

Introduction

The following pages detail computer adaptations available as of November, 1988. There have been significant improvements and additions to the access systems described in the first edition of this book. As with all rapidly advancing technologies, many of the programs and devices described here will likely (within a year or two) be replaced by even more efficient adaptations. Remember, however, the distinction made in the introductory chapter of this work between technological and functional obsolescence. Barring some truly radical and totally unexpected breakthrough in computer science, the majority of the adaptations listed here should remain functionally efficient for the next three to five years.

The products listed here meet or exceed the access criteria described in the preceding chapters. They have been thoroughly tested and have proven to be highly reliable and effective. These adaptations are by no means the only systems available; they simply represent an array of hardware and software adaptations which do work. Use them as a starting point from which you can be confident of success and then, if you are so inclined, begin to explore new and perhaps even better ways of providing adapted computer access.

Even though many dramatic gains have been made, much work remains to be done. Although excellent, software-based, large print systems for the Apple Macintosh computer have recently been developed, no one as yet has introduced a first rate system for PC-type computers which is based entirely in software. Screen reading systems for blind users, at their best, are still somewhat cumbersome and difficult to use. Speech synthesizers based entirely in software which emulate DECTalk or Votrax systems are just beginning to appear. Software-based keyboard control programs for

the Macintosh have become a reality since the first edition of this book, as have word anticipation/completion utilities which will function with any word processor on either Macintosh or PC computers; and the list goes on.

Clearly there is ample room to add many more adaptations to those listed here. It is our most profound hope that the following equipment represents an expansion of our first list rather than its completion.

A.2

Adaptations for Low Vision Computer Users

Product Name: Close View
Vendor: Apple Computer Corporation

Address: 20525 Mariani Avenue
Cupertino, California 95014

Telephone: (408) 996-1010

Price: N/C

Used With: Apple Macintosh Plus, SE and 11

Special Considerations: Included with the Apple Macintosh operating system versions 6.0 and higher. Can be launched automatically at system start-up or selected. Provides 2X to 16X degrees of magnification. Transparent to most applications programs, easy to use, fast text handling. Although providing no single line display or scrolling options, Close View may be all the help many low vision Macintosh users need.

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Notes: The auto-launch method may prove inconvenient if the system is to be used by other than low vision persons.

ProductName: inLARGE
Vendor: Berkeley System Design

Address: 1700 Shattuck Avenue
Berkeley, California 94709-1720
Telephone: (415) 540-5537

Price: \$95.00

Used With: Apple Macintosh Plus, SE and II

Special Considerations: InLARGE is a memory resident program which appears to be transparent to other applications programs. Magnification is adjustable between 1X and 16X. The program provides single line display, scrolling and cursor tracking. All commands are given at the keyboard. Text move-display is fast and smooth. Works with communications software (although enlarged text will tend to be displayed in "spurts," nothing will be lost). All commands are issued through keys on the Macintosh keyboard. Adjustable scrolling rates, overview mode and black-on-white or white-on-black text display option. Automatic cursor tracking with all programs. InLARGE can be used in an Ethernet environment with Digital Equipment Corporation systems.

Notes: Close View, a large print system provided by Apple Corporation with versions 6.0 and greater of the Macintosh operating system is a sub-set of the inLARGE program licensed to Apple by Berkeley System Design. [B.S.D. is](#) planning to release a screen reading system for the Macintosh (Outspoken) in the spring of 1989.

A.4

ProductName: NicePrint
Vendor: Spies Laboratories

Address: 4040 Spencer Street, Suite Q
Torrance, California 90503

Telephone: (213) 538-8166

Price: \$95.00

Used With: IBM PC, XT, AT, PS/2 or work-alike
and IBM Graphics printers, Epson
printers with Grafrax or work-allkes

Special Considerations: Produces legal size (25 point) large
print on dot matrix printers. Best
results are obtained using a wide
carriage (132 column) printer. The
document to be printed in large print
must be no more than 65 characters
wide. The left print margin should be
set to 0. For wider documents, the
program provides a "sideways"
option which rotates the text 90
degrees. A cautionary note: NicePrint
is a memory resident program; if the
program is currently in memory,
loading it in a second time will cause a
malfunction.

Notes: Provides an excellent method for
producing large print output on paper.
Provides a wide selection of large print
font styles, is easy to install and use and
appears to work with most programs
which produce printed text. Even with
high-speed printers, the program will
require approximately three times
longer to print a full page of large print
text. Large print text is clearly formed,
even on 9 pin dot matrix printers.

A.5

Product Name: PC Lens
Vendor: Arts Computer Products, Inc.

