



First Byte®

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First Byte®

THE WORLD'S LEADER IN SOFTWARE SPEECH TECHNOLOGY.

T H E
HANDBOOK
F O R

SmoothTalker.

Give Your Computer the "Freedom of Speech"

SmoothTalker®

H A N D B O O K

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SECTION 1

AN INTRODUCTION TO SMOOTHALKER

SmoothTalker is the result of nearly three years of work by **First Byte**®, the world's leader in software speech technology. **SmoothTalker** is a sophisticated software-only speech synthesizer that converts text to speech in two steps.

1. A powerful "front-end" takes normal English text and automatically converts it into "building blocks" of speech called phonemes. It also applies over several hundred English "rules" to the incoming text, and automatically encodes things like, stress, pitch, and inflections caused by punctuation.
2. The "back end" automatically converts these encoded phonemes into speech through the computer's built-in speaker.

While no knowledge of phonemes (phonetics) is needed to use **SmoothTalker**, (normal English works just fine) you can enter phonetic coding directly to be read by the "back-end" of the program if you so choose. The phonetic codes and examples are shown in the "**Using and Showing Phonetics**" section in this "**User's Guide**".

SmoothTalker can accept text from five places:

1. From the display screen via your computer's keyboard, or from devices that simulate keyboard input, like character or bar-code readers.
2. From a pre-stored **SmoothTalker** document that was previously created using **SmoothTalker**.
3. From a pre-stored text document that was created using another software program.
4. From software programs that have been end-user written in certain programming languages.

The uses of **SmoothTalker** are limited only by your imagination. Here are some:

EDUCATION: Story writing, typing instruction and other innovative auditory-based learning.

HOME: Entertainment and education.

BUSINESS: Proofreading letters, memos, reports, spreadsheets, and speech and presentation preparation.

PROGRAMMING ENTHUSIASTS: Talking programs for the program author's own personal, non-commercial, use: such as telephone answering and voice message switching.

In addition, **First Byte** also licenses special commercial modules of **SmoothTalker** to other software developers so they can include and embed the "Freedom of Speech"™ within their own commercial programs. Inquiries are welcomed.

SECTION 2

TEXT ENTRY

Giving your computer the "Freedom of Speech" is a simple, two part process. First text is entered, and secondly text is spoken by **SmoothTalker**.

This section will cover the first of these two parts. The next section, "**Activating Speech**", will address the second part.

When the **SmoothTalker** program is first opened from the disk, it comes up with a blank window (a **New**, and Untitled, document).

Any English text entered into this blank window can be spoken; you can: (a) use the computer keyboard or a device that simulates the keyboard, (b) **Open** a previously stored text-only document.

The easiest method is to simply use the keyboard to enter the words, phrases or sentences that you wish to hear. Common and familiar "**Edit**" commands are available to **Cut**, **Copy**, and **Paste** portions of your text.

SECTION 3

ACTIVATING SPEECH

The text you want spoken must be visible in **SmoothTalker's** window on the display screen. If your desired text is visible, you are ready to have **SmoothTalker** talk! If it isn't visible, it may require using the "**File**" commands to either (a) **Open** an existing (pre-written) document or (b) to create a **New** (blank, and untitled) document into which you enter your text.

To activate speech, select "**Speech**" on the Main Menu. The command **Speak Text** allows you to say all, or part of a document. To have the entire document spoken just select **Speak Text**. To say only part of a document select the text you wish spoken and **SmoothTalker** will say just that portion of the text when you select **Speak Text**.

The command **Turn Repeat On** will cause either the entire document or the selected portion to continuously repeat or "loop". This command "toggles", or alternates, between **On** and **Off** with subsequent menu selection, allowing you to control this repeat function.

You also have speech options to activate while you are entering text. You can find these added features by selecting **Extras** on the Main Menu. You can select **Letter by Letter** and each letter you type will be spoken after it is entered. Select **Word by Word** and after you enter a word and press the space bar, it will be spoken. Finally, you can select **Sentence by Sentence**. After you have finished typing a sentence the final period, question mark or exclamation mark will direct **SmoothTalker** to say the entire sentence. The **Quiet** command turns off all speaking functions while text is being entered.

