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## T4 Virus

This virus spreads to other applications and to the Finder. It attempts to change the System file. After being infected, an application cannot be repaired and should be removed and replaced by a fresh copy of the application.

## Tab-Delimited File

Used in both databases and word processing, tab-delimited files or tab delimited text is simply text that's been separated into fields or columns by tabs. Comma-delimited text is separated by commas. Tab-delimited and comma-delimited files can be easily transferred between databases, PIMs, spreadsheets, and word processors. Most applications recognize both data formats, but generally you'll have to specify which way you want to import or export your data.

## Tab Key

The Tab key is used to set tabs in word processing and page layout applications, but it is also used as a navigation device within **dialog boxes** and **databases**. You can use the Tab key to move down a list of files in an **active window**, and you can use it to jump from field to field in most dialog boxes. Each press of the Tab key moves the cursor to the next available field.

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If you press Shift-Tab key, the cursor moves to the previous field, or in the list view of an active Window, Shift-Tab moves you back up the list of files.

## *See Also*

Active Window; Database; Dialog Box; Fields

## Tables, Creating in Netscape

A feature that enables authors of **World Wide Web page**s to present text or other data in a table format, with rows, columns, and headings. In general, the information is contained in rectangular table cells. The borders of the cells can either be visible in the **Web browser** screen or be invisible, however, thus opening a variety of **Web page design** options.

Tables are a relatively recent feature of **HyperText Markup Language (HTML)** version 3.0. Because tables are new, not all Web browsers display to them. Web page authors should consider presenting a table document with a non-table alternative, such as the `<PRE>` preformatted text tag.

Tables are contained within the `<BODY>` section of an HTML document, as indicated:

```
<HTML>
```

```
<HEAD>
```

```
<TITLE> </TITLE>
```

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<BODY>

<TABLE>

</TABLE>

</BODY>

</HTML>

In order to create a table, an author needs to be familiar with three or four basic **HTML tags** : <TABLE>, <CAPTION>, <TR>, <TH>, and <TD>.

The following table lists the tags and attributes needed to create tables.

## Tables: The Basic HTML Tags

### *HTML Tag*

<TABLE> </TABLE>

<CAPTION> </CAPTION>

<TR> </TR>

<TH> </TH>

### *Description*

These tags contain the entire table. The tags are contained within the BODY section of the document.

Specifies the name of a table; optional.

Designates the contents of a table row[em]a horizontal set of cells.

Used to mark table headings that describe the contents of a table row or column. Presented with emphasis, such

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	as boldface.
<code>&lt;TD&gt;&lt;/TD&gt;</code>	Used to designate table data, the contents of individual table cells.
<code>&lt;TABLE BORDER&gt;</code>	Specifies that the table will have a visible border.
<code>&lt;TABLE BORDER=<i>n</i>&gt;</code>	<i>n</i> describes the width of the table border
<code>&lt;TD or TR ALIGN=left right center VALIGN=top middle bottom&gt;</code>	Determines whether contents of table data cells is left-aligned, right-aligned, or center. VALIGN controls vertical alignment of table contents.
<code>&lt;TD NOWRAP&gt;</code>	Prevents table data from wrapping at ends of lines.
<code>&lt;TD or TH COLSPAN=<i>n</i>&gt;</code>	Allows data cell or heading cell to span more than one column, specified by <i>n</i> .
<code>&lt;TD or TH ROWSPAN=<i>n</i>&gt;</code>	Allows data cell or heading cell to span more than one column, specified by <i>n</i> .

Tables can bring several benefits to a Web page or **Web site** :

- They allow the presentation of material in columns;

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- Unlike `<PRE>`, text in tables appears a variable width rather than monospaced font.
- Tables help to break up Web page content and add graphic interest to a document.

Before creating a table, an author should consider drawing the contents out by hand on paper to keep rows and columns straight. A very simple example of a table follows:

```
<TABLE BORDER>
```

```
<CAPTION><H1>Clothing Catalog</H1></CAPTION>
```

```
<TR>
```

```
    <TH>Shirts</TH>
```

```
    <TH>Slacks</TH>
```

```
    <TH>Socks</TH>
```

```
    <TH>Ties</TH>
```

```
</TR>
```

```
<TR>
```

```
    <TD>$24.99</TD>
```

```
    <TD>$29.99</TD>
```

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```
<TD>$8.99</TD>
```

```
<TD>$12.99</TD>
```

```
</TR>
```

```
</TABLE>
```

**Tables, Using to Format Text** Some of the most innovative page design on the World Wide Web uses tables to arrange text and provide whitespace. Table borders are invisible, so text appears in columns, or more often, in a single column with “columns” of white space on either side.

Blank columns can be specified by enclosing a line break tag within table data tags:

```
<td width=90><br></td>
```

The column of text in the middle could be specified with a wider measure, for example:

```
<td valign=top align=left width=230>
```

Authors should consider providing an alternative to such layout for users with browsers that do not support tables.

### ***See Also***

Hypertext Link; HyperText Markup Language; HTML Tags; Netscape; Netscape Navigator; URL; Web Browser; World Wide Web Page

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## Tables of Contents

The table of contents appears at the front of a document to help you find the locations of chapters or **sections** within it. It's more general than an **index** and is usually compiled according to the order within the document of items included, rather than alphabetized by subject. It is created much in the same way an index is created, by marking the items to be included and then collating them. In some applications, including **Microsoft Word** , clicking a page number in the table of contents takes you to that page in the document.

*See Also*

Index

## Table Editors

For desktop publishers, creating tables is nothing less than a chore. Setting up tab stops, rules, and shading manually can be done, and might be practical for those who set very few tables. But for those who need to streamline the process, table editors are a lifesaver.

Table editors work rather like spreadsheets, with rows, columns, and cells that expand as text is added. Along with the basics like font, size, and leading, they allow users to define ruling, shading, and more. Although users create default settings for each table, most table editors allow custom formatting for individual cells. The better ones handle multi-page tables, adding

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“continued” lines automatically and repeating column heads.

One of **FrameMaker’s** strengths is its built-in table editor, which can convert text to tables or create empty tables to be filled in later. Tables are anchored in text and can appear where they’re anchored or “float” to the top of the next page if there’s not enough room on the present page. Multi-page tables are supported, with customizable “continued” lines, and columns can be automatically sized to fit the page in several different ways (proportionally, equal widths, etc.). FrameMaker allows the creation of table formats—style sheets that can be applied to any table to change its attributes.

Three **QuarkXTensions** allow users to create tables within **QuarkXPress** : TableMaker, Tableworks, and XTable. All three use standard XPress elements—tabs, rules, and boxes—but automate their creation, placement, and modification.

TableMaker is the simplest, with no custom formatting for individual cells; it creates tabs, lays down rules, and creates a style sheet containing the tab settings it builds. XTable’s feature set is more extensive, including the ability to control column and gutter widths, set straddle heads, align type on special points within each of the columns, and change the positioning in the column of any data in the table.

Of the three XTensions, Tableworks supports the most complex styles. It can rotate text in table cells, automatically align columns on decimal points, automatically justify horizontal space between columns, and even apply a color blend as a table background. Perhaps most impressive, it can import



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text from database and spreadsheet files, allowing users to specify links between any database field and any column in the table. Like FrameMaker, Tableworks supports multi-page tables.

**PageMaker** users already have Adobe Table, which ships with Adobe PageMaker. This program has one big advantage over other table editors—it can export tables as graphics in PICT or EPS format. That means tables created with Adobe Table can be used with any other application, not just PageMaker.

*See Also*

FrameMaker; PageMaker; QuarkXPress; XTensions

## Tabs

*See*

Margins and Tabs

## Take-A-Break! Crosswords

*See*

Traditional Games

## Talk:About

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Talk:About is conversation software for the Macintosh that enables people who are nonspeaking to participate in communication. Unlike less sophisticated methods such as **Freedom**, it enables the user to maintain a real “give-and take” dialogue rather than just expressing prewritten phrases about wants and needs. It is an orthographic-based system (you can spell out the words) that provides point-and-click access to the various parts of a conversation through components such as Quick:Chat, Story:Talk and Story:Panel.

Talk:About is based on research conducted by the University of Dundee, Scotland, on pragmatic social interaction and the use of communication aids. Its studies find that conversations include specific components:

- Fast social interactions
- Beginning small talk
- Novel sentences
- Extended talk
- Wrap-ups
- Farewells

Talk:About combines all these components and includes them in one easily learned program, giving the user full participation in any conversation.

Quick:Chat buttons provide instant access to social interaction, helping the

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user to engage others in conversation. Phrases can be programmed with respect to specific people and/or time of day, so the user can speak appropriately to classmates, coworkers, or family and friends. Story:Talk files are stories, or bodies of conversation, written by the user, about events, experiences, opinions, and other things that come up in everyday conversation.

They might relate to a sports team, a movie, a favorite TV show, politics, or any of the thousands of things people talk about. Files can range in length from a sentence or two to several pages. Story:Talk uses artificial intelligence to link stories so that they are suggested appropriately, according to whom the user is talking with. Story:Panel is the toolbar across the top of Talk:About that is used to retrieve Story:Talk stories. The user selects his or her conversation partner. It might be a teacher, parent, or friend. The program will suggest an appropriate story for that partner, choosing from those the user has previously prepared.

The point and click interface makes for quick and easy chat.

To start or carry on a conversation, the user selects an appropriate button, as shown in the figure. Clicking the button brings up a menu of sentences. To say one, just choose it and click the speech button. When the listener responds, move on to the continuers, and so on.

Talk:About enables you to use text from almost any program or file on your computer.

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If you have written letters, kept a journal or class notes, or sent or received email, all of these can be used as Talk:About stories for conversations. Talk:About can also be used with the **Ke:nx** switch and **scanning software** by people who have difficulty using a keyboard as well as difficulty speaking. It's one more way that technology can improve the quality of life for everyone.

## *See Also*

Co:Writer; Freedom; Ke:nx; Scanning Software

## Tape Drives

### *See*

Dat and Online Storage

## Targeted Window

A feature of the **World Wide Web** browser **Netscape Navigator 2.0** that functions in response to a hyperlink click on a **Web page** that uses **frames** .

A targeted window is specified with <TARGET>, an attribute to the <A>anchor tag in an **HTML** document. (HTML stands for HyperText Markup Language, the language used to create World Wide Web documents.) Both the TARGET and FRAMES elements are Netscape extensions to “official” HTML and may not be displayed by all **Web browser** s.

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The author of a **Web page** can use <TARGET> to get one frame to react to a click in another frame, or to open a new window in response to a click on an anchor (clickable text that leads to another location on the Internet).

An example is shown in the figure below. The source HTML for the document entitled “Printers’ Row” contains several frames. The frame on the left side of the page contains a row of **hypertext links** to other documents.

In order to get the General Information link to open a new document in a targeted window, you can use the predesignated name “\_blank” to open a document “info.html” linked to General Information in a new blank window. The HTML would be written as follows:

```
<p><A HREF="info.html" TARGET="_blank">General Information</a></p>
```

The linked document “info.html” will open in a new window, as shown in the following figure.

Other predesignated commands that can be used with TARGET can open a document:

- In the frame just clicked, for example:

```
<p><A HREF='info.html Target="_self".>General Information</a></p>
```

- in a new separate (“parent”) window over the main HTML page (the page that contains the frames:

```
<p><A HREF='info.html Target="parent">General Information</a></p>
```

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- at the top or “main” level of frames:

```
<p><A HREF='info.html TARGET="_top">General Information</a></p>
```

## *See Also*

<A> Anchor Tag; Frames, How to Create; HTML; HTML Markup Tags; Hypertext Link; Internet; World Wide Web

## Tax Programs

Nobody likes paying taxes, but signing the check is often less painful than filling out all those forms. Can the Mac help? Definitely. There are programs like **MacInTax** to calculate your personal income tax. It does both Federal and State taxes (if you buy the supplement for your state) and can even print the necessary forms in a government-approved format.

Taxes for even the smallest of small businesses are a lot more complex. Federal and State Income tax returns for corporations really require the services of a good CPA or tax specialist. But there are also payroll taxes, FUTA, sales tax, and other forms that the business owner must file monthly, quarterly, or annually. Business accounting software, such as **Peachtree Accounting** and **MYOB**, will provide you with the necessary forms, with the numbers already in place. Tax tables within the program figure the taxes deducted from an employee's paycheck, based upon the employee's wages, residence, and work location. In addition to FICA-Social Security, FICA-Medicare and federal withholding taxes, MYOB Payroll calculates state

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withholding, State Unemployment and State Disability taxes for the 50 states, Puerto Rico, the Virgin Islands and the District of Columbia. Local taxes are also calculated, if applicable. MYOB will even remind you when its time to file them. These programs can even handle non-cash wages, which are sums of money that must be included in an employee's gross pay for tax purposes, but which the employer doesn't actually pay the employee. Some examples of non-cash wages are excess life insurance, incentive travel costs, and other fringe benefits. In addition, there are two types of non-cash wages that are specific to the restaurant business—reported tips and allocated tips.

At the end of the year it takes only a mouse click to print the employees W-2s. Another mouse click generates the quarterly reports for 940, 941, and FUTA taxes, as well as any state or local payroll taxes. Considering the penalties for improper or late filing of payroll taxes, this one function is reason enough to use the software.

## ***See Also***

Finance programmes; MYOB; Peachtree Accounting

# TCL

## ***See***

Think Class Library

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## Tcl

See  
Alpha

## TCP

See  
MacTCP

## TCP/IP

A set of protocols designed to **host** and **client** computers to send and receive information across a network such as the **Internet** .

TCP (Transmission Control Protocol) and IP (Internet Protocol) are only two of several protocols in an “Internet protocol suite” that provides the foundation for information transport on the Internet. TCP/IP makes possible email, newsgroup, File Transport Protocol, Telnet, and other sorts of data transmission.

Originally developed by the Department of Defense’s ARPA (Advanced Research Projects Agency), it deals with the physical layer of the **OSI Model**, while TCP resides in the transport layer. TCP/IP is designed to work across a wide range of computer types, all the way from the very biggest to



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the smallest.

TCP/IP is rapidly becoming part of every Mac's vocabulary, since it's included in System 7.5. Even if you're not tied into a local network with Sun workstations, IBM mainframes, and Cray supercomputers (all of which can talk to the Mac with TCP/IP); you're effectively tied into a Wide Area Network every time you sign on to your Internet Provider.

In very general terms, TCP is used to send messages from one location to another on a network, and IP is used to route those messages to the correct destinations (at the transport level).

For more information go to the World Wide Web site:

<http://www.netspace.org/netspace/tcpip/toc.html>

*See Also*

Client; Host; Internet; IP; IP Address; MacTCP; URL; World Wide Web

## TCP/IP for Systems Running Open Transport

This control panel enables your Mac to communicate and speak the same language of network services, such as the Internet, that use TCP/IP protocol. (Apple's language for networking is **AppleTalk**, but the **Internet** uses TCP/IP, which is the language of UNIX systems that are prevalent on the

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Internet.)

The **MacTCP** Control Panel is incompatible with Apple's Open Transport, so a new version called TCP/IP was introduced in System 7.5.2, and it enables you to specify TCP/IP settings for use with Apple's Open Transport networking.

There are two modes to this control panel: a Basic mode (the default), and an Advanced or administration mode (which can be entered through the Edit menu when the control panel is open).

*See Also*

AppleTalk; Internet; MacTCP

## Teachers, Macintosh and

Today, the typical elementary school classroom is more likely to have a Macintosh than a pet hamster. Computers aren't a luxury. They're a necessity. As with anything else, there are good and bad points to this. It means that one more subject, computer education, has to be jammed into the already crowded school day. It means that teachers often have to go back to school themselves to learn how to use the computer, as well as how to teach with it. But it gives the teacher another tool to use, both in actual classroom teaching, and in handling all the paperwork that's required for grades, progress reports, IEP's, and anything else a school department requires.

**Conversation with Bud Colligan**

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Bud Colligan helped launch the Mac in the higher education market, then took what he knew about the Mac over to Macromedia, the company that sells the Director Multimedia Studio, FreeHand, Graphics Studio, and Authorware Interactive Studio, plus Extreme 3D, SoundEdit 16, Fontographer, Xres (hi-res imaging), and Shockwave (for playing Macromedia files on the Web).

**Maclopedia** : What was your first contact with Apple and the Mac?

**Bud**: Steve Jobs came to Stanford business school and showed us all the Lisa. I was blown away. I tried everything I could to get a job at Apple and ended up testing Lisa software for one week during spring break. I was able to get interviewed in the Mac group and finally got a job. On my first day (before the Mac was introduced in 1984), they showed me the Mac. It was so cool.

**Maclopedia** : What was the secret of the Mac's success in higher education?

**Bud**: Daniel Lewin started the Apple University Consortium. I was managing International Product Marketing in the Mac division in 1984 and kept seeing about one third of the sales going to U.S. universities. So I started the European University Consortium in 1985. After the big reorg in July 1985 when Steve left the company, I took over Higher Ed. We built programs for the universities, gave them excellent pricing, and let them tell us how to market to them. When we followed their advice, we were usually successful.

**Maclopedia** : What were Mac's strengths in higher education?

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**Bud:** Graphic user interface, price, ease of use for students and faculty, lots of courseware, good programming tools for learning, like Mac Pascal, and other innovative tools like our Videoshop (later Director), HyperCard, Authorware. Some of these areas have been eroded by Windows, but the Mac is still the easiest to use and has some of the best tools, particularly for publishing, curriculum, and multimedia.

**Maclopedia :** How do you see your work at Macromedia continuing what you started at Apple?

**Bud:** My Higher Ed group did all the first work with multimedia at Apple. We produced Apple's vision piece, "The Knowledge Navigator," and did all the marketing for HyperCard. We produced the first authoring tools guide. So in a way, the Higher Ed group was a precursor to all the work I have done since at Macromedia.

**Maclopedia :** How do your customers respond to the Mac these days?

**Bud:** We still have about 60 percent of our business on the Mac. It's a very loyal customer base among creative people. There are too many projects done to list them out loud, but if you are interested, go to [www.macromedia.com](http://www.macromedia.com).

Electronic grade books and test-making programs exist in both commercial and shareware forms. Chariot Software's *MicroGrade* and *MicroTest* are two commercial applications for the teacher. *MicroGrade* tracks up to 100 students in 16 subjects, grading as many as 128 separate assignments. Figure

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grades by weighted percent or total points, and mark absent, late, unexcused, and incomplete assignments. MicroTest provides preformatted screens to enter true/false, multiple choice, matching, fill in the blank, and essay questions. Exams are neat and professional-looking, tailored exactly to what you've taught. Shareware grading programs do much the same thing, for free or at a very low cost, but may not have as good documentation or as elegant an interface. This figure shows one that's free and works very nicely. You can find HyperGrade in the educational software area of America Online, or on the Internet at:

<http://www.tiac.net/users/jcrose/html>

There are shareware exams and tests on virtually every topic from learning letters and numbers through college-level sciences and liberal arts. Check the educational libraries of **America Online** and **CompuServe** .

If the classroom computer is equipped with a modem and phone line, it can open doors to many educational experiences. Such programs as **MayaQuest** , linked to an actual expedition, give kids a chance to talk to scientists, archaeologists, and others who are actually doing the things they're reading about. Kids across America participate in the Iditarod Dog Sled Race every year, by way of America Online's Iditarod Trail updates. There are classroom activities linked to the race preparations. Students may "adopt" a team to follow during the race. They'll exchange **email** with the racers and read the daily accounts of training sessions, packing supplies, and other preparations. Many classes even make the protective booties the dogs wear, and ship dozens

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of sets to their favorite team.

Teachers can use the computer in dozens of other ways. In addition to assigning individuals or groups of students to work with the many excellent educational programs available, they can use desktop publishing programs to create a school newspaper or a literary magazine. Students can create and put a class home page on the **World Wide Web** . With it, they can solicit email penpals from similar classes in other parts of the country. They can use the resources of the Internet for research on any topic imaginable.

The computer can even help fulfill continuing education and professional development requirements. **America Online** 's Teacher Information Network offers all kinds of opportunities. There's an on-line connection to the American Federation of Teachers, the National Education Association, and to the Association for Curriculum and Development and the National Principals' Center. CNN in the Classroom, C-SPAN, and the Scholastic Network are also represented here. There are downloadable libraries of lesson plans, exams, and teaching aids. Most of these are completely free, some are low-cost shareware. All are placed there, by teachers, for teachers. **CompuServe** and **Prodigy** offer similar Education forums, also with libraries of software and places to go for more information.

## ***See Also***

Internet, Educational Resources; Software, Educational, Grades 7-12

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## TeachText

TeachText is a bare-bones text editor application that Apple included with every Macintosh **system** until it was replaced in **System 7** with **SimpleText**, which added more features. Although TeachText enables the creation of only the simplest type of text documents, it gained popularity with software developers as they started to include TeachText documents on the same disk with their shipping software. Anytime they needed to include a last minute user update and/or changes to the instruction manual, they'd just include a TeachText document on the same disk. They were pretty certain every Mac user would be able to open, read, and/or **print** the document. Even so, they'd often include a copy of TeachText on the same disk just in case.

TeachText is a small application, takes very little **memory**, and launches quickly, so it's perfect for jotting a quick note. TeachText also enables you to open a **PICT** document for viewing. You're limited to the default **font** and size, and you can only open one TeachText document at a time. For these and other reasons, SimpleText was introduced, which offers choices of font, size, integration of sound, and other features.

### *See Also*

Font; Memory; PICT; Print Simple Text; System; System 7

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## Telecommunication Adapters

See  
Modems

## Telecommunication Programs

Like every other piece of hardware attached to your Macintosh, the modem needs software to tell the computer how to communicate with it, and to allow you to control it. The most basic software is known as a *terminal emulation* program, or a Dumb Terminal Program. More advanced software hides the details of operating the modem from you, letting you think about the task at hand, and allowing the computer and the modem to negotiate the proper commands without your direct input.

The most intelligent programs almost entirely insulate you from the technicalities of using a modem. They frequently ask you a few questions, such as your local area code, your modem type, and where the modem is connected, and from that point on require no further interaction. The only real disadvantage of this type of program is that they are very specific to the service they were designed for. The major online services, such as CompuServe, Prodigy, and America Online each have their own highly intelligent client software. In addition, many privately run or user group **Bulletin Board Systems** make use of this type of software as well, the most popular application being First Class. These programs are designed to be as



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“Mac-like” as possible, using icons and menus in a Graphical User Interface (GUI) rather than text commands like “goto catlover’s forum”.

**Modem Software, Terminal Emulation** Terminal emulation software makes your Mac act as if it is an old style teletype terminal. It connects the keyboard and monitor to the modem, giving very little computer interpretation to the input or output of the modem session. The software simply copies output from the modem to your screen and sends everything you type on the keyboard to the modem. Essentially, this type of software makes your computer an expensive display terminal, hence the name “Dumb” terminal software. Software like this allows you to control your modem directly, using the **AT commands** that the modem understands. This is somewhat similar to using a PC-type computer through DOS using the “C:” interface. The most popular program of this type is **Zterm**, a shareware terminal emulator that is included with many Macintosh-specific modems, such as the Global Village brand. Many users find, however, that the combination of Zterm and a text-based service like Delphi or Bix lets them handle email, newsgroup retrieval, and forum messages far more efficiently than the more graphically oriented ones.

Commercial alternatives to Zterm include **Microphone Pro**, **White Knight**, and **SITcomm**. The commercial programs each provide a wealth of features for automation that sit them on the border line of more advanced dedicated terminal software. However, they still require a certain degree of direct modem interaction and are therefore more powerful but harder to use than the modem software included with standard online services.

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Most service specific modem software, such as the packages included with America Online, configure the parameters of the modem communication for you. However, when working with a “dumb” terminal program you may need to configure the communication settings manually.

Although many options are provided, the following settings will almost always work: **1 stop bit**, **No Parity**, **full duplex**. If a service requires something different, it'll usually tell you. If you're using a hardware flow control cable to connect to an external modem make sure you set Hardware Flow Control (also known as DTR/CTS or RTS/CTS) ON, and XON/XOFF (software flow control) OFF. If you're working with the internal modem in certain computers, such as the PowerBook Duo, you should turn both hardware and software handshaking off.

If you have a data compression modem (MNP 5 or v.42bis), your modem can probably accept data faster than the speed at which it's transmitting. One of the more misunderstood concepts with modems today is that of transmission speeds. In your side of the modem connection, there are two speeds of significance: the speed at which your modem is talking to the remote modem, and the speed at which your computer is talking to your modem. With today's advanced modems, these speeds don't necessarily need to, and probably shouldn't be the same.

The modulation protocol will determine the speed at which your modem will connect to the remote modem. (14,400 or 28,800bps, for example). However, because of data compression, the modem is occasionally able to reach a net

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rate of transfer to your computer of greater than this speed. Because of this, and because sometimes because of pause, the modem has more data to transmit than is currently coming, the modem is willing to send data to the computer faster than it is receiving it remotely. To maximize your performance, you should use your communications software to set the speed your computer talks to the modem faster than the speed at which your modem talks to the remote computer.

Use the following table to pick your optimum computer speed.

## Software Vs. Modem Speeds

<i>Modem Speed</i>	<i>Software Speed</i>
28,800 bps	57,600 bps
14,400 bps	38,400 bps
9,600 bps	19,200 bps
2,400 bps	4,800 bps

As a general rule of thumb, you should set the speed of your software (both intelligent and dumb terminal packages) to a rate *above* that at which your modem is connected to the remote site. Generally, a computer serial port speed of 38,400 is fine for most situations. In the new PowerBook Duo 2300 computers, Apple has reported that using port speeds above 14,400 will actually slow down transmissions. Note that on older Macs, or when using the Printer Port, the Mac may not be able to reliably keep up with the fastest