Address: 145 Tremont Street, Suite 407
Boston, Massachusetts 02111

Telephone: (617) 482-8248

Price: \$690.00

Used With: IBM PC, XT, AT and other 100% PC compatible computers using 100% PC compatible monochrome and color graphics adapter boards

Special Considerations: PC Lens is a software program which requires a monochrome display board, a color display board and a color monitor in order to function. If the existing computer system currently has a compatible color display board and color monitor, a monochrome display board can be purchased for around \$250-300 bringing the actual cost of PC Lens to approximately \$800. If the existing computer system does not have a compatible color display board and color monitor, purchase of additional needed equipment will bring the actual cost of PC Lens to around \$1300. Additionally, a switch within the computer will need to be set to allow both the monochrome and color boards to function simultaneously. Does not currently work with the IBM PS/2.

Notes: PC Lens displays text only. Once the various color and monochrome boards have been installed, the program is relatively easy to learn and use. PC Lens

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makes extensive use of Ctrl and function key combinations to carry out its various options. Four levels of magnification are provided starting at 2X and increasing to approximately 12X. PC Lens provides a variety of interesting options including control of text display color, spacing between letters, words and lines, automatic cursor tracking and an overview mode. When scrolling vertically or horizontally, text display often becomes ragged and "jerky." On computers with faster processing speeds like the PC AT, screen displays are somewhat smoother. As with the VISTA system, automatic cursor tracking works with all programs except spreadsheets. Due to the slow speed at which screens of large print are displayed, PC Lens is unable to function satisfactorily with communications software and terminal emulators.

A.7

ProductName: VISTA, VISTA 2
Vendor: TeleSensory Systems, Inc.
Address: 455 North Bernardo Avenue
Mountain View, California 94043
Telephone: (415) 960-0920
Price: VISTA (Model SFIB) \$2095.00
VISTA 2 (Model SF2A) \$2495.00

Used With: IBM PC, XT, AT, PS/2 models 30,50 and 60 (50 and 60 require VISTA 2), HP Vectra, and 100% PC compatible computers with 100% PC compatible monochrome, CGA, EGA or VGA video display boards

Special Considerations: The VISTA system is an internal hardware device. It takes up one slot inside the computer. Uses a mouse pointer which requires a 25 pin serial port. Most PC type computers come with a built-in serial port, but a port is simple and inexpensive (\$40-50) to add if needed. Check with vendor before purchase to confirm compatibility of equipment with which VISTA will be used.

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Notes: Works well with both text and graphics. Easy to install, learn and use. Magnification adjustable from 3X to 14X (2X to 14X with VISTA 2). Large print text display is fast and smooth. Works with communications software (modems), many computer networks and terminal emulators. All commands are issued using the buttons on the mouse pointer. Adjustable scrolling rates, optional single line display,

overview mode and optional pre-set start-up settings for various display options are standard features. Automatic cursor tracking with all programs except spreadsheets. Viewing window must be manually relocated when using VISTA with spread sheet type programs (i.e., Lotus, Multiplan, SuperCalc). Only PC based large print system presently meeting Section 508 guidelines.

A.9

Adaptations for Blind Computer Users

- Product Name:* DECTalk
Vendor: Digital Equipment Corporation
- Address:* 129 Parker Street
Maynard, Massachusetts 01754
- Telephone:* (617) 897-5111
- Price:* \$4000.00 (\$1600.00 with grant)
- Used With:* IBM PC, XT, AT, PS/2 or work-alikes, Apple, or any system which uses a serial port to output to the speech synthesizer
- Special Considerations:* The serial cable connecting the computer to the DECTalk will most likely need to be reconfigured to accommodate the serial output requirements of your computer. This will definitely be the case with all PC and PC work-alike type computers. Before purchasing a DECTalk, be certain the screen reading system with which it will be used supports the DECTalk speech synthesizer. Almost all screen readers for PC computers will; screen readers for Apple computers or other types of computers may not.
- Notes:* Clearly the best speech synthesizer currently available. DECTalk's speech production is non-robotic, clear, distinct and easily understandable by all users. Distinctions between the letters D, B, C, and V are easily heard. DECTalk provides several unique voices, adjustable speech rates, methods for making adjustments to various

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aspects of speech production, external volume control, headphone jack and a wealth of additional features. The unit is extremely well made and will provide years of trouble-free service.