SECTION 4

SAVING, RECALLING TEXT, AND QUITTING

SmoothTalker has several commands that allow you to save text so it can later be recalled to hear it spoken or to edit its contents. The text can also be printed. These commands are located under the "**File**" heading on the Main Menu.

NEW: Used to open a **New**, blank, and untitled document.

OPEN: Used to **Open** and recall text from an existing document created by **SmoothTalker**.

CLOSE: Used to **Close** the document that was just being worked on. As a protection against accidentally losing your work, a dialog box will appear and give you the opportunity to **Save** your work.

SAVE: **Saves** the current document to the disk. If a document of the same name was already on that disk, this command will replace it with this latest version.

SAVE AS: **Saves** the current document to the disk under a new or different name.

PRINT: **Prints** the current document.

QUIT: This command leaves **SmoothTalker**. If you have made changes to this document, you will be presented with a dialog box giving you the opportunity to **Save** the changes before quitting.

SECTION 5

SHORTCUTS

The English language has many different abbreviation forms and symbols. Most, often look different from the way they are actually pronounced. Here are two examples:

"Dr. Smith" is pronounced as "Doctor Smith"
"300%" is pronounced as "three hundred percent".

Because **SmoothTalker** is sophisticated, it pronounces these just as you probably do. Try them and experiment:

Dr. Mrs. 5/12/85 @ \$ 85% &

12 + - = \$12344.56 997/8

"Test" (213) 427-0178 501-48-7734

SECTION 6

CHANGING THE SPEECH VARIABLES

SmoothTalker allows many aspects of speech to be user-controlled: **Volume, Pitch, Speed, Tone,** and **Gender**. You can also manually insert timed delays into the text to be spoken. **SmoothTalker** works very well without ever using these options, but using them gives you more control over the way **SmoothTalker** sounds. It can be just plain fun!

The speech variables within a document can be changed at two different levels:

1. **Global** changes effect the entire document and the way it is spoken. **Global** changes are made from the **Speech Settings Window** or from the "**Gender**" option on the menu bar. **Global** settings are "invisible" and can't be seen when looking at the document (they can be seen by looking in the **Speech Settings Window**).
2. Just a portion of the document (like a paragraph, sentence, or even a word) can also be changed. If a portion of the document has been changed, that portion will appear within double brackets <<like this>>. Additional coding following the left pair of brackets tells **SmoothTalker** how this section is to be spoken. Encoding just a portion of the document can be completed by manually encoding the desired selection or by using the **Speech Settings Window**.

SHOWING AND HIDING THE SPEECH SETTINGS WINDOW

The **Show/Hide Speech Settings Window** command under the "**Speech**" selection on the menu bar "toggles", or alternates, between **Show** and

Hide with subsequent menu selection, allowing you to see, or hide, this window. **SmoothTalker** won't allow the **Show Speech Settings Window** command to be used with an empty document.

If the **Phonetics Window** is visible, you will have to **Hide** it (using the "**Speech**" menu bar option) before you can select **Show Speech Settings Window**; the **Phonetics Window** and **Speech Settings Window** can't be shown at the same time.

USING THE SPEECH SETTINGS WINDOW

Using this window is an easy keyboard, joystick, or mouse based operation.

1. **CHANGING THE VARIABLES:** Change the various variable settings (**Volume, Pitch, Speed, Tone,** and either **Male** or **Female**) by activating the buttons shown on the **Speech Settings Window**.
2. **CHANGES TO THE ENTIRE DOCUMENT:** **Global** changes are made using the **Set Entire Document** option. Remember, that **Global** settings are "invisible" and can't be seen when looking at the document. They can be seen by looking in the **Speech Settings Window**.
3. **CHANGES TO A PORTION OF THE DOCUMENT:** These changes are made using the **Set a Single Selection** option. Select the portion of the text you wish to change. When the **Set a Single Selection** button is clicked, the selected section will automatically be enclosed within the required <<brackets>> and the speech variable codes will be inserted.

VALID CODES AND RANGES for the **Speech Settings Window**.

<< V text >> = Volume (0=soft to 9=loud)
<< P text >> = Pitch (0=soft to 9=loud)*
<< S text >> = Speed (0=soft to 9=loud)
<< T text >> = Tone (0=soft to 9=loud)
<< M text >> = Gender (F=female or M=male)

* Using the letter "P" is optional; a number without a preceding variable letter is assumed to be a Pitch value.

