equinox

Sayonara KanjiTalk: An Introduction to WorldScript and the Japanese Language Kit

Author(s): Yoshiko Saito and Thomas F. Abbott

Source: *CALICO Journal*, Summer 1994, Vol. 11, No. 4 (Summer 1994), pp. 67-86

Published by: Equinox Publishing Ltd.

Stable URL: https://www.jstor.org/stable/24152760

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at https://about.jstor.org/terms

Equinox Publishing Ltd. is collaborating with JSTOR to digitize, preserve and extend access to *CALICO Journal*

JSTOR

This content downloaded from 129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

Sayonara KanjiTalk: An Introduction to WorldScript and the Japanese Language Kit

Yoshiko Saito, The University of Texas at Austin,
and Thomas F. Abbott

ABSTRACT

With Apple's **WorldScript** technology the door is now open for Japanese language teachers to develop the wonderful learning materials that, up until now, have only been wishful thinking. Previously technical obstacles and the expense of producing high quality Japanese text were prohibitive. This article focuses on the developmental stages involved in arriving at reliable Japanese language capability for Macintosh and the potential benefits offered by **WorldScript**. Formidable obstacles had to be overcome, but now that Apple has introduced **WorldScript** technology, many of those difficulties have been resolved for Macintosh users.

KEYWORDS

WorldScript, KanjiTalk, Japanese Language Kit, Macintosh.

INTRODUCTION

The **Japanese Language Kit (JLK)** has made Japanese language capability easily accessible to Macintosh users around the world. Users of the **JLK** can now use Japanese from within their own native language operating system and no longer need multiple operating systems. Apple's **WorldScript** technology, introduced with System 7.1, is a major accomplishment in the direction of foreign language accessibility for the Macintosh community. It adds full multiple language capability to the arena of foreign language fonts.

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

Foreign language fonts have long been an important focus for the Computer Assisted Language Learning (CALL) community. In the case of languages using alphabets with a fixed number of characters, a specially designed font set and keyboard map had to be devised. For languages written from right to left (e.g., Arabic or Hebrew) the technical challenge was greater, and for symbolic languages (e.g., Chinese and Japanese each with as many as 50,000 characters) formidable obstacles had to be overcome. **KanjiTalk**, the Japanese Macintosh operating system, made Japanese available to the Japanese market, but it was extremely limited outside Japan. Now that Apple has introduced the **JLK** as the first **WorldScript** language kit, non Japanese users can finally use Japanese on their computers (see Appendix for a full listing of the **JLK** and **CLK** components).

This article focuses on the historical and developmental stages involved in arriving at reliable Japanese language capability for Macintosh and the benefits offered by the **Japanese Language Kit/WorldScript** with particular note of its value in the area of Japanese language instruction. First, some general background on the development of electronic Japanese text encoding and word processing is presented. Next, the evolution of Macintosh-based Japanese fonts and systems software is traced up through System 6. Then, the arrival and significance of **WorldScript** and the **Japanese Language Kit** is discussed.

BACKGROUND: WRITINGS IN THE SAND — SILICON MEETS KANJI

Electronic Word Processing

Today, those of us who work with words are understandably pleased with the ever-improving capabilities of our word processing tools, and we tend to take for granted that similar capabilities exist for all languages. This, however, is not necessarily the case, since development of necessary system software and word processing applications has come much more slowly for complex symbolic writing systems such as those of Chinese, Japanese, and Korean. Computers, with their ability to handle and manipulate large amounts of data and perform repetitious tasks tirelessly, were ideally suited to the task of Japanese word processing, but it was the microprocessor that truly enabled a breakthrough. The impact of the microprocessor on symbolic writing systems is truly awesome; it simultaneously expanded the computer's capacity and dramatically reduced its total size. This, in turn, made it possible to mass produce machines that could deal with the complexity of the Japanese writing systems.

This content downloaded from 129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

Written Japanese

Japanese has three writing systems; two are alphabetic, Hiragana and Katakana, and one, Kanji, is ideographic. Hiragana and Katakana are phonetic alphabets which are written differently, but which have exactly the same sounds. Hiragana is used to write Japanese words, and Katakana is reserved for foreign words. Kanji are what come to mind when most people think of Japanese or Chinese writing, they are ideographs each of which represent a thing or concept. There are about 50,000 Kanji all of which can be phonetically written in Hiragana. However there are many, many homonyms. Lastly, Romaji or romanization refers to the practice of writing Japanese phonetically using the Roman (Western) alphabet. Any effort to make Japanese accessible via a Western keyboard will have to start with Romaji.