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ProductName: Freedom 1
Vendor: Interface Systems International

Address: P.O. Box 20415
Portland, Oregon 97220
Telephone: (503) 256-2036

Price: **\$499.00**

Used With: IBM PC, XT, AT, PS/2 or work-alikes

Special Considerations: Sophisticated macro capability allows for a high level of integration between the screen review mode and the applications mode. In operation, the user is able both to read the screen and use the application (i.e., word processor, bookkeeping program, spreadsheet) at the same time. The program comes with predefined macros for several popular programs. Additional macro sets may be created using a procedure which, although exacting, is not particularly difficult. The ease of use afforded by Freedom 1's macros make it a good choice for a broad range of purposes including use by learning disabled and non-oral persons. Freedom 1 can be used concurrently with the VISTA system to produce talking large print.

Notes: Meets all the basic criteria for a good screen reading system. Allows the user to work efficiently. Reads letters, words, lines, multiple lines and complete sentences. Supports windows, announces computer generated screen changes and text colors, and supports "military"

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designations of letters (Alpha for A, Bravo for B, etc.). Reads forward or backward. Sets of predefined macros can be loaded which configure Freedom 1 to work with the program in use. Makes full use of most standard speech synthesizers. All program options are announced verbally. Operates very quickly and uses a small amount of computer memory. Freedom 1 supports some terminal emulation programs. Check with the vendor for more exact information.

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ProductName: Screen Reader
Vendor: IBM
National Support Center for
the Disabled

Address: P.O. Box 2150
Atlanta, Georgia 30055
Telephone: (800) 426-2133

Price: **\$630.00**

Used With: All IBM PS/2 series computers

Special Considerations: Screen Reader works exclusively on PS/2 or fully compatible systems and employs a small keypad attached to the game port. All screen reading commands are issued from the Screen Reader keypad. Screen reading capability is always available as there is no review mode as such. The system works with most brand name speech synthesizers (i.e., DECtalk, CallText, Artic, Votrax, etc.) and, in addition to general full screen reading capability, provides specialized reading templates for many major software applications. Screen Reader provides the reading options found in most high-end systems plus a built-in help function which provides spoken messages explaining all of the available options. Screen Reader is fast, transparent and easy to learn. Additionally, the second keypad assures that there will never be a conflict in key usage between screen reading and applications software.

Notes: Although Screen Reader comes with reading templates for many widely used

applications programs (i.e., WordPerfect, WordStar, dBASE, Lotus, etc.), developing new templates is done through the quite complicated Screen Reader programming language and compiler. Developing new templates is not a trivial undertaking and will require a programmer's skills. IBM expects that in time, a library of reading templates will be developed, thus eliminating most needs to use the programming language.

ProductName: Soft Vert
Vendor: TeleSensory Systems, Inc.

Address: 455 North Bernardo Avenue
Mountain View, California 94043
Telephone: (415) 960-0920

Price: \$495.00

Used With: IBM PC, XT, AT, PS/2 or work-alikes

Special Considerations: An excellent system for reading complex screen displays like reservations systems, spreadsheets, accounting programs, etc. Soft Vert provides a variety of specialized options which can be of great value when used in conjunction with terminal emulation programs. Although providing some ability to read the screen while remaining in the application, to fully access the extensive review capability of Soft Vert the user must leave the application program and enter the review mode.

Notes: Meets all the basic criteria for a good screen reading system. Allows the user to work efficiently. Reads letters, words, lines, multiple lines and complete sentences. Supports windows, announces computer generated screen changes and text colors, and supports "military" designations of letters (Alpha for A, Bravo for B, etc.). Reads forward or backward. User defined program configurations can be saved and reloaded. All program options are announced verbally. Uses most

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standard speech synthesizers, operates at an acceptable rate of speed and uses a moderate amount of computer memory. Soft Vert supports several terminal emulation programs. Check with the vendor for more exact information. Because of its extensive and quite sophisticated review capabilities, this program is a good choice for blind computer programmers and other blind professionals who require great flexibility in a screen reading program.

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Product Name: Votrax Personal Speech Synthesizer
Vendor: Votrax Corporation

Address: 1358 Rankin
Troy, Michigan 48083

Telephone: (800) 521-1350

Price: \$449.00

Used With: IBM PC, XT, AT, PS/2 or work-alikes, Apple, or any system which uses a serial or parallel port to output to the speech synthesizer

Special Considerations: When ordering this device, be sure to specify what type of computer it will be used with, the screen reading program to be used and whether a serial or parallel port will be used for speech output. Before purchasing a PSS, be certain the screen reading system with which it will be used supports the Votrax speech synthesizer. Almost all screen readers will but it never hurts to check.