RESET SETTINGS

The speech settings automatically will start with values of Volume 5, Pitch 5, Speed 5, Bass Tone, and Male Gender (V5, P5, S5, B, and M). At any time you can quickly reset the values in the **Speech Settings Window** to these standard settings by selecting the **Reset Settings** option in the **Speech Settings Window**.

SmoothTalker automatically encodes incoming English text for stress and inflections to give it a more natural sound. However, if you override this feature by encoding a portion of the document with a pitch change, i.e. "P3", that portion will sound monotone. If this monotone effect is not desired, "**Cut**" out the pitch encoding, "P3". Volume settings 7-9 may cause distortion in some computers.

MANUALLY EMBEDDING VARIABLES

After you have thoroughly mastered encoding variables by using the **Speech Settings Window**, you may wish to manually encode speech variables. Remember that the section to be changed must usually << begin and end >> with double brackets.

The coding of the variables always follows the left set of double brackets. The variables can be shown in any order. One or more spaces must follow the last variable before the English text starts; i.e. <<S8V7 Like the space between the "7" and the word "Like" inside this example >>

ADDITIONAL VARIABLE CODES

Besides V, P, S, T, B, M, and F, two other codes are valid, but they can only be inserted into your English text string manually

1. <<~phonetic-text-string>> The ~ tells **SmoothTalker** that the following text-string is in phonetics, not English. You can learn more about this in the "**Using and Showing Phonetics**" section of the **User's Guide**.
2. <<Dx>> = Delay (according to the following times) Delays can be "accumulated" so that <<D2D3D8>> would cause a delay of 9.5 seconds.
0 = no delay
1 = .25 second delay
2 = .50 second delay
3 = 1 second delay
4 = 2 second delay
5 = 3 second delay
6 = 4 second delay
7 = 6 second delay
8 = 8 second delay
9 = 10 second delay

CLEARING EMBEDDED COMMANDS

Clearing any embedded command is a multi-step process. Use the keyboard, joystick, or mouse to select the brackets and their associated speech variable codes, and then, **Cut** them using the "**Edit**" menu bar choices.

SECTION 7

HOW TO USE THE EXCEPTION "DICTIONARIES"

SmoothTalker is a "rules" based software speech synthesizer with over twelve hundred English "rules". However, because English is such a complex language with so many exceptions to the rules, **SmoothTalker** cannot pronounce every word correctly. For example, the word "chihuahua" (the tiny dog with the pointed ears) is not pronounced at all like it looks. It is, instead, pronounced "Cha waw waw". You may want to have the abbreviation "AW" refer to your company name, American Widget. The **Exception Dictionary** functions allows **SmoothTalker** to handle exceptions, mispronunciations, and abbreviations.

The **Dictionary** allows you to:

1. Correct a mispronunciation using misspelled English: Chihuahua=cha waw waw.
2. Correct a mispronunciation using phonetics. (Using phonetics is an option, you do not need to know phonetics to use **SmoothTalker**; see "**Using and Showing Phonetics**" in this "**User's Guide**".) Chihuahua=~CHAXwAAwAA
3. Define an abbreviation (using either English or phonetics) so it will be correctly spoken: AW=American Widget.

THE "CURRENT DICTIONARY"

SmoothTalker allows multiple **Dictionaries** to be present on the disk, and, at any point in time, one (and only one) of these **Dictionaries** can be present within the computer's memory. Any **Dictionary** currently in memory, is called the "**Current Dictionary**".

When **SmoothTalker** is first opened, it automatically loads the "**System Dictionary**" from the disk into memory. You enter your commonly used exception words and abbreviations in the "**System Dictionary**".

In auxiliary **Dictionaries** you can place less frequently used exception words and abbreviations. You determine the name for these auxiliary **Dictionaries**. They are not automatically loaded into memory; you will learn how to load an auxiliary **Dictionary** later in this section.

