip of the arrow is touching the icon and we press the button on the mouse.

After we press the button, the icon becomes highlighted on the Desktop, and it turns black. Now we move the pointer up to the top of the screen, the menu bar. Each item in the menu bar represents a menu, or list of things to do. In order to see a menu, we point at the menu's title and press the mouse button. As we hold the button down, the menu appears below its title, in this case, the File/Print menu. As we point at each menu item, it becomes highlighted, just like the ProFile icon when we selected it earlier.

Figure 2 shows you what the File/Print menu looks like when it's pulled down. You might notice that some of the menu items appear to be gray, while others appear black. This is because the items which cannot be used at a particular moment are automatically locked out. When we point at these dim items, they stay dim—they don't become highlighted. One item in the list, the one at

which we're pointing, is highlighted.

When we come to the item we're after, in this case the one that says "Open Pro-File", we release the mousebutton. Instantly, the action we've chosen takes place. As we watch, the tiny ProFile icon zooms "closer". In a fraction of a second, it seems to grow until it fills about half the screen (see Figure 3).

Now we're looking inside the ProFile and seeing what's kept there. If you've ever been to Disneyland, what's happening here is a lot like the Adventure through Inner Space, where a snowflake appears to grow larger as you apparently shrink into it. Well folks, this is the ultimate E-coupon attraction, as you can see by looking at the contents of the ProFile in Figure 3. It's filled with more icons, this time icons that look like file folders. Each file folder has a name: some of them contain examples, such as LisaCalc Examples, LisaDraw Examples, and so on; one of them is called Apple Orchard, and we'll be working with that one shortly. As you probably guessed by now (after all, this is supposed to be intuitive), the file folder icons act like real file folders: they hold things.

One icon looks like a whole stack of file folders, and it's called Empty Folders. This is a special kind of icon called a pad. It represents a whole bunch of file folders, an infinite number of them, and whenever you want one, you just point at it, click the mousebutton to select it, and choose Tear off Stationery from the File/Print menu.

As we ponder how to look inside the file folder called Apple Orchard, an interesting thing happens, something we might call the Lisa *deja vu* effect. *Deja vu*, of course, is feeling of strange familiarity, as if we've been here before. Last time we wanted to open an icon, to see what was inside it, we selected it with the mouse and then opened it from the File/Print menu. Now here we are again, wanting to open an icon. Of course, the answer is easy. We point at the icon and click the mousebutton to select it, then pull down the File/Print menu and choose Open "Apple Orchard". Just like before, the folder appears to zoom open and becomes a window, showing us what's in the folder (see Figure 4).

Before we discuss the contents of the Apple Orchard folder, lets talk about windows for a while. If you look at the Apple Orchard window in Figure 4, you'll see that there's an unusual look-

ing little box in the lower right corner of the window. This is called the sizing box, and it's used to change the size of the window. Almost every window has one. That means that you can make the window larger or smaller, whatever you like. If you make the window too small to see everything that's inside it, you can use the arrows next to the sizing box, called the scroll controls, to roll the window left, right, up, or down.

You may also have noticed that the Apple Orchard window overlaps the Pro-File window. The Lisa Office System lets you put things on top of other things. (*They must have used my desk as a model.—PCW.*) If you want to look at something that's covered up, all you have to do is point at it and click the mousebutton, and it will be uncovered. You can also move icons and pointers around, putting them anywhere you want them. If you want your ProFile window to appear on the bottom part of the Desktop rather than the top, just point at the top line of the window (called the title bar), grab it by holding down the mousebutton, and drag it down to its new location.

Now lets look at what's inside the Apple Orchard folder. There are three icons inside: 1984 Budget, Staff list, and Memo. These icons look like pieces of paper. Each one represents a document. A document is where a Lisa user does work. For example, the document called 1984 Budget contains a budget for one year. The icon shows which of the Lisa application programs, or tools, as they're called, was used to create this document. The spreadsheet design on the 1984 Budget document tells us that the LisaCalc tool was used to create that document. The Staff list icon indicates that it was created with LisaList, while the design on the Memo icon shows that LisaWrite was used to create it.