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modems. If you have trouble, try slowing down the computer speed to closer to the modem speed.

**TIP** When using computer speed and modem speeds that don't match it is once gain absolutely critical that you make use of a hardware handshaking cable to provide for proper flow control between the two devices.

*See Also*

Modems; Modems, Types

## Telephony

The use of computers with analog or digital telephone lines for a variety of purposes, including data, fax, onscreen dialing, and the use of a computer for a voice phone. Sometime telephony implies the mixture of voice with data and fax communications.

*See Also*

Modems

## Telnet

Telnet is a means of using terminal emulation to connect to a computer somewhere else on the Internet and to do whatever that computer allows you

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to do. It can be likened to using a modem to connect to another computer.

Telnet is considered boring by a lot of Macintosh enthusiasts, especially when compared to the more exciting Web, news, and FTP clients. It involves 1980s rather than 1990s technology. But it still is useful and is the only way to access many Internet resources that are not held on an HTTP or FTP server, such as **BBSs** and libraries.

Telnet can provide a quick way to check whether your local library has the book you are looking for, before you go to get it. When you Telnet to another machine, you use a UNIX-type command-line to reach the specific program that provides information you want. The information providers you connect to may have specific restrictions on the way you can use their site, and you should pay attention to these restrictions.

Features to look for in a Telnet program include the capability to save connection documents so you can automate the work of logging into a specific machine (but beware of security issues if they also store your password). You should also be able to copy and paste out of the Telnet program. Some programs, such as **NCSA Telnet** , also support **drag-and-drop** and **Internet Config** .

Some of the most common Telnet clients are Cornell University's **Comet** , the University of Illinois' **NCSA Telnet** , and Brown University's **tn3270** . They are all readily available from Info-Mac Archive sites. A database of Telnet sites, called **Hytelnet** , is also available. Some telecommunications programs such as Software Ventures' **MicroPhone** come with a Telnet Toolbox tool that

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enable them to serve as terminal emulators to Telnet.

*See Also*

BBS, Comet, Hytelnet, NCSA Telnet, tn3270

## Templates

*See*

Spreadsheet

## Temporal Compression

Temporal Compression is a technique used to compress a sequence of images. In Temporal compression, rather than simply compress the current frame in its entirety, you first subtract the current frame from the preceding frame. This results in only the differences between the two frames, which are often very similar in motion sequence frames. By saving only the differences, the amount of information that needs to be saved is reduced. Temporal compression also must use **spatial compression** techniques (first the differences between frames is determined, and then that resulting data is compressed).

*See Also*

Asymmetrical Compressors; Compression; Spatial Compression, Symmetrical Compressors

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## THINK Reference

THINK Reference was the first hypertext online reference for the **Toolbox**. It includes all of the reference material in the six volumes of the original **Inside Macintosh** series, as well as a large number of programming tips and other tidbits.

Both Symantec C++ and CodeWarrior support THINK Reference. Using **AppleEvents**, either **IDE** can ask THINK Reference to look up and display information, or return the prototype for any Toolbox function.

You can also interact directly with THINK Reference (see following figure). Clicking any underlined text in the window links to that entry in the database. Code samples and function prototypes can be copied to the Clipboard from any page. Although THINK Reference predates the **World Wide Web**, anyone who has spent some time using a Web browser will find THINK Reference immediately familiar.

The THINK Reference databases have not been updated since the release of System 7.0. As a result, many **APIs** introduced since then are absent, including **QuickDraw GX**, **PowerTalk**, **Drag-and-Drop**, and the **Thread Manager**. Also, THINK Reference does not include any documentation on the **Power Mac**, or the special programming considerations they entail. **Macintosh Programmer's Toolbox Assistant** is a similar reference from Apple that contains more up-to-date information.

Symantec recently sold the THINK Reference Viewer technology to Xplain

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Corporation, the publishers of MacTech magazine (<http://www.mactech.com/> ). MacTech has released a database of all past issues in THINK Reference format and is in the process of updating the viewer.

## *See Also*

API; AppleEvents; IDE; Inside Macintosh; Macintosh Programmers Toolbox Assistant; QuickDraw GX; Toolbox; World Wide Web

## Thread

Threads are subprocesses that run within a single program. In any **multitasking** system, each application is given a portion of the total processor time to do whatever it needs to do. Applications can further subdivide the time (and tasks) into individual threads of execution. Threads do not necessarily mean better performance (after all, the total amount of time the application uses is independent of whether it uses threads), but they can greatly simplify programming multiple simultaneous tasks.

A program that performs a very complex calculation, for example, normally pauses the calculation every so often to check and see if the user has canceled the operation, clicked a button, or chosen something from a menu. Using threads, the program could separate these user interface tasks from the calculation itself and run each in a separate thread, simplifying the programming complexity. The calculation thread could then be written



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without regard to the user interface, while the user interface thread could mostly ignore the calculation thread.

Programs written using threads make better use of multiple processors, as each thread can run on a separate processor. Although multiprocessor Macs have yet to appear, they are no doubt coming.

The Macintosh **Toolbox** provides a set of routines—known as the Thread Manager—to create and manage threads. The Thread Manager is built in to System 7.5 and is available as an Extension for earlier versions of System 7. Just as with multitasking as a whole, threads can be switched preemptively or cooperatively. The current implementation of the Thread Manager supports both preemptive and cooperative threads on 68K Macs, but supports only cooperative threads on Power Macs.

*See Also*

Multitasking; Toolbox

## Thread Manager

*See*

Thread

## Three by Five

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An intuitive graphical **database** from MacToolkit.

Three by Five, from MacToolkit, brings the ease of index cards to the Macintosh with the power of word processors, outliners, and databases, and the multimedia capabilities to bring your notes to life with movies and pictures.

By allowing users to view the links between sections, concepts and organizations can be quickly grasped.

MacToolkit is also able to do a text outline form and switch between that and the graphical view with just a click of the mouse. The outline form has handy tools such as **drag-and-drop** editing, and single click expansion and compression of items, making outlining a quick and easy process.

In addition, Three by Five can be used to make and use flash cards and keep track of scores, print out research notes and index cards, create storyboards and presentations, and organize everything from business plans to recipe cards.

Three by Five has drag-and-drop capabilities, and has a built in spell checker and thesaurus to speed up work time. It can also import and export to other word processors, a handy feature for work on storyboards. In addition, Three by Five can categorize cards by style, font, size, and color, and can search and sort them in seconds.

Three by Five will run on everything from a Macintosh Plus to a Power Mac, and on System 6.0.5 or higher, making it perfect for use at work or home.

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Three by Five is published by MacToolkit:

*See Also*

Database; Drag-and-Drop; Movies; Multimedia; Outlines; Pictures; Word Processor

## Three-D

*See*

Macromind Three-D

## Terminal Software

*See*

Modems/Software

## Terrazzo

Xaos Tools' Terrazzo is a Photoshop plug-in that creates symmetrically tiled graphics. Every alteration is accompanied by a real-time on-screen preview so that you know exactly what the render will look like. Terrazzo tiles can be used to create backgrounds or selected graphic fills. Tiled graphics can also serve as texture maps for 3D work, especially when mapped to a planar surface in 3D space. Terrazzo gives you a list of application options, from

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normal to light/dark, multiply, hue, saturation, color, luminosity and screen. The normal setting produces tiles, while the other settings create composited graphics that overlay the tiles in a transparent fashion on the original selection.

**Symmetries** Terrazzo uses symmetrical guides as a basis for the way the tiles are laid out. There are seventeen guides in the Terrazzo library: Gold Brick, Crab Claws, Pinwheel, Wings, Hither and Yon, Card Tricks, Honey Bees, Prickly Pear, Sunflower, Primrose Path, Spiderweb, Lightning, Storm at Sea, Winding Ways, Monkey Wrench, Whirlpool and Turnstile. All of the symmetries work in conjunction with an opacity slider that determines the transparency of the tiles that are overlaid on the graphic, and a feathering slider that sets the sharpness of their edges (0 to 100). The feathering options can be seen on-screen with an expanding rectangular area that responds to the feathering setting. Tiles settings can be saved and applied to other images later. Images used as a basis for tiles can come from libraries or be based upon the current loaded image. This gives the digital artist an infinite number of compositing options above and beyond what the present image indicates.

**Tiles and Composites** Terrazzo applies the tiled symmetries to the image in various modes. Normal mode applies the tile as an overlay, concentrating on the image selection alone. Other mode choices create more composited looks: light, dark, hue, saturation, color, luminosity, multiply, and screen. As a compositing tool, terrazzo can be used in place of other dedicated compositing software, or even as a compositing utility to the compositing capabilities of

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Photoshop itself. As long as a graphic is a PICT file, it can be loaded in and composited over the existing on-screen image. Terrazzo does not work well in a multitasking environment, preferring to have its tasks completed before other programs are accessed.

## Terrell, Paul

*See*

Byte Shop, the

## Tetris

*See*

Tetris Gold

## Tetris Gold

Tetris is considered by many to be the ultimate puzzle or brain game. This CD from Spectrum Holobyte contains the original Tetris, as well as five sequels. The original Tetris consists of different sets of four squares that drop from the top of the screen. You shift the set so that you get a straight line across the bottom of the screen. Each time a line is complete, it disappears. Each round goes faster. This may sound like a cakewalk but Tetris is not so easy.

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Welltris is a more difficult Tetris game in which you watch the sets drop down a two dimensional well.

Faces requires you to place faces together from different facial features and is a bit boring and Wordtris adds letters to the traditional blocks which don't disappear unless you can spell a word. Super Tetris adds bombs to the mix, similar to the those in **BreakThru** . Not all the Tetris games are worth checking out and if you are a complete beginner, non-fanatic type, getting Super Tetris or the original on its own is probably your best bet. But for the price, this is a great way to try out a few brain games.

### *See Also*

BreakThru; Puzzle Games; Troubled Souls; Zoop

## Text Control Panel

This **control panel** offers two choices: Script, which lets you write from left to right like English or right to left like a number of foreign languages, and Behavior, which lets you select a different character set for different countries. French, for example, would have a different character set than English.

To use the Text Control Panel, follow these steps:

1. Select Text from the Control Panels submenu in the Apple menu (or System Folder).

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2. Select the appropriate Script and Behavior for your language from the pull-down menus. Close the control panel when your selections are complete.

## *See Also*

Close; Control Panel; Pull-Down Menu

## Text, Centering

Text may be automatically centered on the line by selecting CENTER as an alignment option. This may be done from the toolbar in a word processor or desktop publishing program that uses one, or may be done from the Format menu, or from the Format paragraph dialog box, as shown in figure C-2-cr. If you are centering text, be sure that it's not also indented. Indenting will throw the line off-center, as will extra spaces after a line.

Centered text is good for headlines and posters, but not for business letters.

## Text, Selecting

To select text for editing, move the **I-beam cursor** to either end of the word(s) you want to select, and drag the cursor over it while pressing the **mouse button** . Or, place the cursor within a single word and double-click to select that word. To select a graphic, click it. Some word processors have additional text-selection shortcuts. In **Word 6** , for example, clicking at the

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left margin of a line of type selects the whole line. You can also select an entire document in Word 6 by triple-clicking it.

*See Also*

Word Processing

## Texture Mapping

Texture mapping is the application a graphic, such as a **PICT** image, to the surface of a three-dimensional model to create a realistic appearance. Texture mapping is often used along with **bump mapping** , a technique that creates the illusion of raised details on the surface of an object.

To create a realistic surface on a 3D model, you must take into account many different parameters. All 3D programs enable you to choose a solid color for the surface of an object. For more complicated objects, however, either texture mapping or shader algorithms are required.

The image used to create a texture map can be anything from a scanned picture of a wood plank to the logo of an airline. 3D programs usually provide controls over the type of mapping (how the surface is wrapped around the 3D object). Is it, for example, stretched to cover the shape, or copied multiple times over the surface of the object?

Texture mapping is not limited to simply applying a graphic to the surface. It is also important to be able to position the image on the object.



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**Bump mapping** uses a graphic to create the illusion of a raised surface, usually with just a black-and-white image. The darker or the lighter areas of the graphic represent the higher and lower portions of the surface. While not useful for creating major modeling effects, bump mapping makes it possible to add little details that otherwise would be tedious to create with the **modeler**—for example, raised rivets on a spaceship.

**Reflection** defines the reflectivity of a surface, while **transparency** is used to define the transparency of an object. Some programs let you apply a **reflection map**—this is an image that appears reflected in the object. This can save modeling a background that you want reflected in a mirror or similar effect.

One significant advantage of texture mapping is that you are not limited by software. Using a scanner or a paint program, you can create custom surfaces for any object you imagine.

A feature offered by some programs is **animated texture mapping**. This applies a **QuickTime** movie or a sequence of still images to a surface as the object is rendered in an animated sequence. Use this to create effects, such as a television program on the screen of a 3D model of a TV set.

## **See Also**

3D; Bump Mapping; Rendering; Shaders

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## TextureMaker

Adobe TextureMaker creates textures by combining layers of transparent pictures, procedural “materials”, bump maps, overlaid texture and Lighting. Because of the way that TextureMaker works, it can be used to generate composited graphics as well as textures. Each layer contains only one element, either lighting, an edge choice, a material, or a picture. The user can add more materials or pictures to the sandwich at any time. All of the layered elements are user configurable. There is also a separate control that allow you to set a definable edge around the finished rendered graphic, especially geared to those users who need to create buttons for Web pages or beveled edged pictures for digital slide shows. As each parameter of TextureMaker is altered, a quick preview of the rendered results can be generated. The interface is designed with intuitive visual buttons and controls, greatly enhancing the learning process. Final rendered images can be saved out as PICT files or as movies.

**Lighting** TextureMaker allows you to set the parameters of up to three lights. Color, brightness, shininess, specularity, graininess, position, intensity of shadowing and degree of reflectivity can be adjusted by sliders. Quick previews of the rendering let you adjust the lights to your needs.

**Bevels** The choices are none, very thin, thin, standard, large and pyramid. each (except for “none”) adds an appropriate edge around the rendered image.

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**Overlaid texture** This acts like a “paper” texture applied in a paint program, in that it effects the apparent graininess of the image. The choices are no bumps, waves, ripples, wrinkles, bumps, dents and bump map. The bump map choice allows you to add another picture (preferably a 256 grayscale image) as a texture. All of these choices have user configurable settings.