The Technical Challenge

Simply stated, to develop Japanese word processing, three technical challenges had to be surmounted: input, character selection, and output. Output to either a visual display or a printer was conceptually facilitated by dot-matrix technology. An input method using the QWERTY keyboard had to be devised and a coding standard similar to but on a much larger scale than ASCII had to be established so that characters could be identified, stored, and quickly retrieved. This coding system was called JIS (for a full discussion of JIS and telecommunications in Japanese, see *Understanding Japanese Information Processing*, by Ken Lunde 1993).

The input methods devised by Japanese engineers enabled users to enter a Japanese word phonetically in either Romaji with a Western keyboard layout or in Hiragana with a Japanese keyboard. Japanese has many homonyms, so the software has to look up all of the Kanji with that sound and offer the user a choice based on frequency of use. Of course, the process was not as simple as this short description implies, but with input systems, character lookup schemes, and output technology developed, the foundation for computer based Japanese word processing was established.

From the Laboratory to Market

In the authors' experience, dedicated Japanese word processing machines began to appear in Japan around 1980. Throughout that decade, these machines followed the normal path of development in the electronics industry – they became smaller, faster, more powerful, easier to use, and

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

cheaper. By the end of the 1980s, schoolchildren could have their own notebook size "*wa-pro*," and teachers were becoming concerned about students' losing the art of calligraphy. The *wa-pro* is a dedicated, single-purpose microcomputer with a lookup dictionary, fonts, and an input conversion engine in ROM; additionally a printer and a small display are built in. While the *wa-pro* continues to be very popular in Japan, the development of personal computers, of course, has followed the same path and Japanese word processing applications are now generally available.

EARLY APPLE BASED JAPANESE LANGUAGE SOLUTIONS

Custom Font Sets

With the arrival of Apple's Macintosh computer and its bit-mapped graphic font system, the possibility for designing higher quality Kanji fonts was created. Just seven months after the January, 1984 introduction of Macintosh, Linguist's Software published MacKana (*MacWorld* 1984, 90). This was a font set that mapped every possible ASCII address to hold "all of the Katakana, Hiragana, punctuation marks and 70 Kanji" (Payne 1989, 3). MacKana led the way, but it was limited and a true Japanese operating system was needed.

Japanese Word Processing with U.S. System

In Japan, the first efforts to develop Japanese word processing capability for Apple personal computers included Japanese character sets and an input method as part of their software and ran with the then current U.S. system. **Assist 16**, a Japanese word processor that would run on Apple IIe and IIc models, was published by A & A Company, Ltd. Tokyo in 1984. **Assist 16** ran under Apple DOS 3.3 and required two 5.25" floppy disks. It worked reasonably well for the time, but by then the Macintosh was coming up on the horizon, and another Japanese company, ErgoSoft, introduced **EgWord** version 1.1 in late 1984. **EgWord** too ran under the current American Macintosh system. **EgWord** came on three 800k disks with its own font sets and conversion (character lookup) engine. The first versions of **EgWord** sometimes had conflicts with the ever-changing Macintosh operating systems of the day, as well as with the unpredictable number of INITs that might be encountered in a user's system file. In other words, it was a bit unstable, but that may well have been due to factors beyond ErgoSoft's control. It certainly was not the only unstable application in those days, but a true Japanese operating system would be needed to improve reliability.

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

JAPANESE SYSTEM SOFTWARE

Apple needed to develop a true Japanese operating system, they began work on it in late 1984 and delivered their first Japanese system software, **KanjiTalk**, to developers in 1986. Version 2.0, released in 1987, was the first reasonably stable Japanese OS for Macintosh. At that time the Japanese Macintosh software library was minuscule while many superb applications had been developed for the American market. Consequently, most Macintosh users who needed Japanese capability still wanted to run both the U.S. system and **KanjiTalk**. In order to do this, one had to have both systems installed on a hard disk and use a utility program such as **System Switcher** or **The Blesser** to designate on which system the Macintosh would start up. Having two systems on the same hard disk has always been a potentially unstable way to set up a Macintosh; some applications designed to run in one environment may crash or not run at all in the other, and the only way to discover which ones were incompatible was by trial and error.