If we wanted to get a look at the document called 1984 Budget, how would we do it? Once again, *deja vu* strikes. Here's an icon, a small representation of something that we want to look at more closely. One of the most important aspects of the Lisa design is consistency: it performs similar functions in a similar way. Here, once again, the Lisa is faithful to this philosophy. The document is opened by using exactly the same actions as we used in opening things before. We point at the document, click the mousebutton to select it, pull down the File/ Print menu and select Open "1984 Budget". You probably know what hap-
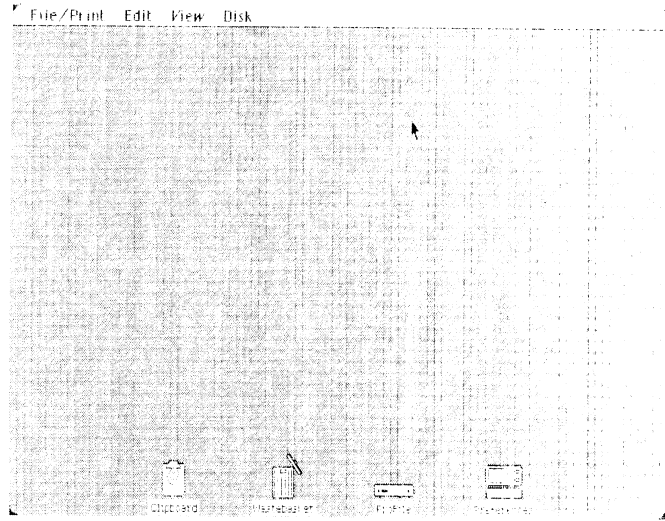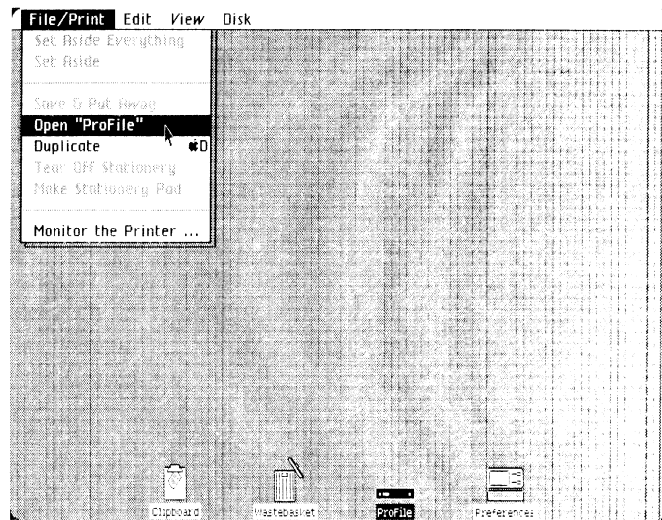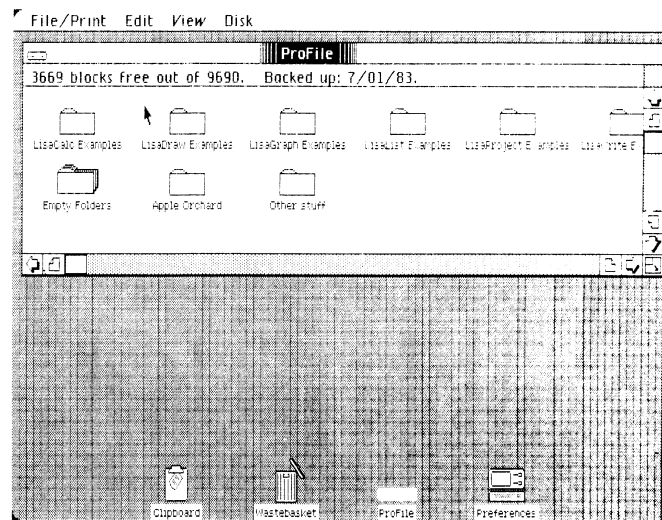

Figure 1

Figure 2

Figure 3

16   Apple Orchard

pens next. The icon zooms open into a window, and the window is entitled 1984 Budget. Inside the window is the message "LisaCalc is preparing this window's display." This message stays up for a while as the ProFile hums away; the pointer changes into an hourglass to show that the Lisa is busy; then the window is filled with the budget spreadsheet.