**Materials Choices** These include: solid color, clouds, marble, wood, checkers, spots, agate, granite, gradient, picture and filter (lighten, darken, blur, add noise). If “picture” is chosen, you can add your own graphic from your personal library of images, but only if the image is in the PICT format.

**Movies** The software will generate a movie file from your finished image, but it can be configured only according to a set list of possibilities. These include moving waves, push through, pan down, evolve, swaying lights and rising bumps. Rendered previews of these animation effects are included. You can set the duration of the movie yourself.

## TextureScape 2.0

The version 2.0 edition of this software offers the user a number of advances over the first release. Major advances include the capability to utilize the full set of bezier drawing tools now residing in TextureScape to create your own vector shape libraries. TextureScape has always been able to import shapes from programs like Freehand and Illustrator, but with the release of 2.0 you

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can create shapes without leaving the program. TextureScape uses these vector drawings as a foundation from which textures are created. Version 2 also includes a full set of “combine” modes, so shapes can be added together, and now can also be subtracted, multiplied, and combined in several other ways. This results in even more shape variability in the final rendered textures.

A full featured visual texture browser has been added, letting you see all of the rendered textures in a library. Any texture can be clicked on while in TextureScape, and it will appear with all layers and data intact on the editing screen. This means that you can use any stored texture as a basis for creating limitless variations. To give your textures a reflective property, this version allows you to configure up to four colored lights, each of which can add a directional hi-light to the rendering. CMYK output is also supported for Desktop Publishing use.

The most novel addition in version 2 is the ability to drag and drop textures between any applications that support the drag-and-drop process. This is especially geared towards users who use 3D software, like Specular’s flagship product, Infini-D. With both TextureScape and Infini-D open, you can take a rendered TextureScape texture and drag it onto a 3D object in Infini-D. Almost instantaneously, the 3D object is wrapped in the new texture. This process can save a 3D artist and animator a lot of time and expense. In essence, this makes TextureScape a texture library utility to all of the 3D software that supports drag-and-drop (Infini-D, RayDream Studio, and Strata Studio Pro to name a few).

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**TextureScape Tools and what they do** The basic TextureScape process involves using a vector shape or drawing to generate a pixelated or raster image. Evenly tiled surfaces are created when the shape is simply repeated a number of times across the image, but very organic textures can be created when the shape is varied as it writes to the picture. TextureScape contains a good many tools used to vary the repetition of the original vector shape. Vector shapes are used as the basis for the texture because they are free of the dreaded “jaggies”, as vector shapes are not really drawings at all, but directions to the computer that tell it what direction lines that make up the shape are headed in. Pixelated or raster images, on the other hand, are directions to the computer that tell it exactly what color each squarish pixel on the screen is to be. That’s why raster images, if you zoom closely enough, evidence some degree of jaggedness. No matter how large or how small you make a vector shape, it never shows any jagged edges. That’s why when a vector shape is used as the basis for constructing a raster or bitmapped shape, as is the case with TextureScape, the resulting bitmap image is a free of jaggedness as it can be. Considering that professional 3D animations often require a very close zooming in upon an object, the highest quality texture that can be wrapped on the object the better. TextureScape can generate textures to a maximum size of 4000 x 4000 pixels without any loss of resolution.

**Shapes, Bevels and Variations** TextureScape Shapes are automatically filled in from vector drawing outlines. The outlined vectors are stored in libraries within TextureScape, and you can add shapes to these libraries by

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importing them from other drawing software (Illustrator, Freehand and others) or you can use the TextureScape drawing tools to create new shapes without ever leaving the program. Once a shape is accessed, it takes on 3D attributes. The major attribute is its bevel, its depth outline. TextureScape allows you to interactively edit this bevel in a visual window. The angle and size of this bevel may be varied over the rendering with each cloned shape from 0% to 100%. Non-varied shapes produce mechanical-like renderings, while varied shapes produce more organic and less repetitive renderings. Sliders set the variability for both size and degree of beveling. The shape itself appears in outline form in a separate window, and the mouse can be used to resize and rotate it.

**Attributes Menu** The attributes addressed to each repetition of the original includes the number of horizontal repetitions, vertical repetitions, color (hue, saturation, and luminance level), matte/shiny, opaque/transparent, smooth/bumpy, convex/concave, and the degree that the edges of a shape should be “softened” as it meets another repeated shape. Although each of these is determined by specific numeric or slider settings, it is in the variability settings that TextureScape’s magic resides. Each of the mentioned attributes can be addressed by a slider with a range of 0% to 100%. A setting of 100% next to the hue control, for instance, results in the shape rendered with a randomized different hue. More variability equates to more organic looking textures.

**Lights** TextureScape includes an interactive menu for changing the XYZ direction and colorization of four lights. If the setting for “shininess” is

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turned up, each repeated shape will seem to reflect the lights.

**Layers** Users of Photoshop and other software that uses layers to composite images should be familiar with the way that TextureScape uses layers as well. Each layer in TextureScape represents a separate rendering which can have different shapes and settings. The magic is in setting degrees of transparency for each layer, so that the renderings on the layers “below” the top layer shine through and influence the final texture.

**Animated Textures** TextureScape can generate animations that transform one texture into another. Many 3D programs allow animated sequences of images to be placed on 3D objects in a scene, useful in creating watery waves, moving sky phenomena and other special effects.

A TextureScape Walkthrough: How to Create a Basic Texture:

1. Choose “new image” from the file menu, use the default size and say OK.
2. Choose a shape from the shape library.
3. Adjust the beveling of the shape.
4. Set the size and color attributes that you desire, and adjust the variability sliders next to each attribute.
5. Adjust the light directions and colors.
6. Hit the “apply” button from the Apply menu.

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7. Observe how your image renders to the screen for the preview.
8. Go to the final rendering menu, set the rendering parameters you desire, and render to a file.
9. Open up the rendered texture in Photoshop or any other 2D or 3D program of your choice.

## Theorist

For those artists with a penchant for mathematics, Waterloo Maple's Theorist software may fill an important gap. With the capacity to translate complex numbers into 3D graphics, Theorist can serve as an investigative tool that builds bridges of understanding between the two seemingly different worlds of science and art. There are a number of artists who remain determined to use mathematics as the basis of visual design. For these and others seeking to comprehend the beauty of numbers in a new way, Theorist can act as a step in the right direction. Considering that the software that generates digital terrain is based upon a number of mathematical foundations, Theorist can also serve to at least allow the artist to appreciate the deep roots of the tools that are too many times taken for granted.

It's a bit challenging to pop Theorist out of the box and immediately generate interesting graphics based on manipulating equations. Most artists have either experienced a definite mental block concerning math, or they are removed from their knowledge of it by intervening years. In either case, the



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Theorist manuals guide you back through the number maze step by step, reintroducing the algebraic necessities page by page. Without some comprehension of the mathematical equations that command Theorist graphics, there is no chance to explore the visual realms that Theorist can potentially open up.

After you get a grasp of the basics, the algorithms that function as graphics generators can be typed on Theorist "Notebook" screen. There is an alternate way of entering the equations that might be more attractive to the math-challenged user because Theorist also contains a graphic interface that allows for point-click numeric entry. You first have to have (or recall) a basic knowledge of what the parameters are for entering the data, but this can be learned fairly quickly by studying the Theorist documentation. As you click on the targeted icon in Theorist's graphic menu, the appropriate symbol area is written on-screen, waiting for you to type a letter or number in place. The more comprehensive items like tangent, cosign, and other data chunks are also represented by buttons ready to click the formulas into place. Theorist comes in Mac, Notebook, and PowerMac native versions. After a 2D or 3D graphic is rendered in Theorist, it can be exported as a PICT or EPSF graphic for importation and more detailed rendering in either Bitmap or Vector graphics software.

Someone in the computer graphics chain, whether or not it's the artist who creates the final visuals, has to have a deep knowledge of mathematics and how computer graphics algorithms (mathematical strings that translate numbers to line and color) can be tamed and utilized. Usually, this is the

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programmer, an artist in her own right. Before graphics can be created on-screen, they must be wrestled with in the mind by those who invent the tools. The artist, however, can also gain a great deal by learning to create and manipulate visual algorithms at the root level. For those whose exposure to Theorist, or whose appetite for exploration in general, yearn for understanding deeper connections between math and graphics, Waterloo Maple presents its flagship software, Maple.

Maple is an explorative mathematical programming language that can help you understand and create very complex graphics. Because Mandelbrot's discoveries of chaotic phenomena and fractal dimensions (which all scene-generating software incorporates), it has been difficult to tell where art ends and math begins. Waterloo Maple's extensive Maple software, although not as graphically interfaced as its Theorist package, gets to the root of algorithmic manipulation. Maple is probably more essential for the graphics programmer, but with a little time and effort, even the math-shy artist can begin to comprehend the tools that are at the root of computer graphics magic. Maple's documentation gently guides the novice and professional through these realms, while displaying some of the potential results in alluring full color.

## Thermal Recalibration

A process performed by **hard disk drive** mechanisms to ensure that the **disk drive head** knows where the **tracks** on the disk are located. Changes

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in temperature can change the size of the disk drive **platter** enough to affect the accuracy of positioning of the **read/write head** .

For this reason, many hard drives routinely perform a recalibration routine to check for changes in the drive. These routines are performed automatically by the software in the drive, and may happen at the same time that you are attempting to read or write to the disk drive. While this process might take only fractions of a second, it can be an issue if you are performing a **transfer-rate** -critical process such as digitizing video or **burning** a **CD-ROM** .

Hard drive manufacturers have responded to this problem by releasing AV (audio-video) drives. These drives either don't need to perform recalibration or will postpone the recalibration if the user accesses the drive. Often, these drives cost more than a similarly sized non-AV drive. Whether you need to spend the extra money for an AV drive depends upon what your needs are. Newer drives are less likely to cause a problem, particularly if you aren't pumping large amounts of information into or out of the drive. For example, digitizing video for CD-ROM (which doesn't require a very high throughput) probably won't be a problem with newer drives, but if you are attempting to digitize full-screen video, you probably need to buy a **RAID** drive or certainly an AV one.

**See Also**

Hard Disk Drive

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## Thermal Wax Printing

*See*

Printing Technology, Color

## Think C

*See*

Symantec C++

## Think Pascal

*See*

Symantec C++

## Thinkin' Things

EdMark's Thinkin' Things is a collection of logic puzzles and experiments for kids ages 7 to 13. As of this writing, there are three different sets, each with a half dozen different activities, and presumably there will be more to come. They help develop reasoning and analysis skills, memory and concentration, and listening skills. Each activity emphasizes a different kind of thinking. Kids learn Boolean logic as they fill orders at the Fripplle shop, deductive reasoning as they match the Fripplles with their houses, attributes and

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differences as they analyze a series of birds and attempt to assemble the next one in the series, and many other higher-level thinking skills with the other activities.

There's plenty of room for creativity, too. Many of the activities are "open-ended". They have no right or wrong answers, just tools to explore. Kids can construct moving art and three-dimensional illusions, program a marching band and cheerleaders through a halftime show, experiment with gravity, friction, and motion on a virtual ball field, and play with special effects and morphing on photos. Most of all, they'll be having so much fun they won't realize how much they're learning. Each activity has beginning and advanced levels and some, such as Stocktopus require many steps to achieve a goal.

In Stocktopus, the child starts with some items to trade and a goal of up to a half dozen items to trade for. Just like in the "real" world of commodities trading, the transactions can become quite complex. One nifty feature in this activity is that the characters the child trades with are all bi-lingual. Don't be surprised to have your son or daughter greet you in Chinese, Norwegian, or Swahili.

## **ThinNet (10Base-T)**

*See*

Connectivity, Ethernet Port

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## TIA

Stands for The **Internet** Adapter, an inexpensive commercial product offered by Cyberspace Development, Inc., for an **Internet Service Provider**'s UNIX Web server that allows a user of that server to run a basic shell account as if it were a more powerful **SLIP** account. A user with a **MacTCP**-based connection who dials into the Net with an Internet Service Provider has to pay only for a simple UNIX-based shell account, which normally gives you the most basic Internet access, but enables you to use **Netscape** , **Fetch** , **Anarchie** , and other TCP/IP-based software.

To find out more about TIA, go to <http://marketplace.com/>.

### *See Also*

Anarchie; Fetch; Internet Service Provider; MacTCP; Netscape; SLIP

## TidBITS

A free weekly newsletter distributed solely over computer networks on the Internet. TidBITS focuses on the Macintosh and developments in the world of electronic communications. Edited by Adam C. Engst, author of *Internet Starter Kit*. Distributed by mailing list ([listserv@ricevm1.rice.edu](mailto:listserv@ricevm1.rice.edu)), and via a home page on the World Wide Web at <http://www.tidbits.com/>.

To subscribe to the TidBITS mailing list, send email to [listserv@ricevm1.rice.edu](mailto:listserv@ricevm1.rice.edu). The contents of the message should assume a

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standard format that the **LISTSERV** will recognize:

SUBSCRIBE TIDBITS [*your full name, at least two words*]

The **LISTSERV** will return an email message confirming your subscription and providing general information about the list you have joined (it's a good idea to save this list when it comes time to unsubscribe). After you have been on a list for some time, the **LISTSERV** may ask you to confirm your subscription.

**See Also**

Internet; Internet Starter Kit; Mailing List

## Tilde Key

This key inserts a foreign language accent mark (`), or when pressed while holding the Shift key it inserts the foreign language tilde (~) mark. You can access letters with these foreign language accent marks already in place by using the Key Caps DA.

**See Also**

Key Caps D; Shift Key; Special Characters

## Time Base Corrector

Because **analog video** signals are often dependent upon mechanical devices

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(a VCR mechanism for example), the frames of the video aren't always displayed exactly on time. This creates timing errors (a jittery image), because the electron gun in the television tube continues scanning at the ideal rate even if the new image hasn't arrived. This becomes a real problem when mixing signals from two devices. A time base corrector, which is built into some VCRs and camcorders or can be purchased separately, acts as a frame buffer and ensures that a frame is delivered at the correct time. A frame buffer is simply memory that stores the current frame. If the next frame doesn't arrive on time, the last frame can be sent again by the Time Base Corrector. Although mostly used when editing video tape, these devices can help improve the quality of digitized sequences. For typically sized **QuickTime** movies (i.e. smaller than quarter screen; 240 x 180 or 180 x 160 pixels in size), correctors are usually unnecessary.

## *See Also*

Analog Video; Digital Video; QuickTime; Video Digitizing