Notes: Votrax is one of the oldest and most reliable manufacturers of low cost speech output devices. Votrax speech production is somewhat robotic, and learning to hear distinctions between such letters as D, B, C, and V takes some practice. Interestingly enough, blind users who have become familiar with the pronunciation style of the Votrax sometimes prefer it to the DECTalk. Votrax provides adjustable speech rates, external volume control, headphone jack and a number of additional features. The unit is a good

choice for low cost speech output. The quality and accuracy of Votrax speech production are such that it should not be used with learning disabled students.

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Adaptations for Orthopedically Disabled Computer Users (Mild to Moderate)

Product Name: Adaptive Firmware Card

Vendor: Adaptive Peripherals

Address: 4529 Bagley Avenue North
Seattle, Washington 98103

Telephone: (206) 633-2610

Price: \$300.00 (Apple 11+), \$350.00
(Apple IIe)

Used With: Apple II + and IIe computers

Special Considerations: The Adaptive Firmware Card is a plug in board which is used to alter the normal behavior of the Apple computer and keyboard. Programming the card, although not particularly difficult, is an exacting procedure which does require some practice.

Notes: The Firmware card has a variety of capabilities designed to make the Apple computer and keyboard more accessible to orthopedically disabled persons. Automatic key repeat may be turned on or off, Shift, Esc, Apple and Ctrl keys can be electronically latched or unlatched to facilitate ease of use by one-finger typists. The Firmware card can store and recall multiple keyboard configurations, slow down the speed at which information is displayed on the computer screen and also accept keyboard input in the form of Morse Code. The card also provides auxiliary inputs for special keyboards and single switch devices.

ProductName: Easy Keys/Mouse Keys
Vendor: Apple Computer Corporation

Address: 20525 Mariani Avenue
Cupertino, California 95014

Telephone: (408) 996-1010

Price: N/C

Used With: Apple Macintosh Plus, SE, and II

Special Considerations: Provided at no charge with versions 5.0 and greater of the Macintosh operating system. Easy Keys has many of the capabilities of Filch. It provides electronic latching of all "special" keys on the Macintosh keyboard (i.e., Open Apple, Ctrl, Shift, etc.). The system provides both "latch/release" and "continuous latch" options. Key repeat rate and visual cueing of auditory prompts can also be selected using the control panel. Mouse Keys allows all mouse functions to be controlled using the arrow and numeric keys on the Macintosh enhanced keyboard. In combination with Easy Keys, all mouse functions can be duplicated at the keypad. Icons appearing in the upper right corner of the screen prompt the user to latched or shifted keys.

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Notes: Easy Keys, Mouse Keys and Close View are excellent examples of the industry trend to incorporate access systems directly into the operating system. Although each of these systems still require a little fine tuning, they are quite functional as they are and may well meet the access needs of many orthopedically or visually disabled persons.

ProductName: Filch
Vendor: Kinetic Designs

Address: 14231 Anatevka Lane, S.E.
Olalla, Washington 98359
Telephone: (206) 857-7943

Price: \$89.00

Used With: IBM PC, XT, AT, PS/2 or work-alikes

Special Considerations: When used in combination with other programs, version 2.0 of Filch must be loaded before any other applications.

Notes: A basic tool for providing keyboard access to orthopedically disabled persons. The program is easy to use and provides a wide variety of methods for altering the normal behavior of the PC keyboard. Automatic key repeat can be slowed down or turned off completely: Ctrl, Alt, and Shift keys can be electronically latched on or off to facilitate use by one- finger typists; an "electronic keyguard" feature desensitizes the keyboard and reduces the incidence of accidental keystrokes by persons with limited fine motor control; a user definable display window shows the status (latched or unlatched) of the Ctrl, Alt, or Shift keys. Filch also includes a wealth of other additional features. Keyboard configuration options can be automatically carried out when the program is started. Filch is entirely memory resident, occupies around 1200 bytes and seems to work with almost all software. Keyboard

configuration options may be selected individually or in any combination.

A.23

ProductName: Gramatik III
Vendor: Reference Software

Address: 330 Townsend Street, Suite 123
San Francisco, California 94107
Telephone: (800) 872-9933

Price: \$99.00

Used With: IBM PC, XT, AT, PS/2 and work-alike computers

Special Considerations: Grammar and usage checkers in the microcomputer environment are still in their technological infancy and, although Gramatik III is no exception, it represents the best of what is currently available. Like most grammar and usage checkers, its comments are often either overly generalized or excessively "picky." Its most useful application remains the identification of gross errors in capitalization, some types of punctuation and word usage.