Let's step back for a moment and discuss what we've done so far. This time, though, let's examine our actions from a different point of view—we're going to compare them to similar actions on traditional personal computers. First, we looked at the contents of the ProFile hard disk. On a conventional computer, this is called a catalog or directory listing, and you get it by typing in a command. What's the command? Well, it's CATALOG, or CAT, or DIR, or FILES, or any of a bunch of other variations, depending on what computer and what operating system you're using. Of course, if you're using an application program, it might be somethng else, probably some control-character, if you can get it at all. And, of course, you can bet that whatever the command is in one program, it'll be completely different when using another program on the same computer. On the Lisa, there was no command. We simply pointed at the ProFile, then selected a menu item, all with the mouse. Number of keystrokes required: zero.

What if we wanted to look at the ProFile contents while we were using one of the Lisa applications? The procedure is exactly the same. No matter what you're doing, even if you're right in the middle of entering a cell in LisaCalc or reshaping a polygon in LisaDraw, you can select the ProFile icon and open it. Of course, you can also leave the ProFile's window open so that you can see the ProFile's contents all the time. If another window that you open covers up the ProFile window, just click in the ProFile window and it becomes completely visible.

The ability to perform virtually any action (like looking at the ProFile's contents even while you're working on another document) is extremely powerful and quite unique in the world of computers. This capability, which is technically called being modeless, extends throughout the Lisa Office System. The Lisa tries very hard never to lock you into a "mode", in which commands suddenly do very different things than they

do in a different mode. This use of different commands is very disconcerting to the person using the computer and sometimes can destroy work ("Does CTRL-C accept or cancel?"). Consider, for example, many word processing programs which move the cursor by means of arrow keys. Most of the time, this movement simply repositions the cursor, but once the user gets into "delete mode", cursor movement suddenly gobbles up any text that's moved over. As I said, very disconcerting.

The Lisa Office System and its applications work hard to be modeless to avoid situations like this. The system of windows is a fundamental way to get away from modes. In the few cases where modes are used, the mode becomes a window. This changes an abstract concept (a mode, which you can't see) into a concrete one (a window, which you can see).

Let's continue to review the actions we've taken so far. After opening the ProFile, we wanted to look at the Apple Orchard folder. Following the same steps as before, we opened the file folder icon, and were then shown its contents. Although this action doesn't have a

direct counterpart on other systems, it is very much like getting a listing of a subdirectory. Subdirectories, which are used by Apple ///'s SOS, Unix, and other operating systems which work with large disk drives, provide a way of grouping similar things, much like file folders in the Lisa Office System. Finding out what's in subdirectory usually requires a command a lot like the ones used for finding out what's in a directory.

After opening the Apple Orchard file folder, we decided we wanted to take a look at the document called 1984 Budget. In order to do that, we once again followed the procedure of selecting something (the document) and then performing some action upon it (opening it). The icon zoomed open into a window and the document became visible (see Figure 5).

How would we perform a similar function with a conventional system? Well, first we would have to enter some command to run a spreadsheet program from our hard disk. Then, after the spreadsheet was loaded, we would enter a command in the spreadsheet to load a file, then type in the file name.

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Oops—what if we've forgotten the name of the file we wanted to load? No problem. Just enter the spreadsheet's command for listing a catalog. After you find the file's correct name, just go back to the spreadsheet's load command and type in the file's name. Counting the command which started the spreadsheet, we're up to about 15 keystrokes (it would have been more if we had used a name longer than 1984 Budget for our document).

By the way, for those of you who haven't been counting, we have so far used the Lisa's keyboard a grand total of . . . uh, we haven't used it yet. In fact, that's another cornerstone of the Lisa Office System's philosophy: the mouse is used for making the Lisa do things; the keyboard is used for entering text and data. This fundamental separation of tasks is one of the things which makes the Lisa so easy to learn and use. There are no cryptic commands to learn. Actions are performed in the simplest way possible, often by just pointing at the thing you want to work with, then selecting a menu item. The only time you have to go to the keyboard is when you want to type in some information.

Another interesting observation: with Lisa, you don't "run a program" and "load a file." These two actions are combined for you into one simple action: opening a document. This method has many advantages. One of the most important is that you never have to remember the name of a program or file. You never have to go through the frustration of knowing something is out there on the disk, but that you're just spelling it wrong, surely one of the cruellest tricks a computer can play on a human.