## Time Code

Time code provides an accurate method for finding a frame in a video sequence. Many semi-professional video decks and cameras support some (often proprietary) form of time code, although it might not always be recognized by other devices. The most recognized and standard form of time code is **SMPTE**.



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Time code is sometimes seen burnt (or striped) into a dub of a video tape. This shows the time code numbers on-screen in the video, and enables a viewer to note sequences that are needed for editing. The time code then is used by editing equipment to specify the exact points at which an edit is to be made.

Time code is most useful when editing video or digital video sequences as a preview before editing the video tape. Time code makes it possible to find locations on a tape quickly and accurately.

If you plan to digitize and edit video on the computer and keep the material in a digital computer based format, time code becomes less important. It's good to have a playback deck that has an accurate way of finding the segments you need to digitize, but after they are digitized, **QuickTime** adds its own timing mechanism.

Time code is required when using an **EDL** (Edit Decision List) to transfer editing information from one device to another.

## ***See Also***

EDL; SMPTE; Striped; Video Editing

## **Time Saving Window Tips**

There's much more than meets the eye when it come to working within windows in the **Finder**. Apple has added a host of shortcuts that make managing and working with windows much easier. Here are some of the most

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popular:

- To close any active window (not just in the Finder), press Command-W.
- To move an inactive window without making it the active window, hold the Command key, and you can select and drag the window to a new location.
- If you're in the window of a **nested folder**, you can navigate your way backward to the **folders** your folder is nested in by holding the Command key and clicking the window's name in the title bar. A pop-up menu appears listing any windows you can jump to from that folder. If, for example, you're in the Netscape Preferences folder in your Preferences folder, which is in your **System Folder**, which is in your Hard Disk folder, and you click the name of the Netscape Preferences folder in the window's title bar, a pop-up menu appears where you can choose to jump backwards to the Preferences folder, the System Folder, or the Hard Disk folder.
- To close all open windows, press and hold the Option key and click a window's close box, or press the keyboard shortcut Command-Option-W.
- To close a window and open a folder in that window at the same time, press the Option key while double-clicking the new folder and the previous window automatically close.
- When viewing a window in a list view, you can change the method in

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which the items are sorted by clicking the name of item in the list view. If you have a window whose contents are sorted by name, for example, “Name” is underlined at the top of the window, indicating that the window is sorted by name. If you click “Size,” the window resorts by size and “Size” becomes underlined. To sort by a different view, click the word at the top of the window.

You can also change the accent color of your window by choosing the Color Control Panel. At the top of this Color window you can select the color highlighted text items appear as, and at the bottom you can select the accent color for your window from a pop-up menu of colors. After you've made your selection, close the Color Control Panel, and your choice of window accent color takes effect.

## ***See Also***

Finder; Folder; Nested Folder; System Folder

## **TimeLapse: Ancient Civilizations**

TimeLapse from GTE Interactive is slick. Like **Eastern Mind**, it presents a new twist on the **Myst**-like theme of roaming a foreign landscape, but the unique artwork is simply unbelievable. The development team for TimeLapse included a team of computer artists who used ancient artifacts as models for the 3D recreations of the lost and mythical civilizations you encounter in the game.

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In TimeLapse, you play an inter-dimensional traveler who must unlock the secret connection between cities in different time periods. The civilizations you visit are based on cultures as varied as Ancient Egypt, Mayan culture and the Anasazi civilization, (based in the southwestern United States from about 1300-1700. The best world you visit is the mythical Atlantis. Because there were no artifacts to copy or scrutinize, the artists had creative license in designing the background scenery and characters for the lost city. The images in TimeLapse are perfect right down to the computer generated shadows. Plus, game play is fun and the puzzles challenging. TimeLapse builds on the serene adventure-style of Myst and adds a new dimension in Mac gaming.

## *See Also*

7th Guest, the; Daedalus Encounter, the; Eastern Mind; Full Throttle; Hell; Myst; Return to Zork; Riddle of Master Lu, the

## Tint Screen

### *See*

Halftones

## TMON Professional

TMON Pro is a low-level **debugger** for the Macintosh that has a somewhat

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checkered past. Written in the early days of the Macintosh by Waldemar Horwat, TMON Pro rapidly gained an extensive following and was widely used among commercial developers. TMON was originally published by ICOM Simulations, Inc., a company best known for its multimedia titles. When ICOM was purchased by the media giant Viacom, TMON faded into the background. By the time the Power Macs were introduced, TMON had all but disappeared from the Mac development scene. Through a series of agreements and purchases, TMON ended up with MindVision Software, a company known for its custom development work and developer tools. TMON was reborn.

The new TMON has all the excellent features of the original, plus a slew of features designed for Power Macintosh debugging. TMON Pro can now debug PowerPC code, and it supports the new “modern” memory manager in the Power Macintosh, as well as the **mixed mode Manager** .

One of TMON’s most unique features is its ability to modify both 68K and PowerPC code on the fly using an interactive assembler. This makes it easy to directly apply patches to code during debugging and testing. The interactive assembler enables programmers to enter assembly language instructions, convert them into machine language instructions, and patch them into the existing code on the fly.

TMON also provides formatting of memory locations into the high-level structures they hold and dynamic memory watching capabilities. Using this feature, you can watch memory locations change as the program runs. Any data displayed by TMON can also be edited in place.

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TMON shares many features with **MacsBug**, including the capability to check any memory **heap** for validity and the ability to show the complete chain of subroutine calls that led the application being debugged to its current state.

TMON Pro is published by MindVision Software:

MindVision Software

840 South 30th St., Suite C

Lincoln, NE 68510

Email: [sales@mindvision.com](mailto:sales@mindvision.com)

Fax: (402) 477-1395

Phone: (402) 477-3269

Web: <http://www.mindvision.com/>

## *See Also*

Debugger; Debugging Tools; Heap; MacsBug; Mixed Mode Manager

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## *See*

Tables of Contents

# Tog

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## **See**

Tognazzini, Bruce

## **Tognazzini, Bruce**

Bruce “Tog” Tognazzini is a computer interface guru, now working for Sun Microsystems, who was Apple’s human interface evangelist.

Tog developed and published Apple’s first set of **human interface guidelines** that programmers use to keep their applications consistent and easy to use. Tog was involved in the interface design of a wide variety of Apple’s computers, applications, and System software.

Tog is best known among programmers for the columns he wrote for *Apple Direct* the predecessor to *Apple Directions*. Many of these columns are collected in his very popular book, *Tog on Interface*, in which he elucidates the Macintosh spirit and discusses the fundamental principles of the Macintosh human interface.

## **See Also**

Apple Directions; Human Interface Guidelines

## **Toolbox**

The Toolbox is a set of system routines available to programmers through the

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**MacOS Application Programming Interface** (API). The toolbox contains routines for virtually every aspect of Macintosh programming.

Related toolbox routines are categorized into *managers*. Each manager is responsible for one functionally-related group of routines. Some of the most important managers are listed in the following table.

## A Few of the Toolbox Managers

Apple Event Manager	Code Fragment Manager	Control Manager
Window Manager	Dialog Manager	Menu Manager
Drag Manager	File Manager	Event Manager
Gestalt Manager	Mixed Mode Manager	TextEdit
Sound Manager	SCSI Manager	QuickDraw
Process Manager	Resource Manager	Printing Manager

This table is just the tip of the iceberg. The Toolbox contains thousands of routines that do everything from drawing a simple line to playing a **QuickTime** movie. All but the very newest Toolbox routines are documented in the massive series of **Inside Macintosh** books. They also are documented in **THINK Reference** and the **Macintosh Programmer's Toolbox Assistant**, electronic references that enable you to search rapidly for any routine.



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You don't need to know all of the Toolbox inside-out to program the Macintosh. In fact, you can become a competent Mac programmer knowing only a few dozen routines (provided you keep *Inside Macintosh* or one of the electronic references close at hand). There are very few programmers who know more than a couple hundred of the most common routines.

## *See Also*

Application Programming Interface; Inside Macintosh; Macintosh Programmer's Toolbox Assistant; THINK Reference

## Toolbox Assistant

### *See*

Macintosh Programmers Toolbox Assistant

## Top Cat Virus

### *See*

MDEF Virus

## Touchpads

The touchpad (or the trackpad, as it is sometimes called,) is a new and innovative pointing device. Touchpads are included in all PowerBooks after

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the 100 series, such as the 500 series, 5300, and 2600 duos use this method of pointing and clicking in the place of the older trackball. The touchpad uses the principle of coupling capacitance to sense the presence of your finger. This is the same technology used in elevator buttons that you touch rather than push.

The touchpad uses capacitance sensing via a grid of conductive strips that underlie the pad. Controlling circuits emit high-frequency signals along the strips. The electrical field emanates through and above the surface of the pad. These circuits measure the change in capacitance (the electrical field produced between the strips and spaces) that is caused by running your finger over the pad. Your finger disrupts the electrical field for several of the conductive strips. A microprocessor in the touchpad calculates the center of the disturbance and tracks the movement and speed of your finger. The touchpad can detect 387 points per inch (generating measurements of very small movements). The touchpad, like the mouse, is a relative-motion device, calculating the relative location of the cursor rather than its exact location compared to the cursor on the screen. You click the screen to select by tapping on the pad's surface or by pressing buttons at the top, bottom, or side of the pad.

The touchpad provides significant advantages over the trackball:

- The touchpad has no moving parts that can break or get dirty.
- The touchpad uses less power than the trackball—a significant savings for PowerBook batteries.

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- The touchpad is lighter and smaller than the trackball, leaving more internal space in PowerBooks for other internal components.
- The proportions of the touchpad matches that of the PowerBook screen, providing a more direct correlation between the movements of your finger and the corresponding movement of the cursor across the screen.

On the other hand, many users find touchpads difficult to use. You must touch the pad with your finger, and not your fingernail. If you have an adhesive bandage on your touchpad finger, the device will not respond.

Touchpads come with software that lets you program their buttons to perform keyboard shortcuts. Some touchpads let you set the button action, cursor acceleration, and touchpad response for specific applications.

The following table provides an overview of the touchpads available for use with desktop or portable Macs.

## Touchpads for Your Mac

*Manufacturer/ Model Name*

*Features Street Price*

Hagiwara Sys-Com Point Pad

A pressure-sensitive trackpad that uses a different technology than standard pads \$99

MicroQue QuePoint II

Software loads that customize the pad for each application's requirements \$79.95

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Alps Electric GlidePoint	3-button touchpad. Software for adjusting finger-to-cursor tracking ratios. Manufactures touchpads for PowerBook 520 and 540. \$70
Touche Technologies TouchPad	Color coordinated touchpad for PowerBook users \$59.95
Cirque GlidePoint	4-button touchpad, programmable pad and buttons \$79.95

## *See Also*

Absolute Versus Relative Motion; Apple Desktop Bus; Graphics Tablets; Joysticks; Keyboards; Mice; Pen/Handwriting Devices; PowerBooks; Trackballs; Touch Screens

## Touch Screens

Touch screens function the same as **graphics tablets**, except your finger is the pen. Touch screens are useful for self-running demos (especially **HyperCard**-based demos), and public information **kiosks** that permit people to operate the computer simply by tapping buttons onscreen. Touch screens replace **keyboards** and **mice** completely in these situations or can complement them in office and home use. Almost all are **Apple Desktop Bus devices** and are completely compatible with the Mac and its applications.

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The attraction to touch screens is their directness and immediacy. In this respect, they surpass the mouse as a pointing device. The downside is that they require the user to be within arm's reach of the **CRT** screen to place a finger on the surface. The possible problems of **radiation** and **electromagnetic** fields become much greater the closer you are to the monitor or electromagnetic source. For casual, occasional use at a kiosk, this probably is not significant. For continual daily use at home or in the office, a touch screen might not be a good idea if the prospect of exposure to electromagnetic fields bothers you. Many researchers say its a non-issue. Others believe there may be cause for concern.

The following table provides an overview of the touch screen technology available for the Mac.

## Touch Screens for the Mac

<i>Manufacturer</i>	<i>Model Name</i>	<i>Features</i>	<i>Street Price</i>
Edmark	Touch Window	ADB device	\$335
Elo TouchSystems, Inc.	Elographics Touchscreen	Clear glass panel with IntelliTouch surface acoustic wave sensing—greater than 900 touch points per square inch; ADB device	\$290
Elo TouchSystems, Inc.	TouchMonitors	Factory-installed touch screens. Available in 14-, 17-, and 19-inch sizes. Use Intellitouch (surface	

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wave) or AccuTouch (resistive) technologies. Usable with a gloved or naked hand. \$970 to \$2,800 plus controller

MicroTouch Systems, Inc.

Mac 'n' Touch An overlay for monitors. Includes an ADB controller, ClearTek 1000 touch sensor, driver software N/A

## ***See Also***

Apple Desktop Bus; Graphics Tablets; Keyboards; Mice; Pen/Handwriting Devices; Trackballs; Touchpads

# Toyo

Similar in principle to the FocolTone and Pantone spot color systems, Toyo is used primarily in Japan. Offering both a printed swatchbooks and a digital one accessible through major graphics applications, the system allows designers to choose colors that can be reproduced by single inks (for best results) or converted to CMYK equivalents (usually imperfectly).

## ***See Also***

CMYK; Color Matching Systems; FocolTone; Pantone; Spot Color; TruMatch

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## Trackballs

If you do not have the desk space to move a mouse, then the trackball is the pointing device you should consider. The trackball is like an upside-down mouse. Trackballs don't require additional software to access the point-and-click functionality of a regular mouse. The trackball is a plastic ball that sits on rollers in a fixed location. You roll the ball with your fingers and press a button to select. Because of its smaller footprint, the trackball was the pointer of choice for the PowerBook 100 and 200 models. Some trackballs come with control panels and system extensions that offer programmability for the multiple buttons available on some models.

The benefit of a trackball, other than its smaller footprint, is that when using it, your hand stays in one position. If you experience shoulder pains from moving the mouse around, a trackball can provide welcome relief. On the other hand, that little bit of mouse movement exercises the arm and shoulder. Leaving the hand in one position on the trackball for extended periods of time (such as when you scroll through a series of database records during pruning and updating operations) can create ideal conditions for carpal tunnel syndrome. The best approach is to switch between mouse and trackball to provide physical relief and variety of movement. Trackballs are a convenience in many situations, particularly when you are working with graphics applications. In contrast to using a mouse, you do not run the risk of running out of mouse pad room when trying to draw lines, shapes, or edit pixels in a graphic image. Trackballs can also be programmed to select

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special key combinations.

In graphics applications, this can help automate magnifying an image or selecting a certain graphics tool before using the trackball.

## Mice and Trackballs for Your Mac

<i>Manufacturer</i>	<i>Model Name</i>	<i>Features</i>	<i>Street Price</i>
Apple	ADB Mouse II	Opto-mechanical mouse with a round housing and large single button. Comes standard with current PowerMacs, LCs, and Performas.	\$80
CH Products	Trackball Pro	ADB Simple trackball with limited programmability and functionality	\$119.95
Kensington Microware	Thinking Mouse	Macintosh ADB Four programmable buttons to automate tasks and rubberized sides for easier grasping	\$89.95
Kensington Microware	Mouse-in-a-Box	Single-button mouse	\$39.95
Kensington Microware	Mouse Dual-button	mouse	\$59.95