DICTIONARY FUNCTIONS

Edit Current Dictionary: This option allows you to add, delete, or change (by redefining) exception words or abbreviations in the "**Current Dictionary**" (the one loaded into memory). The **Edit Current Dictionary** function references these terms:

CORRECT SPELLING: Enter the word or letters that need to be changed. When **SmoothTalker** "reads" this exception word it will substitute the **Correct Pronunciation**. If you are entering an abbreviation in **Correct Spelling**, the first character must be an alphabetic letter; D374 is valid, 374D is not. Only letters and numbers are allowed, not special characters or punctuation marks.

CORRECT PRONUNCIATION: The **Correct Pronunciation** can be entered in either English, or, Phonetics. If you are using English, just enter the English to be substituted like "cha waw waw" or "American Widget". The **Correct Pronunciation** can also contain user-embedded commands, like <<V7S9 hello>>. Using **Phonetics** is an option, you do not need to know **Phonetics** to use **SmoothTalker**. If you do know **Phonetics**, you can enter the **Phonetics** to be substituted here instead of the English (like <<~CHAXsAAxAA>>). (See the "**Using and Showing Phonetics**" section of this "**User's Guide**".)

If your **Correct Pronunciation** of a word sounds "cut off" when spoken, it is due to the fact that **SmoothTalker** will truncate back-end phonetics that exceed 32 characters.

SAY IT: Make sure the **Correct Pronunciation** sounds like you want it to sound before it gets added to the "**Current Dictionary**".

ADD IT: Adds the **Correct Spelling** and the **Correct Pronunciation**, to the "**Current Dictionary**".

DELETE IT: Removes a word from the "**Current Dictionary**".

CANCEL: Quits the **Dictionary** function without making any of the changes or additions.

QUIT: Quits the **Dictionary** function and makes all your changes and additions to the "**Current Dictionary**". **SmoothTalker** will prompt you for the name you want this "**Current Dictionary**" to be called on the disk; and then will save the "**Current Dictionary**" (from memory to the disk). If you supply a name already used on your disk, it will overlay (or replace) it with the contents of the "**Current Dictionary**".

View Current Dictionary: This option allows you to look at, but not change, the exception words or abbreviations in the "**Current Dictionary**" in memory.

Replace Current Dictionary: This option can be thought of as the "switching of the **Current Dictionaries**". This "clears" out of memory the "**Current Dictionary**", and then, in an automatic second step, loads (from the disk into memory) another user-specified **Dictionary**.

Create New Dictionary: This option creates a whole new **Dictionary**. This "clears" out of memory the "**Current Dictionary**", and then, in an automatic second step, creates a new, and empty, **Dictionary**, with a new, user-specified name.

SECTION 8

USING AND SHOWING PHONETICS

It isn't necessary to know phonetics to use **SmoothTalker**. This is an optional topic for the curious, or the very experienced. This section will discuss phonetics, phonetic coding (using phonemes), speech variables using phonetics, and two of the five choices under the "**Speech**" command on the menu bar:

SHOW / HIDE PHONETICS WINDOW RE-PHONETICIZE SELECTION

Phonetics is the analysis of speech sounds with respect to their articulation and acoustic properties. The "building blocks" of speech are called phonemes, and they are the smallest significant units of speech.

The "front-end" of **SmoothTalker** converts normal English text into phonemes which are converted by the "back-end" into speech. You can by-pass the "front-end" and write directly in phonemes; or you can use them in the exception **Dictionary** function to get that hard-to-say word to sound "just right".

While it isn't necessary to understand phonemes to use **SmoothTalker**, you may wish to experiment with them. Phonemes are represented by either one character (always one lower-case letter) or by two characters (always two UPPER-case, or CAPITAL letters).

If you want to experiment with phonetics, you will find it very helpful to reference the list of the phoneme codes in this section.

SHOWING PHONETICS

The **Show/Hide Phonetics Window** command under the "**Speech**" selection on the menu bar "toggles" or alternates, between **Show** and **Hide** with subsequent menu selection, allowing you to see, or hide, this window. **SmoothTalker** won't allow the **Show Phonetics Window** command to be used until after the desired English phrase to be converted to phonetics has been selected.

If the **Speech Settings Window** is visible, it will be automatically replaced by the **Phonetics Window**; the **Speech Settings Window** and **Phonetics Window** can't both be shown at the same time.

The **Phonetics Window** can show 250 characters of equivalent phonetics at one time. If you selected an English phrase that requires more than 250 characters of equivalent phonetics, **SmoothTalker** will truncate the length of the selected English text.