You may also have noticed that the names of documents and file folders are rather unrestricted. Unlike conventional systems, which usually limit you arbitrarily to short names composed of a small number of characters, Lisa names can be 63 characters long and can contain any of the characters you can type at the keyboard. By the way, the Lisa's keyboard is extremely versatile. In addition to typing all the standard typewriter characters, you can type lots of other symbols, including various common foreign characters, by using the Lisa's option key. This key acts as a second shift key to give you more flexibility.

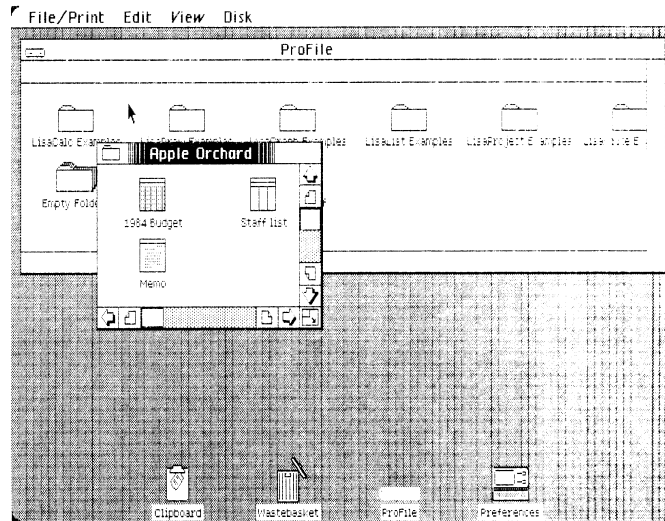I mentioned that the names of Lisa objects are limited to 63 characters. What happens if we try to exceed that
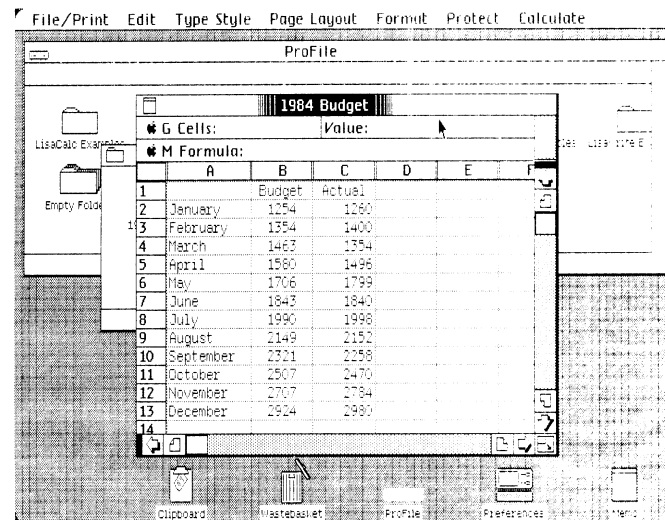
Figure 4

Figure 5

Figure 6

18 Apple Orchard
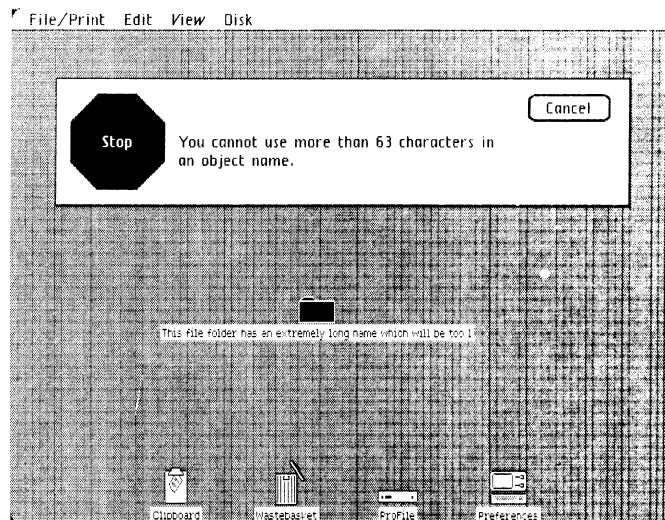
limit? I'm glad I asked that question, because if gives us a chance to see how Lisa handles error messages. You can see what happens by looking at Figure 6. Actually, the term "error messages" isn't really fair. Apple calls them alert boxes, and this is a typical example of what happens when something goes wrong. Note the oval marked "Cancel" on the right side of the alert box. As you probably figured out, by pointing at this oval (called a button) and clicking the mousebutton, the alert vanishes and un-covers whatever was behind it on the Desktop. That's what happens when there's an error: no muss, no fuss.