Kensington Microware	Turbo Mouse 5.0	Programmable buttons	



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	on the trackball for configuring keyboard commands. Versions prior to 4.0 can cause a PowerMac to crash. \$109.95
Logitech	MouseMan Opto-mechanical mouse curved to fit the contours of the hand. Right- and left-hand versions \$129
Logitech	TrackMan Marble Optical mechanism, programmable buttons with trackball \$89.95
MicroSpeed	Mouse Deluxe Mac Multi-button, non-ergonomic mouse \$49.95
MicroSpeed	MacTrac and HyperTrac 3-button trackball with software that senses the program you are using and switches button shortcuts to accommodate N/A
Mouse Systems	A3 Mouse Optical tracking, 3-button mouse \$64.95
Mouse Systems	A3 Trackball Opto-mechanical device, Programmable trackball with 3 buttons \$49.95

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The Mace Group

MacAlly ADB mouse \$49

CoStar

Stingray Ergonomically designed to fit the hand, 2-button trackball. \$99.95

## *See Also*

Absolute Versus Relative Motion; Apple Desktop Bus; Graphics Tablets; Joysticks; Keyboards; Mice, Cordless; Mice; Pen/Handwriting Devices; PowerBook Trackballs and Trackpads; Touchpads; Touch Screens

## Tracking

Tracking adjusts the letter spacing of an entire line of type, as opposed to kerning which adjusts individual pairs of letters. Tracking is sometimes called letter spacing or character spacing. Tracking can be set as loose, expanded, normal, tight, or condensed.

## *See Also*

Kerning; Leading

## Trackpad

This control panel is used only by **PowerBooks** that have the Trackpad input device (rather than a mouse). The Trackpad was introduced with the 500 series of PowerBook Macintosh models and enables users to move the

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cursor by sliding their fingertip across a square flat pad. This pad appears on the PowerBook where the small trackball used to appear.

The Trackpad Control Panel enables PowerBook users to set preferences for the tracking of the Trackpad (how fast the Trackpad responds to their movement), and it enables the user to tell the PowerBook at which speed to interpret two clicks as a double click. This control panel is almost identical, in features and layout, to the standard **Mouse Control Panel** found on desktop Macs.

## *See Also*

Control Panel; Mouse Control Panel; PowerBook

## Trade Shops

### *See*

Service Bureaus, Trade Shops, and Desktop Publishing

## Trading Fonts

Fonts present a daily dilemma for desktop publishers. Designers' work doesn't stay where it's created—files usually have to be sent somewhere else for revisions or output. That means the fonts and graphics have to go along, too.

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Or do they? The fact is, trading fonts is illegal. The software license supplied with most commercial fonts allows users to install the fonts on one or more work stations within their establishments, but not to send copies of the fonts along with jobs. Despite many people's impression that it's OK to trade screen fonts, or OK to trade printer fonts, but not both, the bottom line is that service bureaus are required to buy their own copies of any fonts they need to open a document.

There's no law against trading shareware fonts (in fact, that's how they're *supposed* to be distributed), but paying shareware fees is a moral obligation. When distributing a shareware product, always include all the files that came with it.

## ***See Also***

Fonts; Shareware

## **Traditional Games**

You may feel like you are the only person in the world who doesn't want to parade around a medieval dungeon dressed up as an orc with a band of thieves looking for the Holy Grail while you dodge flying toilets, but chances are you are not. If you yearn for an old fashion board game, card game or just a brain teaser without 3D paddles and sound effects, there are plenty of **traditional games** that have made it over to the computer.

Not all of us felt the immediate need to put all of our old board games into the

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furnace and load up **Doom II** or **Myst**. We aren't all "fancy" gamers. Many companies have done a great job of switching favorite non-computer games to the computer.

The main thing missing from most computer games (although it's changing with the onset of network gaming) is playing against a partner. Though **You Don't Know Jack** from Berkeley Systems brings a much more hip variation of the board game Trivial Pursuit to the screen and can handle multiple players smoothly, most computer games do not. Games like **Return to Zork** and **Rebel Assault** are great fun, but you can't sit around the screen with friends the way you do with Monopoly or Pictionary.

Consequently, a lot of attempts to bring board games to the screen don't really add up to much. Often the screen is small or the element of timing is skewed by having too many fingers at the keyboard.

**TIP** Many of the better "traditional games" are shareware. Look for variations of Yahtzee, Othello, VideoPoker, MilleBornes, Bridge, Gin Rummy, and the like in shareware collections or online game libraries.

**Card games** range in complexity from the standard solitaire game that probably shipped with your Mac, to the 3D complexity of the forthcoming Perfect Partner series from Canadian company Positronic. Most crossword and word-puzzle games add digital elements of help—online tips, freebies such as free words you can drop into a crossword and the ability to make your own puzzles, but the overall game is the same as any newspaper puzzle.

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Crossword Wizard from Cogix and Take-A-Break! Crosswords from Dynamix are among the best of the bunch but if you are into the idea of solving crosswords on your computer, even on a PowerBook, any of the titles available will most likely suit you.

## *See Also*

Classic Collection; Chess; Sports Games; You Don't Know Jack

## Training

### *See*

Desktop Publishing Training

## Transferring Files on Internet

### *See*

FTP

## Transition (Video Editing)

In video editing, a transition is an effect applied when jumping from one clip to another. Common effects are wipes and dissolves. During the transition, the second clip becomes visible through or over the first clip. This requires overlapping the end of the first clip and the beginning of the

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second clip to create the transition effect.

For example, if you have two clips that are four seconds long , and create a one-second transition, then the final movie will contain three seconds of video from the first clip, one second of transition (from both clips) and three seconds from the second clip. The resulting segment will be seven seconds long. If, however, a simple cut had been employed, the resulting segment would be eight seconds long.

Note that during the transition the audio also overlaps (see preceding figure), and must either be merged or cut in some way

*See Also*

Cut; Jump Cut; L-Cut; Premiere; VideoShop

## Transitional Typefaces

*See*

Typeface Categories

## Translating Files

*See*

Converting and Translating Files

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## Transmission Media

Transmission media is the physical cable that connects each workstation or computer to the others. The transmission media is responsible for distributing the messages between each computer on the network. It serves the same function in relation to the network that your spinal cord and nervous system does to get the signal from your brain to wiggle your toes. Unlike the human body, though, the network can run on several different kinds of cables. If you could replace a spinal cord with a piece of an artery, or a ligament, you'd have the same kind of interchangeability that network designers have in the choice of transmission media.

Note that these types of media are technically independent of the network protocols and data links in use. However in practical terms, the data link in use specifies the types of transmission media that are supported.

**Twisted Pair** Twisted Pair wiring is an inexpensive and reliable means of connecting computers. Twisted pair is by far the most commonly used network transmission media. Ethernet, LocalTalk and Token Ring all support the use of Twisted Pair cabling. However, each data link kind requires slightly different wiring and different connectors.

The two major types of Twisted Pair wiring are shielded and unshielded. Shielded twisted pair cabling has a metal shield within the cable to protect the network signals from outside interference. The LocalTalk and Token Ring data link protocols support shielded twisted pair cabling.



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**LocalTalk over Shielded Twisted Pair** Apple's original Locking LocalTalk connectors were designed to use Shielded twisted pair cabling. However, due to the expense of purchasing and installing this type of wiring, it is fairly uncommon for LocalTalk networks. (Even Apple headquarters has switched to the less expensive Farallon system described below.) The LocalTalk cabling system connected to the Mac's Printer (serial) port and to the appropriate LocalTalk port on other devices.

**Token Ring over Shielded Twisted Pair** Token ring connections are fairly commonly used over shielded twisted pair as this is the "Type 1" cabling specified by IBM for use in most microcomputer networks.

**Unshielded Twisted Pair** Unshielded Twisted Pair (UTP) cabling makes use of regular twists within the cable to block outside interference. The frequency of the twists determines the level of interference that the cabling is protected from, and is rated accordingly as Category 1-5. UTP of category 3 through 5 are suitable for Ethernet, Token Ring and LocalTalk.

The major drawback of unshielded twisted pair is that the signals are not well protected from electromagnetic interference or physical damage. Therefore, UTP serves well in an office environment, but may not be appropriate for industrial or long-distance outdoor applications. The shielded cable above is a better choice in an electrically noisy environment.

**LocalTalk over Unshielded Twisted Pair** This method of connecting Macs to LocalTalk was developed by Farallon and is called PhoneNet. Farallon's PhoneNet connectors use ordinary telephone cable and standard

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RJ-11 jacks and plugs. The incredible popularity of this type of networking stems from the relatively low cost and easy availability. The PhoneNet connection boxes can be had for as little as \$10 each, and the wire, connectors, and the special crimping tool to apply them can all be purchased at Radio Shack or a well-equipped hardware store. Though it's quickly becoming replaced with UTP Ethernet, this type of network will be found *somewhere* at nearly all Mac network installations.

**EtherNet over Unshielded Twisted Pair** EtherNet is now very commonly run over unshielded twisted pair wiring. Ethernet requires slightly higher quality cabling than some telephone wire provides, so it's not always possible to use existing telephone wires. Ethernet running over UTP is referred to as 10Base-T. 10Base-T Transceivers make use of an RJ-45 Connector to attach the cable to the transceiver. It is critical to always use cabling of at least Category 3, or you will not get satisfactory results.

**Thin Coaxial** Thin coaxial cable is similar to the cabling used to connect cable television, but be careful! It's not quite the same... and the two types are not interchangeable! Token Ring and LocalTalk do not provide support for this type of connection, but it is supported and fairly commonly used by Ethernet. A thin coaxial Ethernet network is generally referred to as Thin Ethernet or ThinNet. A ThinNet transceiver is required for each EtherNet node. They attach to the cable with BNC twist connectors.

**Thick Coaxial** Thick coaxial cable is not supported by LocalTalk or by Token Ring, but as with thin coaxial, only by Ethernet. Thick Coaxial Ethernet and is

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referred to as Thick ethernet or ThickNet. It offers much better shielding from electronic interference, and can provide long distance connections. Unfortunately, it's also quite unwieldy and expensive to install. This type of cable is now used less frequently as Fiber Optic cabling can provide many of the same advantages at a lower cost. When used, it generally serves as the "backbone" for a network, and may also be used in applications that require the cable to go outdoors from one building to another or to stand up under other "tough use" conditions.

**Fiber-Optic** Fiber optic cabling sends its messages using pulses of light instead of by electromagnetic signals. Because of its form of transmission, Fiber-Optic cabling is immune to electromagnetic interference and can be used over quite long distances, making it an ideal media for network connections between multiple buildings. Fiber-Optic cabling is also called FDDI, for Fiber Distributed Data Interface. These initials actually represent an ANSO/ISO standard for networks. FDDI has a bandwidth data throughput rate of 100Mbps, ten times faster than 10Base-T EtherNet, and equal to the new 100Base-T EtherNet networks recently introduced. Fiber Optic Ethernet cabling is quickly becoming common on Macintosh networks, and is referred to as 10Base-F.

Fiber-Optic cabling is only now starting to become commonplace in microcomputer networking. With recent increases in the cost of high quality category 5 unshielded twisted pair cabling, Fiber Optic cabling no longer carries the huge price penalty it was once associated with, though it remains more difficult to install than UTP. However, FDDI requires plug-in cards, as

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EtherNet does, but the cost is higher, a bit over \$1000. per card.

## Transparent Images

Transparent images are graphics that have an invisible background and appear to be “floating” on a **World Wide Web** page .

Transparent images are a variant of the CompuServe **GIF** format that is recognized by virtually all Web browsers. This special type of GIF file, called **GIF 89** , allows one color in its palette (color number 89) to be rendered as “transparent.”

A useful and popular freeware utility for converting GIF images to GIF89s is called Transparency, by Aaron Giles. Keep in mind that the best images to convert are icons or other line art because the images can be discerned clearly from the backgrounds. Also keep in mind that some **Web browser** s may not yet display transparent images.

To use Transparency, first set up your image in GIF format. Transparency doesn't allow you to retouch your image—you must remove the background or other area in an image-editing program, and replace the area in question with a solid color not used in the part of the image you wish to display. (In most cases the software you use to scan an image will allow you to edit it.) Then:

1. Save your image as a GIF.

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2. Open the image with Transparency by dragging the document's icon onto the Transparency icon. Your image will appear in transparency's window.
3. Click the color you wish to make transparent, and hold down the mouse button. A palette that contains all the colors in your GIF image appears under your cursor, and the color that you have clicked is selected. Release the mouse button.
4. Be sure to choose "Save as GIF 89..." from the "File" menu when you are through.

Transparency is available at:

<ftp://ftp.med.cornell.edu/pub/aarong/transparency/>.

**See Also**

GIF89; Web Browser; World Wide Web Page

## Transporting Files

Though it's a major concern for desktop publishers, anyone who trades files with other users who aren't on the same LAN needs to consider the best way to accomplish the transfer.

The most obvious way to get a file to another computer is to copy it to a floppy disk. Macs can read and write to PC-formatted disks, as well as to Mac-

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formatted ones, so for small files (1.2 MB or less), this is the fastest solution. Larger files can be **compressed** and segmented into sections that will each fit on one floppy. When the file is decompressed, the pieces are rejoined.

The larger the files get, however, the less convenient floppy disks are. That's the time to turn to removable storage media like SyQuest, Bernoulli, magneto-optical, and other disk formats. While tape formats like DAT are useful for archiving, they're generally considered too slow to use for file transfer.

The first thing to consider in choosing a media format is compatibility. Which formats does the file's recipient use? It's no use sending a pile of Bernoullis if your service bureau only uses SyQuests. Make sure you inquire about disk capacity, too—some media come in more than one capacity, such as SyQuest disks, which are available in 44, 88, 200, 270, and 540 MB sizes.

While service bureaus make it a point to accept as many formats as they can, SyQuest technology has been a standard with them for years. Newer formats will probably drive it out eventually, but it's still the best way to make sure almost anyone will be able to read your disk.

The next point to look at is reliability. This isn't nearly as much of a problem as it was just a few years ago, when removable drives often failed and had to be reformatted or thrown away. Newer technology has made all these formats much more reliable. To assess differences in this area, look at the manufacturers' data on mean time between failures.

Cost is another thing that's changed a lot in the last year or two. The cost of

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smaller-capacity media constantly falls as manufacturers come up with ways to make larger-capacity disks—44 MB SyQuest disks cost half what they did just a few years ago. Disks for newer formats (SyQuest EZ135, Zip, Jaz, and others) are much cheaper than those for older formats (Bernoulli and SyQuest)—a 100 MB Zip cartridge costs about \$20, compared to \$50 for a 44 MB SyQuest cartridge.

If both parties have modems, a direct modem connection is another way to get files where they're going. It can certainly run up those phone bills, though, and “noise” on the phone lines can corrupt an entire file, so that it has to be resent.

The latest—and often quickest—way to transfer files is via the **Internet**, using **FTP** or **email**.

## *See Also*

Email; File Compression; FTP

# Trapping

Trapping is the process of adjusting printed elements of different colors so they slightly overlap each other, preventing gaps caused by press misregistration. DTP programs such as **PageMaker 6** and **Quark Xpress** will trap automatically.

## *See Also*

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Color Separations; Color Trapping; Printing Methods, Digital; Printing Methods, Traditional; Process Color; Register; Spot Color