Once the **Phonetics Window** is visible on the screen, you can select additional English phrases and show their equivalent phonetics. Select the new English text, and then use the **Re-Phoneticize** choice under the "**Speech**" heading on the menu bar. The new phonetic equivalent will be shown in the **Phonetics Window**.

You can speak, modify, or change the equivalent phonetics shown in the **Phonetics Window**.

The contents of the **Phonetics Window** are not saved with the document. If you want to keep the modified equivalent phonetics, **Copy** or **Cut** them from the **Phonetics Window**, and **Paste** them in the upper document work area, which then can be saved (using **Save** under the "**Edit**" menu).

A ~ tells **SmoothTalker** that the characters following it are phonetics. The upper document work area can be either: totally phonetics, or, mixed English and phonetics.

To use mixed English and phonetics, put the phonetics string, and a ~, inside <<double brackets>>, like this: English-text-string <<~phonetic-text-string>> English-text-string.

PHONEME CODES:

~ Phonetic text code: tells **SmoothTalker** the following characters are phonetics. If you are mixing English and phonetics, the ~ is inside the double brackets: <<~phonetic-text-string>> Don't forget to use ~ in the **Dictionary** if you are entering phonetics in the **Correct Pronunciation** field.

[Shortens the following phoneme.
] Lengthens the following phoneme.

/ Raises the current pitch value (0-9) by one.
\ Lowers the current pitch value (0-9) by one.

| | | | |
|-----------|---------------------------------|-----------|---|
| AE | short "a" as in "l <u>a</u> st" | EY | long "a" as in "a <u>ce</u> " |
| EH | short "e" as in "b <u>e</u> st" | IY | long "e" as in "b <u>ee</u> t" |
| IH | short "i" as in "f <u>i</u> t" | AY | long "i" as in "i <u>ce</u> " |
| AA | short "o" as in "c <u>o</u> t" | OW | long "o" as in "d <u>o</u> g <u>o</u> se" |
| AH | short "u" as in "u <u>p</u> " | UW | long "u" as in "l <u>u</u> te" |

AO intermediate "o" in "caught"

UH "u" sound in "book"

AX schwa sound in "against"

OY diphthong in "noise"

AW diphthong in "loud"

| | |
|-----------|---|
| ER | "f <u>ur</u> ther" or "f <u>ur</u> th <u>er</u> " |
| CH | "ch <u>i</u> n" |
| TH | "th <u>i</u> n" |
| SH | "sh <u>i</u> n" |
| DH | "th <u>e</u> n" |
| ZH | z as in "pleas <u>u</u> re" |
| NG | "sing" |
| WH | "wh <u>i</u> ch" |

| | | | |
|----------|------------------|----------|------------------|
| p | "P <u>i</u> n" | t | "t <u>i</u> n" |
| k | "k <u>i</u> n" | b | "b <u>i</u> n" |
| d | "d <u>i</u> n" | j | "G <u>i</u> n" |
| g | "G <u>i</u> ven" | f | "f <u>i</u> n" |
| s | "s <u>i</u> n" | v | "v <u>i</u> m" |
| z | "z <u>e</u> n" | l | "l <u>i</u> ght" |
| m | "m <u>i</u> ght" | n | "n <u>i</u> ght" |
| h | "h <u>i</u> t" | r | "r <u>a</u> te" |
| w | "w <u>a</u> it" | y | "y <u>e</u> t" |

SPEECH VARIABLES

Speech variables in a phonetic text-string are embedded differently from an English text-string. You do not use the <<beginning and ending>> brackets as you learned to do with English text. Instead the codes are just placed in the phonetic string at the desired position. Here are the valid codes and ranges:

| | | | |
|----------------------|---|--------|-----------------------|
| V | = | Volume | (0=soft to 9=loud) |
| * | = | Pitch | (0=soft to 9=loud) |
| S | = | Speed | (0=soft to 9=loud) |
| T or B | = | Tone | (T=treble or B=bass) |
| D | = | Delay | (0=short to 9=long)** |
| | | Gender | (Male or Female) |

* Do not use a "P" for pitch. Just use any number 0-9.

** See "**Changing Speech Variables**" for Delay values