In order for the metaphor of the Desktop to be effective, it must truly allow us to manipulate things in the computer by using the icons. The Lisa Office System lives up to this expectation. For example, if we want to make a duplicate copy of any of the documents or file folders, such as Staff list, all we have to do is select the document by pointing at it and pressing the mouse button, then choosing Duplicate from the File/Print menu. This creates a new copy of Staff list, which we can then put into any file folder.

The Lisa's floppy disk drives come to life any time we insert a diskette into either disk drive. After a few seconds a new icon appears on the desktop: it's a picture of a diskette. If we opened the diskette we would see that it contains file folders and documents, just like the ProFile.

What if we wanted to move a document from a diskette to the ProFile? Easy. We just point at the document and hold the mouse button down while we move the document over to the ProFile icon. Of course.

Now let's take a look at how some of the Lisa applications work. Right now our LisaCalc spreadsheet, 1984 Budget, is active. As I mentioned earlier, we have complete freedom over the appearance of the window. We can make it larger or smaller with the sizing box; we can move it anywhere on the Desktop. We can also scroll through the sheet with the scroll controls. If we want to enter values in some of the cells, we first select the cell by pointing at it and pressing the button; then we type in the value.

If we want to add something to an entry we've already made, here's the procedure. We select the cell by pointing at it and clicking. The pointer then changes appearance: it turns tall and thin (wish I could do that). This is called the text pointer. Now we point between the characters and click again. We can now type our added characters. It's important to realize that we have not been put into an "insert mode" which we can get stuck in. If we wanted to, we could move the pointer (it would change back into an arrow as soon as it was outside this cell) and select something else.

What if we want to delete some text? If you think we're going to get into "delete mode", you just haven't been reading very closely. To delete text, we first select it. We do this by pointing at the first character to delete, pressing and holding down the mouse button while we move the pointer to the last character, and letting up on the button. As soon as we let up on the button, the text we've selected is highlighted on the screen. Now we pull down the Edit menu and choose Cut. Zap! The selected text is gone. What happened to "delete mode"? There was none, so nobody will ever get hopelessly lost in it, deleting things they don't want to delete.

We've talked about insert and delete, and there's one other basic editing func-

tion: replacing some text with other text. For example, if we had typed "big old dog" and we wanted to change it to "big happy dog", we would first select the word "old" by pointing in front of the "o" and holding the button down while we move the pointer past the "d". Then we would simply type "happy", the replacement. Again, no modes in sight!

The best thing about these editing features is this: anywhere on the Lisa, anytime you need to edit text, these techniques work exactly the same way as they did here. Exactly. Always. Whether you're changing the name of a document, entering a phone number in a LisaList document, typing a letter with LisaWrite, or putting in your budget, text editing is consistent. The advantage of this is incredible. Instead of having to relearn basic actions in different applications, the same techniques are repeated throughout the Lisa Office System.

Integration without Busing

Another Lisa feature is the ability to take data from one document and put it into another. For example, if you've got a picture in a LisaDraw document that you want to put into a different Lisa-Draw document, Lisa lets you make a copy of the picture and paste it into the other document. You can also move information between some documents of different types—for example, you can make a copy of a schedule from a Lisa-Project document and paste it into a LisaDraw document.

Here, we're going to copy some of our 1984 Budget information and paste it into the LisaWrite document called Memo. In this case, we're after the information for January through September. Here's how we do it. First we point at one corner of the information we want to copy and hold the button down; we move the pointer to the opposite corner of the range of cells and release the button. This causes the cells between the two points to become highlighted on the screen (see Figure 7). Now we pull down the Edit menu and choose Copy. This tells the Lisa to make a copy of the selected cells. This is the information which we will paste into the Memo in a moment.