Notes: Gramatik III is a grammar and usage checker. It identifies missing punctuation marks, vague or hackneyed word usage, cumbersome phrasing, sexist terminology, run-on sentences, missing capitalizations and a variety of other grammatical and stylistic errors. The program is able to insert comments directly into the document, display them on the computer screen or print them. Gramatik displays the portion of the document in which the error occurred and makes suggestions for corrective action. Although of some value for students with learning

disabilities, the program is most profitable used in conjunction with instructional staff who can explain the sometimes vague and pedantic critiques generated by Gramatik III.

ProductName: Keytronics KB 5153 Keyboard for the Disabled

Vendor: Keytronics

Address: P.O. Box 14687
Spokane, Washington 99214

Telephone: **(509) 928-8000**

Price: **\$400.00**

Used With: IBM PC, XT, AT or work-alikes

Special Considerations: Changes in the design of the keyboard port on the IBM PS/2 computers have rendered the KB 5153 keyboard non-compatible as of this writing. Use this or any alternative keyboarding system only in instances where the advantages clearly outweigh the problem of replacing the factory issue computer keyboard.

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Notes: In addition to the usual keys found on the standard PC keyboard, the KB 5153 provides a touch sensitive tablet with 36 programmable locations. Lengthy command sequences may be stored at each of these locations and executed with a single touch. The KB 5153 comes with preprogrammed setups and templates for many commonly used software programs (WordPerfect, Lotus, dBASE, WordStar, etc.); others can easily be created and saved for future use. The normal size of the touch sensitive area on the pad can be increased from approximate 0.75 x 0.75 inches per location to a maximum of 2.5 x 2.5 inches per location. This can be a valuable feature for

orthopedically disabled persons with limited fine motor control. As the size of the touch sensitive location is increased, however, the number of touch sensitive locations is reduced. The KB 5153 can be of value to orthopedically and learning disabled students as well as to persons with acquired brain injuries.

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ProductName: MindReader
Vendor: Brown Bag Software

Address: 2155 South Bascom Avenue, Suite 114
Campbell, California 95008
Telephone: (408) 559-4545

Price: \$89.95

Used With: IBM PC, XT, AT, PS/2 or work-alikes

Special Considerations: MindReader requires 256K of memory and works with either monochrome, color or enhanced graphics displays. When used in combination with other software based adaptations, additional computer memory will be required. Computers equipped with 640K of memory will support MindReader and several other adaptations concurrently.

Notes: MindReader is a "smart" word processor which is able to anticipate and complete words or phrases based on their first few letters. Used with persons who have limited fine motor control, MindReader can increase typing speed by as much as 75%. The system is entirely menu driven. Most individuals are able to produce printed documents within thirty minutes after being introduced to the program. MindReader "learns" a user's word usage patterns and so becomes "smarter" with continued use. The size of MindReader's vocabulary is only limited by disk storage space. The program is a full-featured word processor including a calculator, spelling check and line drawing

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capability. MindReader can produce a standard ASCII text file which can be used by other word processing programs. All processing is performed in memory, so the number of pages which can be edited at any one time will be determined by available memory. A typical computer system with 256K of memory should be able to handle a 25 to 30 page document.

ProductName: Turbo Lightning
Vendor: Borland International

Address: 1700 Green Hill Road
Scotts Valley, California 95066-0001
Telephone: (408) 438-8400

Price: \$99.95

Used With: IBM PC, XT, AT, PS/2 or work-alikes

Special Considerations: Requires plenty of disk storage and, when used in conjunction with other software based adaptations, a computer with 640K of memory. Although it continues to function, Turbo Lightning loses some flexibility when used with non-standard programs like Mind Reader. Although non-standard programs do not appear on the Turbo Lightning installation menu, with a little experimentation almost any program can be accommodated. When using the program with a two floppy drive system, best results will be obtained by placing the program and thesaurus files on drive A: and the dictionary files on drive B:.

Notes: Turbo Lightning is a "real-time" spell check and thesaurus. That is, it checks spelling as text is actually being entered. A tone alerts the user to probable spelling errors as they actually occur. Pressing a single key causes Turbo Lightning to display a window of likely correct spellings. Word corrections are based on sound alike words rather than similarly spelled words. For example, the incorrectly

spelled word "psikologist" would still cause Turbo Lightning to suggest the correct spelling of "psychologist" because of the sound alike quality of both words. Placing the cursor on a word in the document and pressing a single key causes a list of synonyms to be displayed. Word replacement is completely automatic for both the spell checker and thesaurus. New words can be added to the spell checker's dictionary but not to the thesaurus.

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Adaptations for Orthopedically Disabled Computer Users (Moderate to Severe)

ProductName: Long Range Optical Pointer

Vendor: Words +, Inc.