## Trash

When you want to permanently **delete** a file from your **hard drive**, drag it into the **Trash**. The Trash is an **icon** of a **trash can** on your **desktop**, as shown in the figure. When an item is placed in the Trash, the icon changes to a bulging trash can to let you know the Trash is not empty. The Trash acts as a holding area for items you want to delete. The items are not deleted until you go the **Special menu** and choose **Empty Trash**. Selecting Empty Trash deletes any items in the Trash, and returns the regular trash can icon, letting you know the Trash has been emptied.

If you place an item in the Trash and then decide you don't want to delete it, **double-click** the trash can to open the Trash. **Drag** the item out of the trash, or choose **Put Away** from the **File menu**, to return the item to its original location. This is possible only while the item is in the Trash. Once you choose Empty Trash, the item is deleted and cannot be retrieved.

An alert **dialog box** appears when you choose Empty Trash warning you that you are about to permanently delete files in the Trash. It also tells you how many items you're about to delete and their combined file size. If you click OK, the files are permanently deleted. If you do not want this alert dialog box to appear every time you empty the Trash, you can disable this



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alert by clicking the trash can and selecting **Get Info** from the **File menu** . When the Get Info window opens, click the "Warn before emptying" **check box** to deselect this option. Close the Get Info window.

To delete a file using the Trash, follow these steps:

1. Drag the file(s) you want to delete into the trash can on your desktop.
2. Choose Empty Trash from the Special menu.
3. When the alert box appears asking you whether you want to delete the items in the Trash, click OK.

## *See Also*

Check Box; Delete; Desktop; Dialog Box; Empty Trash; File Menu; Get Info; Hard Drive; Icon; Put Away; Special Menu

## Trash Tips

If you choose **Empty Trash** (from the Special menu) to permanently delete files in the trash can and you get the **alert box** that says, "The **Trash** cannot be emptied because it contains items that are locked," you can still have those items removed. Before we look at getting around the locked item dilemma, it should be noted that files are locked to keep you from accidentally deleting them. Make sure you really want to delete a file before you work your way around this preventative measure.

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The quickest way to delete a **locked file** is to hold the Option key and choose Empty Trash again. This deletes the file. The second method is slower, but by being slower, it gives you another chance to make certain that you really want to permanently delete the locked file. Double-click the trash can, select the locked file, and choose Get Info (Command-I) from the File menu. This displays the Get Info window, and in the lower-left corner of this window is a checkbox marked "Locked." To unlock the file, click the checkbox. Close the Get Info box and choose Empty Trash to delete the file.

In System 7 and higher, a dialog box comes up each time you go to empty the trash telling you how many items are in the Trash, how much space they occupy, and asking you if you're sure you want to delete these items. This dialog box tends to get annoying after a while, and many users elect to have the dialog box disabled. You can do this by clicking the trash can and choosing Get Info (Command-I) from the File menu. At the bottom of the Get Info window is a checkbox called "Warn before emptying." Uncheck this box to disable the warning dialog box.

Another popular tip that many System 7 users do is keep the Trash window open at all times and drag it across the bottom of the desktop to make it easier to put items in the Trash (as the Trash icon itself is rather small). This enables them to see what is in the Trash at any given time.

If you have an item in the Trash and decide you don't want to delete it, you can have put the item back in its original location by selecting the file in the Trash you don't want to delete and choosing Put Away (Command-Y) from the

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File menu. This returns your file to its original location.

You can also use the Trash for ejecting disks. If you have a disk mounted on the desktop and you want to eject it, drag the disk into the trash can and it is ejected. This dragging a disk to the trash can tip is a bit disconcerting to many new Mac users because the trash can is used for deleting files. It would only stand to reason that if you dragged a disk into the trash it would erase the files on the disk, right? Wrong. This only ejects the disk and leaves the contents of the disk as is. But if this method still makes you nervous, you can always select the disk and choose Put Away (Command-I) from the File menu or Eject Disk (Command-E) from the Special menu, and the disk ejects without you getting near the trash can.

Another popular trash can trick is to make aliases of the trash can and put them anywhere you want. You can put aliases in different locations on your desktop, in folders where you frequently delete a lot of files, even in your Apple menu. Although you can't put files into the Trash on the Apple menu, you can choose the Trash from the Apple menu to see the contents of the trash.

### *See Also*

Alert Box; Empty Trash; Locked Files; Trash

## Tree Professional

Even if you learn slowly, it will take you no more than half an hour to come

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close to mastering this software—a real tribute to its ease of use and clear interface design. Tree Professional is all that you ever wanted in a digital foliage generator. The CD-ROM that accompanies the software is loaded with libraries of American and Japanese tree parameters, ready to load into Tree Professional and open to infinite tweaking. The library of American trees is segmented into Broadleaves, Bushes, Conifers, Cute trees and Palms. Each can be appreciated in the preview window before loading. Tree Professional saves out the parameters, PICT renderings, or DXF 3D object files. Be careful when it comes to DXFs though. A standard tree with all of its leaves displayed can result in a DXF file of over ten megs quite easily. Make sure you have enough RAM to render larger DXF files. A helpful series of buttons in the save dialog box has been added so that you can count the polygons in a specific DXF save, and see exactly how many megs the file will consume. You can also reduce the percentage of leaves (the main culprit) in the same save dialog in an attempt to reduce the file size.

**Tweaking Nature** There are four icons representing Trunk and Boughs, Branches and Twigs, Trunk size and color, and broadleaves/conifers/palms. All have a list of items that are adjustable via an on-screen sliders as follows:

**Trunk and Boughs:** Random Seed, Trunk Height, Bottom height, Crown Center, Bough Length Change, Bough Angle, Angle Change, Bough Curving, Bough Density, and Bough Twist.

**Branches and Twigs:** Random Seed, Branch length, Length Change, Branch Angle, Angle Change, Branch Curving, Branch Density, Twig Length, Twig

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Angle, Twig Curving, Twig Density, and Phyllotaxy. Phyllotaxy has to do with determining the group that various branches fall under, and like a biologist you can set various conditions to change the leaf shapes.

Trunk Size and Color: Random Seed, Trunk and Branch Width, and Color.

Broadleaves: Random Seed, Leaf Type, Leaf Density, Stem length, Stem Angle, Stem Curving, Phyllotaxy, and Color.

Conifers: Random Seed, Needle Length, Needle Angle, Needle Curving, Needle Density, and Color.

Palms: Random Seed, leaf Type, Leaf Length, Leaf Angle, Leaf Twist, Leaf Curving, Leaf Density, Petiole Length, Color.

Tree Professional is a superlative piece of digital bioengineering software, having uses for professional design and animation as well as dedicated classroom use. It's as easy to creat fantasy flora as it is the real-world kind. Pink leaves? Why not...

## Tristan

*See*

3-D Ultra Pinball

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## Trivia Games

*See*

You Don't Know Jack

## Trojan Horse

*See*

Virus

## Troubled Souls

Troubled Souls is a wonderful game. The premise, like all brain games, is simple, but puzzle games are never quite as easy as they sound. Various skeletal parts connected to pipes are dropped into a tube. Your job is to assemble them into whole shapes on-screen before the tube fills up to the top and you lose one of your three lives.

As the levels progress, the screen space you have to build your shapes becomes more and more limited. Plus, as the pipes gradually begin to incorporate different features, hands, skulls, eyeballs, and so on, you can only connect like to like pipes (hands to hands, eyes to eyes). a big bonus of Troubled Souls is the majestic background music. The eerie soundtrack provides a calming ambiance for playing the game, unlike most arcade and

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puzzle games where you end up switching the annoying music off.

## **See Also**

BreakThru; Tetris Gold; Puzzle Games; Zoop

## **Troubleshooting the MacOS**

Sometimes computers don't perform exactly as we'd like. While it's easy to get frazzled when computers start to head off on their own track, through careful evaluation you can usually get your machine back on course fairly quickly. Your overall goal in troubleshooting is to find the difference between (a) what you want the computer to do, (b) what the computer thinks it's doing, and what the computer is actually doing. To succeed in this task, you've got to think like a computer (Yes, it *does* think.).

**Defining The Error Type** Microcomputer troubleshooting can be as much art as science. Over time, you'll master the techniques presented here, and develop your own "sixth sense" of what's most likely to be causing the errors you run across. But no matter how experienced you become, you should always begin each troubleshooting session with a few basic questions.

1. When did you first notice the problem?
2. What exactly did you notice? Sound? Display abnormalities? Odors? Incorrect data?
3. Did this problem gradually begin to display itself, or did it suddenly

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appear?

4. Have you ever had this problem before? If so, how did you solve it?
5. Are you trying something new, or is this something *that used to work*? Is it possible that this has been broken all along and you just haven't used it till now?

These questions will give you a head start in determining the type of error you are dealing with.

**User Errors** Before assuming that your computer is misbehaving, you have to rule out a user error. This type of error occurs when the commands that you're using mean something different to the computer than they do to you. From the computer's point of view, nothing's wrong here — it did what you told it to do, which it assumes is what you wanted it to do. Check for user errors first. They're usually the quickest to rule out.

Errors of this type are nobody's fault — they usually result from a difference in opinion in how a program SHOULD work. Unfortunately, it's quite possible that the steps to accomplish what you want don't make much sense! To get the computer to do your bidding, you have to think about your tasks the way the programmer did; the computer only has as much knowledge as the programmer gave it — it simply can't make the assumptions most people do.

If you think communication with the program may be the problem, take a moment to identify your assumptions. It may be logical, and “Mac-like” for a program to give more detail about something when you double click on it, but



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just because it doesn't, you can't assume that your mouse is broken!

Finally, look up the commands in question in the manual. See if the manual states that the commands you're using should give the results you want. If this doesn't help, check a few related topics in the manual's index to see if there's another way to accomplish what you want. Sometimes the manuals included with software aren't very helpful. If the manual doesn't answer your questions, check a local bookstore for a book on the subject.

Next, ask other users with a similar setup. Other users may have encountered the situation and found ways around the program's limitations and intricacies. If others have been successful with a similar setup to yours, try to identify what's different between your system and theirs, as this may be what's causing your problem.

A great source of this information is found on-line. If you have an account on an on-line service such as America Online or CompuServe, try checking forums to see if other users have posted messages detailing similar problems. See if the vendor has a question and answer section or a tech support section in their forum. If you have access to the World Wide Web, check the vendor's web page (you can always try the address <http://www.companyname.com>) and see if they have a tech support area. You can also read Mac Usenet newsgroups to see what kind of help is offered there.

Finally, contact the manufacturer of the product — software authors use feedback from users to customize the interface and for ideas about new features. Before you call, check your manuals to see if the company charges

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for support. If they do, try the other methods again.

*See Also*

Repairing Your Mac

## TruMatch

A color system similar to Pantone, Toyo, and FocolTone, TruMatch has one big difference—it's based on the four process colors, rather than spot color inks.

Available as a printed swatchbook and in digital form supported by major graphics applications, TruMatch is useful for “spot” colors that will be printed using a four-color (CMYK) printing process. Rather than choosing colors based on, for example, the Pantone system, which will be imperfectly represented when printed using CMYK inks rather than Pantone inks, TruMatch allows designers to choose colors that can be perfectly reproduced by CMYK inks.

*See Also*

CMYK; Color Matching Systems; FocolTone; Pantone; Spot Color; Toyo

## TrueType

Introduced by Apple in 1991, the TrueType format is an **outline font** format that competes with **PostScript Type 1**. Like PostScript fonts, TrueType fonts

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print accurately at any size; unlike PostScript fonts, you don't need **Adobe Type Manager** to make TrueType fonts look good on screen.

TrueType fonts come in one piece, a suitcase file, so they're easier to install and keep track of than PostScript fonts. Macs running System 7 and above can use TrueType fonts; System 6.0.5 and above will recognize them with the addition of the TrueType extension.

TrueType is a popular font format among Mac home and business users, although desktop publishers generally prefer PostScript Type 1 fonts. TrueType fonts are very popular in the PC world. Most commercial fonts and many shareware ones are available in both PostScript and TrueType formats; Adobe's fonts are an exception, because Adobe created the PostScript technology.

## *See Also*

Adobe Type Manager; Font Formats; Fonts; Outline Fonts; Type 1 Fonts

## **Tune Up Extension (System 7 Tuner)**

The **System 7 Tune Up** consists of a Tune-Up disk that is a bug-fixer and provides performance enhancement for System 7 and **System 7.01** in a number of areas including: enhanced **printing** performance, faster copying of files at the **Finder** level, and **memory** management improvements.

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## *See Also*

Finder; Memory; Printing; System 7; System 7.0.1

## Tuner Extension

The Tuner extension is part of Apple's free System tune-up for **System 7**. The Tuner extension was designed to improve the way System 7 was handling **memory**, in particular how it addressed a problem causing a significant number of **out-of-memory messages**.

## *See Also*

Memory; Out-Of-Memory Message; System 7

## Tunneling

A networking trick known as tunneling that enables you to send a data packet in a particular networking protocol, such as AppleTalk, across a network that doesn't support it.

In effect, it hides the packet inside one of the "right" kind until it reaches a gateway where it can shed its disguise and go on its way. Here's how it works. Suppose you had to deliver a package to someone in the town of West Gerbilton. You live in East Gerbilton. The only way to get there is to travel through Center Gerbilton. But it is an unfriendly town to strangers. If they don't think you belong, they'll refuse to let you through, and throw your

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package away. So, you disguise yourself in a Center Gerbilton High jacket and cap, and tuck the package into the jacket. Then, you ride through town waving happily at everyone you see. Thinking they know you, they wave back and let you pass through. When you enter West Gerbilton, you take off the jacket and cap and deliver the package.

This scenario can be directly applied to networking as well. The process of placing one transport protocol inside another is called protocol encapsulation or tunneling. Tunneling AppleTalk inside of another protocol, such as TCP/IP or DECnet, might be necessary or desirable for several reasons.

One reason could be that an organization's wide-area network only supports a certain protocol. This has been fairly common in the past because a number of routers have only supported a single protocol. For example, many companies that have extensive wide-area DECnet networks interconnect them with DECnet-specific routers. For these companies to be able to offer AppleTalk services over the network, they would have to scrap all their existing DECnet routers and replace them with multiprotocol AppleTalk/DECnet routers.

Alternatively, they can tunnel AppleTalk protocols inside the DECnet protocol. In this case, an AppleTalk datagram (a packet of data plus its address) that is directed to a distant network is wrapped inside a DECnet packet by a special device and routed over the wide-area DECnet network to another special device, where the AppleTalk datagram is then extracted from

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its DECnet encapsulation and then passed along using AppleTalk protocols to its final destination.

In the case of AppleTalk/DECnet tunneling, the special device happens to be a DEC VAX that's running the AppleTalk for VMS and DECnet protocols simultaneously. The AppleTalk for VMS software establishes a connection with the DECnet software and performs the encapsulation and decapsulation of the AppleTalk datagrams.