But wait! The Lisa is supposed to represent things as physical objects on a "desktop." If we've made a copy of this information, where is it? Well, it's inside another icon: the Clipboard. In fact, we
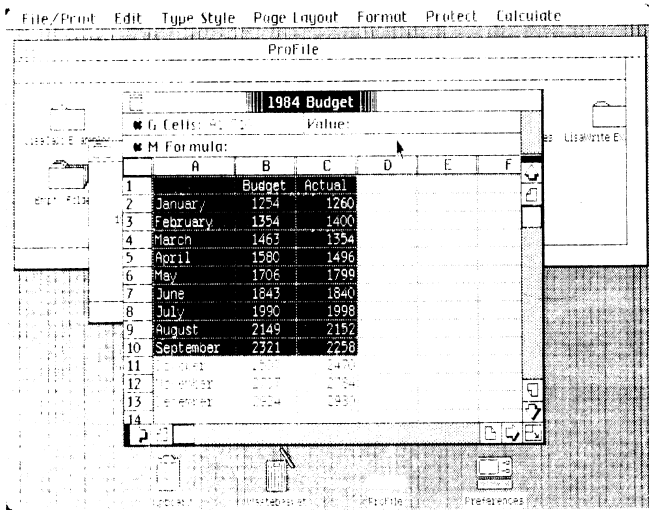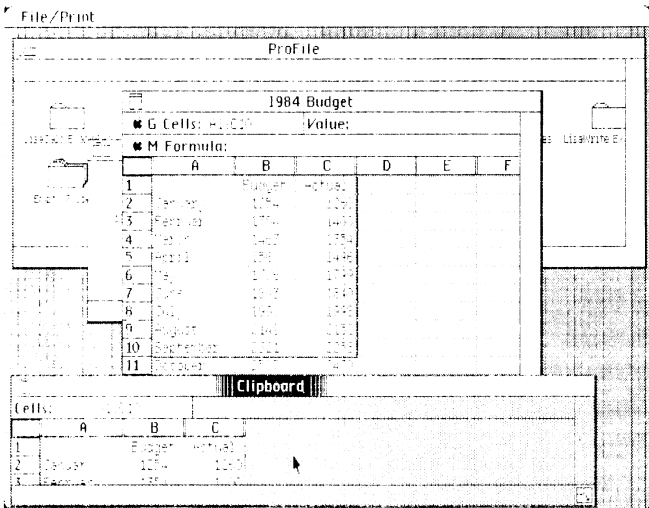
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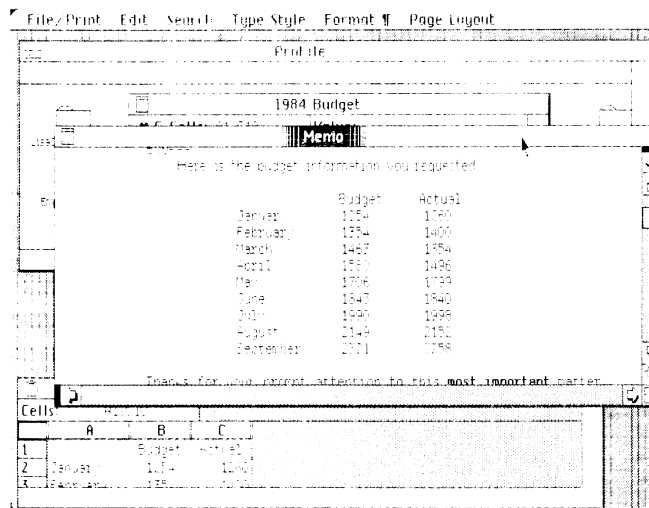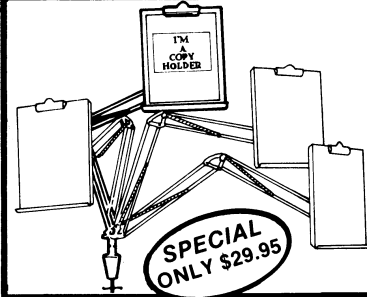
File/Print Edit Type Style Page Layout Format Protect Calculate

ProFile

1984 Budget

G Cells: Value:
M Formula:

	A	B	C	D	E	F
1		Budget	Actual			
2	January	1254	1260			
3	February	1354	1400			
4	March	1463	1354			
5	April	1580	1496			
6	May	1706	1799			
7	June	1843	1840			
8	July	1990	1998			
9	August	2149	2152			
10	September	2321	2258			
11						
12						
13						
14						

Figure 7

File/Print

ProFile

1984 Budget

G Cells: Value:
M Formula:

	A	B	C	D	E	F
1		Budget	Actual			
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						

Clipboard

Cells:

	A	B	C
1		Budget	Actual
2			

Figure 8

File/Print Edit Search Type Style Format ¶ Page Layout

ProFile

1984 Budget

Memo

Here is the budget information you requested.