By 1989, however, **KanjiTalk** had progressed to version 6.x and was far more dependable. A Japanese version of **HyperCard** was released, and soon CALL applications featuring Japanese began to appear, but they often needed **KanjiTalk** to run (e.g., Maciejewski and Leung 1992; Nara 1992), or depended upon custom font sets (e.g., Hatasa, Henstock, and Hsu 1992; Saito and Abbott 1994). Unfortunately, **KanjiTalk** was still difficult to obtain and poorly supported outside of Japan. Thus these **KanjiTalk**-based CALL applications were effectively unavailable to many prospective users.

KanjiTalk in Practice

In an academic setting of Japanese graduate students who were good at Japanese but weak in computers, and American students who were good at computers but weak in Japanese, the combination of computer neophytes, potential system/application incompatibilities, and not-quite-bullet proof **KanjiTalk** systems made the whole subject of writing Japanese on a Macintosh rather dynamic. By 1989, with **KanjiTalk** 6.x, this became possible and good Japanese application software began to appear. The Japanese word processor application of choice at that time was **EgWord** from ErgoSoft (Tokyo) and its companion product for page layout, **EgBook**. They had evolved together with **KanjiTalk**, and by 1990 it was possible to run MultiFinder in **KanjiTalk** 6.x with reasonable confidence

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

and produce bilingual documents with graphics and fairly sophisticated layout designs. Still, however one had to run multiple systems and a switching utility — a formula for frequent problems necessitating frequent in–house user support.

Third Party Customer Support

Unfortunately, Apple seemed to display a perpetual state of ambivalence toward prospective **KanjiTalk** users located outside of Japan. **KanjiTalk** customer support from Apple was nonexistent. Linguist's Software was licensed by Apple to resell international systems, including **KanjiTalk**. Linguist's repackaged the various localized Macintosh systems – Arabic, Hebrew, Japanese, Korean, etc. – with bilingual installation instructions and a few useful utility programs. Linguist's technical support staff often found themselves supporting non Japanese **KanjiTalk** users from all over the world. This was a real service for academic and other Macintosh users who needed these foreign language capabilities, and for many years Linguist's was their only reliable source, but according to Dr. Phil Payne, Linguist's founder, it has been a rocky relationship (Payne 1994).

Japanese Use Grows in America

During this same time frame, the number of Americans studying Japanese began to increase dramatically (Modern Language Association 1991), and the adoption of personal computer-based word processing also spread across the industrialized world. Teachers of Japanese often found Macintosh with **KanjiTalk** to be their best option.

WorldScript Arrives

In late 1992, Apple introduced Macintosh System 7.1 with **WorldScript** technology. The arrival of **WorldScript** was a long-awaited event for internationally focused Macintosh users. Specific system software kits were still needed to realize the prospect of working in non-Western languages such as Japanese or Chinese. The **Japanese Language Kit (JLK)** was released in the second quarter of 1993, and the **Chinese Language Kit (CLK)** in the fourth quarter of the same year; more are in the pipeline. Finally, with the delivery of **WorldScript** and the **JLK**, American users can now write Japanese, and Apple is providing 800 number telephone support. Just how significant and how useful are **WorldScript** and the language kits?

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

JLK Compatible Applications

The next evolutionary stage was the arrival of additional commercial quality word processing programs, most notably **Nisus**, a Japanese market version of **Nisus** renamed **SoloWriter**, and **WordPerfect** starting from version 2.1. Also, in the localized category, Japanese versions of the Aldus, Claris, and Microsoft lines and DTP programs such as **PageMaker** were introduced. Software localization is the practice of modifying an application to operate in the language of a particular market. In the case of adapting an American application for the Spanish market, the major challenges are to produce Spanish documentation, marketing, and customer support. Users in the local market can be expected to have the correct fonts in their systems and the correct keyboards, the technical changes will be relatively minor. When a producer enters a market such as Japan, the technical attributes of the language become more formidable. American market applications typically cannot operate correctly with the two byte characters of Japanese. Thus the application must be significantly modified or "localized" to be usable. In general, however, these products are not well supported outside of Japan and can only be purchased at Japanese Yen prices, which make them much more costly than their American counterparts.

JLK Savvy Applications

"Savvy" is a term used throughout this article that means something more than "compatible." **HyperCard** and **SuperPaint**, for example, are **JLK** *compatible*, by manually selecting a Japanese font and changing the keyboard map, one can enter Japanese in an input window at the bottom of the screen. The Japanese text must then be accepted by pressing return or enter. **Nisus**, on the other hand, is **JLK** *savvy*, by typing "CMD space" the keyboard and font are both automatically changed to Japanese and Japanese text conversions occur seamlessly in-line. **MSWord** is *incompatible*, it may show Japanese on the screen, but printing produces a document which is not in any known language.