## TurboGopher

A client for navigating **Gopher servers** on the **Internet**. Like Gopher itself, TurboGopher was developed at the University of Minnesota.

Although most users access Gopherspace via a World Wide Web browser, TurboGopher still has some advantages, such as its speed (especially over slow modems using **PPP** or **SLIP**) and its multi-window format. TurboGopher's other features include:

- A bookmarks function.
- Support for the Gopher+ extensions (these permit alternative ways of viewing a Gopher object, among other things).
- Capability to download a file while you continue to browse.
- Capability to connect to **FTP** and **Archie** sites.

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Follow these steps to download and begin using TurboGopher:

1. Download the software from  
`gopher://boombox.micro.umn.edu/11/gopher/Macintosh-TurboGopher.`
2. TurboGopher 2.0 requires the **Thread Manager** extension that comes with System 7.5. If you not have System 7.5, copy the Thread Manager extension that comes with TurboGopher into your Extensions folder and restart your computer.
3. Double-click the TurboGopher icon to launch the program.
4. TurboGopher is comes configured to connect to the Home Gopher Server at the University of Minnesota. You will see a window for the Home Gopher Server as well as a window for your Bookmark Worksheet and TurboGopher Help, as shown in the following figure.
5. You can now begin to navigate by clicking folders in the active window.

As this was being written, a new version of the software, TurboGopherVR 2.1a1, was just released. TurboGopher VR is designed to combine a point-and-click browser interface to the Internet with a 3D virtual-reality interface. Find out more at `gopher://boombox.micro.umn.edu/00/gopher/Macintosh-TurboGopher/TurboGopherVR/.`

*See Also*

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Archie, FTP, Gopher, Internet, PPP, SLIP, Thread Manager, Veronica, Web Browser

## Tweens

*See*

Inbetweening

## Type 1 Fonts

When Adobe introduced **PostScript fonts**, there were actually three types. Type 1 fonts are what most people think of as PostScript fonts today.

Adobe didn't release the specification for this format publicly until 1991, so other vendors before that time could only produce Type 3 fonts. This format didn't support hinting, so Type 3 characters didn't print clearly at laser printer resolutions. Type 2 was a format that Adobe never used commercially. Type 5 is the format of the fonts that are hard-coded into printer ROMs.

Some Type 3 fonts are still available, but if you're using them, be aware that Adobe Type Manager doesn't recognize them.

Today, Type 1 PostScript fonts are the standard for desktop publishing. They're composed of two parts: screen fonts, **bitmapped** representations of the letterforms that are used only for screen display, and printer fonts, the



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ey're composed of two parts: screen fonts, **bitmapped** representations of the letterforms that are used only for screen display, and printer fonts, the **outline** versions of the letterforms that are sent to an output device when the font is printed.

*See Also*

Bitmapped Fonts; Fonts; Outline Fonts; PostScript

## Type 2 Fonts

*See*

Type 1 Fonts

## Type 3 Fonts

*See*

Type 1 Fonts

## Type 5 Fonts

*See*

Type 1 Fonts

Type Code, *See* Changing Type and Creator

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## Type Foundries and Distributors

These companies range from huge corporations to one-person shops, with their font offerings varying just as much. From fine calligraphic fonts to foreign-language alphabets, it's all here—and this is just a taste of what's out there.

Adobe Systems, Inc.  
Mountain View, CA  
(415) 961-4400  
800-521-1976  
<http://www.adobe.com>

Agfa Division, Bayer Corp.  
Wilmington, MA  
(508) 658-5600  
800-424-8973

Autologic, Inc.  
Thousand Oaks, CA  
(805) 498-9611  
800-457-8973

Bitstream, Inc.  
Cambridge, MA  
(617) 497-6222  
1-800-522-3668

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sales@bitstream.com

Carter & Cone Type, Inc.

Cambridge, MA

(617) 576-0398

800-952-2129

Carter.Cone@applelink.com

70402.155@compuserve.com

Design Plus

New York, NY

(212) 477-8811

800-231-3461

Dubl-Click Software, Inc.

Bend, OR

(503) 317-0355

(503) 317-0430 (fax)

Educorp

San Diego, CA

(619) 536-9999

800-843-9497 (orders)

(619) 536-2345 (fax)

The Electric Typographer

Santa Barbara, CA

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(805) 966-7563

Emigre, Inc.  
Sacramento, CA  
(916) 451-4344  
800-944-9021  
sales@emigre.com  
<http://www.emigre.com>

FontHaus, Inc.  
Fairfield, CT  
(203) 367-1993  
800-942-9110

The Font Bureau, Inc.  
Boston, MA  
(617) 423-8770  
fontbureau@aol.com; prodigy, eWorld, Microsoft Network

FontShop USA, Inc.  
(312) 360-1990  
800-897-3872  
Fontshop.USA@applelink.com

Galapagos Design Group, Inc.  
Littleton, MA  
(508) 952-6200

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islandtype@aol.com  
galapagos@applelink.com  
76501,147@compuserve.com

GarageFonts  
Del Mar, CA  
(619) 755-4761

The Hoefler Type Foundry, Inc.  
New York, NY  
(217) 777-6640

Image Club Graphics  
Calgary, AB, Canada  
(403) 262-8008  
800-661-9410  
<http://www.adobe.com/imageclub>

International Typeface Corp. (ITC)  
New York, NY  
(212) 371-0699  
800-425-3882  
typeface1@aol.com  
typeface@applelink.apple.com  
<http://www.letraset.com/itc>

Letraset USA

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Paramus, NJ  
(201) 845-6100  
800-343-8973  
<http://www.esselte.com>

Linotype-Hell Co.  
Hauppauge, NY  
(516) 434-2000  
800-799-4922

Monotype Typography, Inc.  
Chicago, IL  
(312) 855-1440  
800-666-6897  
[sales@monotypeusa.com](mailto:sales@monotypeusa.com)

Precision Type, Inc.  
Commack, NY  
(516) 864-0167  
800-248-3668

PrePress Solutions  
East Hanover, NJ  
(201) 887-8000  
800-631-8134  
[info@prepress.pps.com](mailto:info@prepress.pps.com)  
[catalog@prepress.pps.com](mailto:catalog@prepress.pps.com)

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<http://www2.prepress.pps.com/>

Stone Type Foundry, Inc.

Palo Alto, CA

(415) 324-1870

800-557-8663

Treacyfaces/Headliners

West Haven, CT

(203) 389-7037

800-1-800-6805

74041,3336@compuserve.com

D3385@eworld.com

T-26

Chicago, IL

(312) 787-8973

T26font@aol.com

URW America

Nashua, NH

(603) 882-7445

800-229-8791

75054,574@compuserve.com

**See Also**

Fonts

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## Typeface

See

Typesetting Terms

## Typeface Categories

There are probably as many systems for classifying typefaces as there are people doing the job, but this listing will give an idea of the possibilities. These are the categories used by Precision Type, a New York-based font distributor whose Precision Type Guide contains samples of more than 13,000 fonts.

- The typefaces we now call *Oldstyle* were designed between about 1470 (Nicholas Jenson's faces) and 1700 (William Caslon, a Dutch designer). They're identified by a lack of contrast among stroke weights, and curves have a leftward stress. Oldstyle faces include Bembo, Caslon, Garamond, and Minion.
- *Transitional* typefaces include those designed during the 18th century, between the popularity of Oldstyle faces and Modern ones. There's greater stroke contrast than seen in Oldstyle faces, and serifs are sharper, while curved strokes have a vertical stress. Transitional faces include Baskerville, New Caledonia, Janson (don't confuse this one with Jenson!), Stone Serif, and Times.



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- *Modern* faces like Bodoni were seen as quite radical in the late 17th and early 18th centuries. Their most obvious characteristic is an extreme contrast in stroke weight; in some, light strokes are almost hairlines, and heavy strokes are quite bold. They have a strong vertical stress. Melior is another well-known Modern face.
- *Slab serif* typefaces first appeared in the early 19th century, when they were called Antiques. Their serifs don't taper at all, and strokes tend to be of similar weights throughout, with vertical emphasis. They've also been called *Egyptian*—hence Memphis, which is a popular example of this type. Many of these faces look like typewriter letters, such as American Typewriter and Stymie.
- First introduced in 1916 by William Caslon and also known as *gothic* and *grotesque*, sans serif faces—obviously—don't have serifs. Their stroke weights have little contrast, and they generally don't have true italic versions; slanted sans serif fonts are called “oblique.” Helvetica is the most commonly used sans serif, but most designers actually prefer faces like Frutiger, Gill Sans, and Stone Sans. Optima is a “humanistic” sans serif face, with more variation in stroke weight than is common.
- *Script*, *cursive*, and *brush* faces are based on handwriting. Some are connecting; others are not. Their only common characteristic is that they appear to have been written rather than printed or drawn. Zapf Chancery is a much-overused script face, while Mistral, Poetica, and

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Brush Script are other examples of this category.

- *Display* typefaces have nothing in common except that they're too ornate or unusual to be used for long stretches of text. So they're used for headlines and other short sections of text, at large sizes. They include such faces as Beesknees (a Roaring Twenties style), Castellar (an "inline" style that looks as though it's carved from stone), and Umbra (in which the black sections appear to be the sides, not the fronts, of three-dimensional letters).
- Historically, *blackletter* faces come first in type classifications. They include German *fraktur* faces, *uncial* faces with crooked strokes, and others based on handwriting that predated movable type. Goudy Text, Fette Fraktur, and San Marco are blackletter faces.
- Precision uses the term *polyglot* to describe typefaces used in foreign-language typesetting. These include Cyrillic, Arabic, Hebrew, Greek, and Asian typefaces. Some are designed specifically for use in foreign-language typesetting, while others are variations on English typefaces, such as Minion Cyrillic and Times New Roman Greek.
- *Pi*, *symbol*, *logo*, *ornament*, and *picture* fonts are non-alphabetical fonts made up of symbols and pictures. They're used for special purposes like typesetting mathematical typesetting and mapmaking, and picture faces are often used by designers in place of **clip art**.

*See Also*

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Fonts; Typographical Terms

## Typesetting Terms

**Ascender:** Any part of a lower-case letter extending above the x-height, as in “b” or “h.”

**Baseline:** The imaginary line on which the bases of letters sit.

**Bold:** Type with heavier strokes. Most typefaces have a bold face.

**Black:** Extra bold typefaces are often called “Black.”

**Cap height:** The height of capital letters.

**Condensed:** Narrow, compressed letterforms.

**Counter:** The “hole” in a letter, such as the middle of “o.”

**Descender:** Any part of a lower-case letter extending below the baseline, as in “y” and “j.”

**Expanded:** Wide, extended letterforms.

**Italic:** Type with slanted strokes and an appearance closer to script than roman faces.

**Ligature:** Letters that are joined as a single unit, such as æ.

**Oblique:** Type slanted to the right.

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**Pi fonts:** Special symbol characters, such as those used in mathematical equations and on maps.

**Point:** A unit of measure used in typesetting. There are 72 modern points in an inch, but traditionally points were smaller (72.27 to the inch). The change was made when PostScript was created, and it's generally accepted now.

**Roman:** Type with vertical stems, as opposed to italic or oblique type, which is angled.

**Sans serif:** A typeface that has no serifs.

**Serif:** A small cross-stroke at the end of the main stroke of a letter. Also used to refer to a typeface that has serifs.

**Small caps:** Capital letters that are the height of the lower-case letters in the typeface with which they're being used. Many page layout applications and word processors make small caps by scaling regular capital letters, but traditionally small caps are slightly different from capitals and were contained in a separate font.

**Subscript:** A small character set below the normal letters or figures.

**Superscript:** A small character set above the normal letters or figures.

**Swash letters:** Italic characters with extra flourishes.

**Typeface:** A collection of alphanumeric characters with a similar, distinctive design, intended to be used together. There are several categories of typeface:

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uncial, blackletter, serif, sans serif, script, and decorative. Within these categories, there are subcategories, such as old style, transitional, modern, and slab serif, which are subcategories of serif fonts.

X-height: The height of a letter excluding the ascenders and descenders.

## Typestry

Developed by **Pixar**, Typestry is a tool for creating animated 3D text and simple logos. The program creates extruded text using fonts available on the computer and from simple imported objects. It then renders the scene or creates a flying logo animation to export to a QuickTime movie. Because Typestry uses the **MacRenderMan** renderer, the quality of the output is very high, but you need a lot of memory to run the renderer successfully (one solution is to render parts of the scene and then glue the results together).

Pixar no longer supports any of its Macintosh products.

### *See Also*

AddDepth; LogoMotion; MacRenderMan; Pixar; ShowPlace

## TypeTamer

The most difficult part of having large numbers of **fonts** on your system is

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finding the one you want for a specific task. If the font's name starts with a letter at the end of the alphabet, you have to scroll down the whole list to find it. You also can't tell from a font's name if it's a **TrueType** or a **PostScript** font, and that may matter in certain applications. TypeTamer from Impossible Software is a help to everyone who utilizes fonts, from desktop publishing users to graphics artists, designers and animators. TypeTamer reconfigures the Mac's font menu, allowing you to customize the contents.

TypeTamer provides a **hierarchical menu** structure when you access the styles comprising a type family. If the foundry name is available, it is included in brackets to the right of the font name. Most importantly, icons are included that tell you at a glance if the font is a TrueType, **bitmap** or PostScript font. TopFonts, a TypeTamer utility, allows you to move your choice of fonts to the top of the font list, making long scrolling operations no longer necessary when looking for your most often accessed fonts. Holding the mouse cursor over the font's new TypeTamer icon will bring up an instantly visible display that shows the alphabet written in the chosen font (extremely helpful when a font's name indicates little about its visual character). Using special keystrokes (Shift and Option key augmented) while the font icon is visible, you can add special characters not normally associated with the selected font (trademarks, copyright, and other symbolic characters).

With a utility called SpeedFonts, TypeTamer allows you to seek out any font in a long list simply by entering the first few letters of its name. SpeedFonts fosters font categorization packets. A collection of your favorite fonts can be grouped together and saved. When the font menu is accessed in any software

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that uses the Mac font standard (which most graphics packages do), the separate SpeedFont category groups will be displayed as choices. Selecting a new font group will display only those fonts in the group, skipping over all of the extraneous fonts you may have in your font suitcase. Essentially, categorizing fonts in TypeTamer allows you to build any number of sub-suitcases, each of which may be devoted to separate job related tasks, a great time and energy saver.

## Type Twister

The real name of this software is “Simplicity” with a capital “S”. With all of its text creation options represented by visual displays, Type Twister is one of the easiest ways to generate 3D text looks. It lacks the capacity to texturize type on the screen, but adds the ability to render hundreds of unique pseudo 3D displays for 2D color environments. Type Twister is not an animation program, and retrofitting it to accomplish animation tasks is daunting to say the least. Type Twister has no save options for writing to any file format. Instead, finished graphic compositions are saved to the Clipboard. To see them, you have to use Photoshop, Illustrator or another graphics package that allows access to the clipboard. Create a new page and “paste” the graphic into the page.

**Options** Type Twister creates a 3D text block with several user selectable rendering options. The central shape of the text block takes your text input and configures according to a selection in the Type Twister shape library.

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This library contains several dozen choices, most of which involve adding color and drop shadow/cast shadow variables to your text block. That's only a start in most situations, because all of the default shape choices are open to further adjustment based upon layer/Depth extrusions, Font, Extruded Shapes and Color Sets. An on-screen adjustment box also provides user transformation of text block height/width and rotation. Since Type Twister is a 2D program, rotation of the graphic is allowed only in the XY plane. An automatic animated display of all of the shape choices (forward or backward) can be toggled on or off.

Type twister is not limited to one-line text blocks, as some of its shapes require two or more user input text lines (most commonly, text around a circular space). Further options are provided in an Alignment menu, allowing you to align the text according to twelve possible options. The background color of the text block can be made visible, reversed and lightened. Custom colors can be added to the background.

**Custom Effects** Type Twister invites the user to customize any of the defaulted shapes, and offers a dialog where shape colors and extruded elements may be adjusted to user specifications. Customized effects can be saved and are immediately added to the visual library display. Text blocks can be further stylized with Slant, Tilt, Disorder, Stagger, Cutout, Horizontal/Vertical Extension, Vertical Stretch and Reversal (writes the text backwards). A “copy” command writes the finished work to the Clipboard.



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## Typing Programs

*See*

Mavis Beacon Teaches Typing