Address: P.O. Box 1229
Lancaster, California 93534

Telephone: **(805) 949-9331**

Price: \$995.00

Used With: IBM or compatible

Special Considerations: Originally used with two monitors but has recently been redesigned for use with one monitor. As the optical pointer is directed toward the screen, the keyboard appears. The application screen appears when the pointer is moved away from the screen.

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Notes: Provides accurate, efficient access to standard software using head control or other controllable sites to aim an optical pointer. Also provides acceleration techniques, including direct selection of most frequently used words, word prediction and automatic word endings.

Product Name: Mini Keyboard

Vendor: Tash

Address: 70 Gibson Drive, Unit 12
Markham, Ontario, Canada L3R 4C2

Telephone: (416) 475-2212

Price: \$325.00

Used With: Apple Ile, Apple JIGS, IBM or compatible

Special Considerations: The Mini Keyboard must be used with a keyboard emulator such as the Adaptive Firmware Card in the expanded keyboard mode or the PC Serial A.I.D. for IBM.

Notes: A small keyboard with closely spaced membrane keys. Requires very little force to activate the keys (100 gms). Force to activate can be provided by pointers including the fingers, a handheld pointer, a headwand or a mouthstick. Is used when there is a small range and fine resolution. Can be used to reduce the effort required to move between keys that would otherwise be positioned farther apart on a standard keyboard. Layout of keyboard can be redefined with letters, words, functions or phrases using the keyboard emulators. Keyguard available.

A.33

ProductName: RealVoice/EvalPac/ScanPac
Vendor: Adaptive Communication Systems, Inc.

Address: 354 Hookstown Grade Road
Clinton, Pennsylvania 15026

Telephone: (412) 264-2288

Price: \$2695.00 to \$3995.00

Used with: IBM compatibles, Apple II

Special Considerations: Requires a keyboard emulation interface such as the ACS Emulator for the Apple IIe, Adaptive Firmware Card or the Prentke Romich Keyboard Interface for the Apple II or IBM PC and compatibles.

Notes: A portable augmentative communication system that can be accessed by scanning, light pointer, expanded keyboard, joystick and Morse Code. Capable of storing key words and phrases using abbreviations or locations. Uses a very high quality female or male voice output for spoken communication.

ProductName: Touch Talker/Light Talker
Vendor: Prentke Romich Company

Address: 1022 Heyl Road
Wooster, Ohio 44691

Telephone: (216)262-1984

Price: \$2895.00 to \$4290.00

Used with: IBM compatibles, Apple II

Special Considerations: Requires a keyboard emulator such as the Adaptive Firmware Card with the Apple II or the Prentke Romich Company Keyboard Emulator with Apple II or IBM and compatibles.

Notes: These are portable, speech output, augmentative communications systems. The Touch Talker is accessed with a keyboard. The Light Talker is accessed with an optical pointer, switches and scanning, and Morse Code. Key words and phrases can be stored and retrieved using a picture encoding strategy, Minspeak, or levels and locations.

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ProductName: Unicorn Expanded Keyboard
Vendor: Unicorn Engineering Company

Address: 6201 Harwood Avenue
Oakland, California 94618

Telephone: (415) 428-1626

Price: \$425.00

Used With: Apple IIe, Apple II GS, IBM or compatible

Special Considerations: Requires a keyboard emulator such as the Adaptive Firmware Card in the expanded keyboard mode for Apple or the PC Serial A.I.D. for IBM.

Notes: A large membrane keyboard with 128 activation sites. Each activation site is $\frac{3}{4}$ " x $\frac{3}{4}$ " with the centers 2 inches apart. Custom keyboard layouts are easily created and changed using overlays and the keyboard emulators. Activation sites can be defined as letters, words, functions or phrases and can be combined for larger target areas. The Unicorn Expanded Keyboard is useful with a large range and fine or gross resolution. 64-hole and 128-hole keyguards available.

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Adaptations for Learning Disabled Computer Users

ProductName: DECTalk
Vendor: Digital Equipment Corporation

Address: 129 Parker Street
Maynard, Massachusetts 01754
Telephone: (617) 897-5111

Price: \$4000.00 (\$1600.00 with grant)

Used With: IBM PC, XT, AT, PS/2 or work-alikes,
Apple, or any system which uses a serial
port to output to the speech
synthesizer

Special Considerations: The serial cable connecting the computer to the DECTalk will most likely need to be reconfigured to accommodate the serial output requirements of your computer. This will definitely be the case with all PC and PC work-alike type computers. Before purchasing a DECTalk, be certain the screen reading system with which it will be used supports the DECTalk speech synthesizer. Almost all screen readers for PC computers will; screen readers for Apple computers or other types of computers may not.