	Budget	Actual
January	1254	1260
February	1354	1400
March	1463	1354
April	1580	1496
May	1706	1799
June	1843	1840
July	1990	1998
August	2149	2152
September	2321	2258

Thanks for your prompt attention to this most important matter.

Cells:

	A	B	C
1		Budget	Actual
2	January	1254	1260

Figure 9

can see it. If we point at the Clipboard icon, select it, and choose Open Clipboard from the File/Print menu, we see the cells we just copied from the 1984 Budget document (see Figure 8). Great!

Now we have to open the Memo. We can't see most of the Apple Orchard window (where the Memo document is filed), so we point at the part of the window we can see and press the mouse button. This uncovers the Apple Orchard window and makes it completely visible. Now we can select the Memo icon and choose Open "Memo" from the File/Print menu, and it zooms open into a window. We point at the place in the Memo where we want the information to be placed, then click the mouse button to mark it. We pull down the Edit menu and choose Paste, and we're done (see Figure 9).

That's it. We have just moved information from our spreadsheet into our memo, quickly, easily, and without entering one single command—we've done it entirely by pointing at things with the mouse. If you don't think this is a remarkably easy and powerful way to do things, try it sometime.

Prints Charming

One of the nicest things about the Lisa is that it doesn't force you to believe in the "paperless office." It acknowledges that producing paper documents is a very important part of any office system, and the Lisa's printing capabilities are astonishing. Using the Lisa applications you can create a large variety of text and graphics, and everything you see on the screen can be printed on Apple's Dot Matrix Printer. This printer, which Apple sells for less than $700, produces quality which must be seen to be believed (so look at Figure 10!). This printing of our memo was produced on a dot matrix printer.

Almost as remarkable as the output is the way the document was created. All of the large text, boldfaced text, and italics were created without the aid of any "control characters" or special commands in the text. Instead, the text was selected with the mouse, and the special type was chosen from the Type Style menu. What's more, the large, boldfaced, and italic text were displayed on the screen in the document's window. The fancy term for this is visual fidelity, but it's more popularly known as "what you see is what you get."

Interoffice Memo

To: Bob Jones
From: Mike Smith
Date: October 27, 1984
Subject: Budget data

Bob---
    Here is the budget information you requested:

	Budget	Actual
January	1254	1260
February	1354	1400
March	1463	1354
April	1580	1496
May	1706	1799
June	1843	1840
July	1990	1998
August	2149	2152
September	2321	2256

Thanks for your prompt attention to this most **important** matter.

Figure 10

These are just a few of the things you can do with text on the Lisa. You can also change fonts, choosing from 10, 12, and 15 pitch, as well as proportional spaced characters. And, of course, some of the Lisa Applications, such as LisaDraw and LisaGraph, help you create marvelous graphics. Adding text to these graphics is easy, and you can usually choose from the same vast array of fonts and type styles. All of this can be printed on the Dot Matrix Printer. (In case you're interested, printing a document involves choosing "Print" from the File/Print menu, then clicking "OK" in a box that comes up on the screen).

By the way, Apple's Daisy Wheel Printer also works with the Lisa. Its main advantage is that it produces fully-formed characters rather than dense dot-matrix ones. However, in order to print all the Lisa's different fonts, it requires a change of type wheels.

And furthermore . . .

There's an awful lot more to Lisa. For example, to get your diskette out, you have to press a button above the drive. The Lisa will then politely ask you to wait while it puts all the disk's documents away before ejecting the diskette. When you turn the Lisa off, it does the same thing: it puts everything away, then shuts off. There are lots of little touches, too, such as the way it always opens a window to the exact size and shape it was in when you last worked with it.

Lisa is a remarkably well-designed system. The care that was taken in putting the Lisa together is obvious. When some of the other systems that use a mouse and windows come along, running on computers which were really designed to handle the lesser demands of more conventional software, it will be very interesting indeed to see how they compare to Lisa.

On second thought, it probably won't be a very interesting comparison at all. ⬢

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