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voices, adjustable speech rates, methods for making adjustments to various aspects of speech production, external volume control, headphone jack and a wealth of additional features. The unit is extremely well made and will provide years of trouble-free service.

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Portland, Oregon 97220

Telephone: (503) 256-2036

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Used With: IBM PC, XT, AT, PS/2 or work-alikes

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Additional macro sets may be created using a procedure which, although exacting, is not particularly difficult. The ease of use afforded by Freedom 1's macros make it a good choice for a broad range of purposes including use by learning disabled and non-oral persons. Freedom 1 can be used concurrently with the VISTA system to produce talking large print.

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Notes: Meets all the basic criteria for a good screen reading system. Allows the user to work efficiently. Reads letters, words, lines, multiple lines and complete sentences. Supports windows, announces computer generated screen changes and text colors, and supports "military"

designations of letters (Alpha for A, Bravo for B, etc.). Reads forward or backward. Sets of predefined macros can be loaded which configure Freedom 1 to work with the program in use. Makes full use of most standard speech synthesizers. All program options are announced verbally. Operates very quickly and uses a small amount of computer memory. Freedom 1 supports some terminal emulation programs. Check with the vendor for more exact information.

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San Francisco, California 94107

Telephone: (800) 872-9933

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Used With: IBM PC, XT, AT, PS/2 and work-alike computers

Special Considerations: Grammar and usage checkers in the microcomputer environment are still in their technological infancy and, although Gramatik III is no exception, it represents the best of what is currently available. Like most granunar and usage checkers, its comments are often either overly generalized or excessively "picky." Its most useful application remains the identification of gross errors in capitalization, some types of punctuation and word usage.

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Notes: Gramatik III is a grammar and usage checker. It identifies missing punctuation marks, vague or hackneyed word usage, cumbersome phrasing, sexist terminology, run-on sentences, missing capitalizations and a variety of other grammatical and stylistic errors. The program is able to insert comments directly into the document, display them on the computer screen or print them. Gramatik displays the portion of the document in which the error occurred and makes suggestions for corrective action. Although of some value for students with learning

disabilities, the program is most profitable used in conjunction with instructional staff who can explain the sometimes vague and pedantic critiques generated by Gramatik III.

ProductName: MindReader
Vendor: Brown Bag Software

Address: **2155 South Bascom Avenue, Suite 114
Campbell, California 95008**

Telephone: (408) 559-4545

Price: \$89.95

Used With: IBM PC, XT, AT, PS/2 or work-alikes

Special Considerations: MindReader requires 256K of memory and works with either monochrome, color or enhanced graphics displays. When used in combination with other software based adaptations, additional computer memory will be required. Computers equipped with 640K of memory will support MindReader and several other adaptations concurrently.

A.43

Notes: MindReader is a "smart" word processor which is able to anticipate and complete words or phrases based on their first few letters. Used with persons who have limited fine motor control, MindReader can increase typing speed by as much as 75%. The system is entirely menu driven. Most individuals are able to produce printed documents within thirty minutes after being introduced to the program. MindReader "learns" a users word usage patterns and so becomes "smarter" with continued use. The size of MindReader's vocabulary is only limited by disk storage space. The program is a full-featured word processor including a calculator, spelling check and line drawing

capability. MindReader can produce a standard ASCII text file which can be used by other word processing programs. All processing is performed in memory, so the number of pages which can be edited at any one time will be determined by available memory. A typical computer system with 256K of memory should be able to handle a 25 to 30 page document.

A.44

ProductName: Turbo Lightning
Vendor: Borland International

Address: 1700 Green Hill Road
Scotts Valley, California **95066-0001**
Telephone: **(408) 438-8400**

Price: \$99.95

Used With: IBM PC, XT, AT, PS/2 or work-alikes

Special Considerations: Requires plenty of disk storage and, when used in conjunction with other software based adaptations, a computer with 640K of memory. Although it continues to function, Turbo Lightning loses some flexibility when used with non-standard programs like Mind Reader. Although non-standard programs do not appear on the Turbo Lightning installation menu, with a little experimentation almost any program can be accommodated. When using the program with a two floppy drive system, best results will be obtained by placing the program and thesaurus files on drive A: and the dictionary files on drive B:.

A.45

Notes: Turbo Lightning is a "real-time" spell check and thesaurus. That is, it checks spelling as text is actually being entered. A tone alerts the user to probable spelling errors as they actually occur. Pressing a single key causes Turbo Lightning to display a window of likely correct spellings. Word corrections are based on sound alike words rather than similarly spelled words. For example, the incorrectly

spelled word "psikologist" would still cause Turbo Lightning to suggest the correct spelling of "psychologist" because of the sound alike quality of both words. Placing the cursor on a word in the document and pressing a single key causes a list of synonyms to be displayed. Word replacement is completely automatic for both the spell checker and thesaurus. New words can be added to the spell checker's dictionary but not to the thesaurus.

A.46

ProductName: VISTA, VISTA 2
Vendor: TeleSensory Systems, Inc.

Address: 455 North Bernardo Avenue
Mountain View, California 94043
Telephone: (415) 960-0920

Price: VISTA (Model SFIB) \$2095.00
VISTA 2 (Model SF2A) \$2495.00

Used With: IBM PC, XT, AT, PS/2 models 30, 50 and 60 (50 and 60 require VISTA 2), HP Vectra, and 100% PC compatible computers with 100% PC compatible monochrome, CGA, EGA or VGA video display boards

Special Considerations: The VISTA system is an internal hardware device. It takes up one slot inside the computer. Uses a mouse pointer which requires a 25 pin serial port. Most PC type computers come with a built-in serial port, but a port is simple and inexpensive (\$40-50) to add if needed. Check with vendor before purchase to confirm compatibility of equipment with which VISTA will be used.

Notes: Works well with both text and graphics. Easy to install, learn and use. Magnification adjustable from 3X to 1 IX (2X to 14X with VISTA 2). Large print text display is fast and smooth. Works with communications software (modems), many computer networks and terminal emulators. All commands are issued using the buttons on the mouse pointer. Adjustable scrolling rates, optional single line display,

A.47

overview mode and optional pre-set start-up settings for various display options are standard features. Automatic cursor tracking with all programs except spreadsheets. Viewing window must be manually relocated when using VISTA with spread sheet type programs (i.e., Lotus, Multiplan, SuperCalc). Only PC based large print system presently meeting Section 508 guidelines.

A.48

Adaptations for Deaf and Hard-of-Hearing Computer Users

ProductName: MindReader
Vendor: Brown Bag Software

Address: 2155 South Bascom Avenue, Suite 114
Campbell, California **95008**
Telephone: (408) 559-4545

Price: \$89.95

Used With: IBM PC, XT, AT, PS/2 or work-alikes

Special Considerations: MindReader requires 256K of memory and works with either monochrome, color or enhanced graphics displays. When used in combination with other software based adaptations, additional computer memory will be required. Computers equipped with 640K of memory will support MindReader and several other adaptations concurrently.

A.49

Notes: MindReader is a "smart" word processor which is able to anticipate and complete words or phrases based on their first few letters. Used with persons who have limited fine motor control, MindReader can increase typing speed by as much as 75%. The system is entirely menu driven. Most individuals are able to produce printed documents within thirty minutes after being introduced to the program. MindReader "learns" a user's word usage patterns and so becomes "smarter" with continued use. The size of MindReader's vocabulary is only limited by disk storage space. The

program is a full-featured word processor including a calculator, spelling check and line drawing capability. MindReader can produce a standard ASCII text file which can be used by other word processing programs. All processing is performed in memory, so the number of pages which can be edited at any one time will be determined by available memory. A typical computer system with 256K of memory should be able to handle a 25 to 30 page document.

A.50

ProductName: Turbo Lightning
Vendor: Borland International

Address: 1700 Green Hill Road
Scotts Valley, California **95066-0001**
Telephone: **(408) 438-8400**

Price: \$99.95

Used With: IBM PC, XT, AT, PS/2 or work-alikes

Special Considerations: Requires plenty of disk storage and, when used in conjunction with other software based adaptations, a computer with 640K of memory. Although it continues to function, Turbo Lightning loses some flexibility when used with non-standard programs like Mind Reader. Although non-standard programs do not appear on the Turbo Lightning installation menu, with a little experimentation almost any program can be accommodated. When using the program with a two floppy drive system, best results will be obtained by placing the program and thesaurus files on drive A: and the dictionary files on drive B:.

A.51

Notes: Turbo Lightning is a "real-time" spell check and thesaurus. That is, it checks spelling as text is actually being entered. A tone alerts the user to probable spelling errors as they actually occur. Pressing a single key causes Turbo Lightning to display a window of likely correct spellings. Word corrections are based on sound alike words rather than similarly spelled words. For example, the incorrectly

spelled word "psikologist" would still cause Turbo Lightning to suggest the correct spelling of "psychologist" because of the sound alike quality of both words. Placing the cursor on a word in the document and pressing a single key causes a list of synonyms to be displayed. Word replacement is completely automatic for both the spell checker and thesaurus. New words can be added to the spell checker's dictionary but not to the thesaurus.

A.52