When **WorldScript/JLK** were introduced, only **Nisus** and **EgWord** were fully **JLK** savvy from the outset, **WordPerfect** has since announced a new **WorldScript** savvy version. Both **Nisus** and **WordPerfect** in America, have toll-free technical support and are very supportive of the academic market, so now foreign language educators have excellent word processing tools available.

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

One System for All

In the American academic setting, Japanese students were generally more comfortable with **EgWord** and **KanjiTalk**, but they often had to use the American system for other applications they might need in the course of their studies. Conversely, American students who wanted to do some work in Japanese had to switch into **KanjiTalk** and often became frustrated with the Japanese menus and system messages. System switching still remained a problem area because of incompatibilities between some applications and one system or the other. After a couple of system failures, less adventurous students tended to stay away from switching between multiple systems.

These problems were solved for the most part with the delivery of the **Japanese Language Kit** for American System 7.1 (and the corresponding International versions of System 7.1) and **KanjiTalk** 7.0 which incorporates **WorldScript** II technology. A nice feature of **WorldScript** is that the user can choose the menu language for each application. All systems are now effectively multilingual and are readily available. Apple finally resolved its user support ambivalence with System 7 and decided to charge for system software in America as well as the rest of the world. The prices are relatively low, but they allow Apple to recover production and distribution costs and provide technical support. (The **JLK/CLK** works very well with System 7 Pro and System 7.1.2 [PowerPC]. As this article goes to press, System 7.5 is being released and will require **JLK** version 1.1.1 which will not be released until December 1994.)

WORLDSCRIPT AND THE JAPANESE LANGUAGE KIT

Just exactly what is the **Japanese Language Kit**, what can we do with it, and how easy is it to install and use? Apple (Cannon 1993, 1) describes the **JLK** as follows: "The **Japanese Language Kit** is a package that adds Japanese script capabilities to any System 7.1 Macintosh System. The core of the package is fonts, an input method, script resources, and **WorldScript** II. Some extensions and a utility add additional functionality. An installer script and (bilingual English-Japanese) user documentation complete the package."

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

Scripts

The term **script** may need some clarification, since it is often used with slightly different, context-dependent meanings. However, "script" is a precise technical term in the **WorldScript** context. With system 7.1+ and **WorldScript**, Macintosh supports multiple languages and their writing systems through software called **script systems**. "A script system tells your computer what characters the script contains and what keystrokes produce them ... the direction of text flow ... and other information such as sort order and date, time, number, and currency formats" (Apple 1993a, 18). In other words, scripts are information used by the system that describe a font in relation to its language. A script, for example, includes a keyboard map, tells the system if text runs from left to right or right to left, or perhaps top to bottom and right to left. A **WorldScript** language kit includes appropriate fonts, keyboard map(s), script resources, and system extensions to enable the system to work properly in that language. This ability is what makes **WorldScript** superior to simply installing a custom made font set like MacKana which the system would not recognize as Japanese.

If a user is working in Japanese, the system will use the Japanese script. In some cases, the same script can be used by several languages if they use most of the same characters. In that case, the user selects which keyboard mapping scheme will be active or uses special key combinations to access the few unique characters (see Table 1). For example, the Spanish question mark "¿" can be accessed by holding down the option key and typing "?," or "ç" is just option "c" from the English operating system.

SCRIPTS	CORRESPONDING LANGUAGES
Roman	French, Italian, Spanish, English, German, others
Cyrillic	Russian, Ukrainian, others
Hebrew	Hebrew
Japanese	Japanese
Chinese	Chinese
Korean	Korean
Arabic	Arabic, Persian
Thai	Thai
Eastern European	Polish, Czech, Slovak, Hungarian, others

(Source: Apple 1993a)

Table 1. Examples of Macintosh scripts and corresponding languages

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

Easy Installation

Installing the **Japanese Language Kit** is now the easiest part. In the past, installing **KanjiTalk** correctly without disturbing the English system required some care and patience, but with System 7.1+ and the **JLK**, installation is fully automated with Apple's installer program. The installer allows users to choose either a one-button "Easy Install" or to customize the installation. One might chose the custom installation, for example, if there were limited disk space, since leaving out the two TrueType fonts would save about 13 MB of hard disk space. Of course, the scalable TrueType Kanji fonts are one of the most appealing features of the System 7 Japanese system software, especially for developers of teaching materials or graphic artists (see Figure 1). Still one can write Japanese with the bit-map fonts and the Kotoeri input engine. It is just not as attractive.

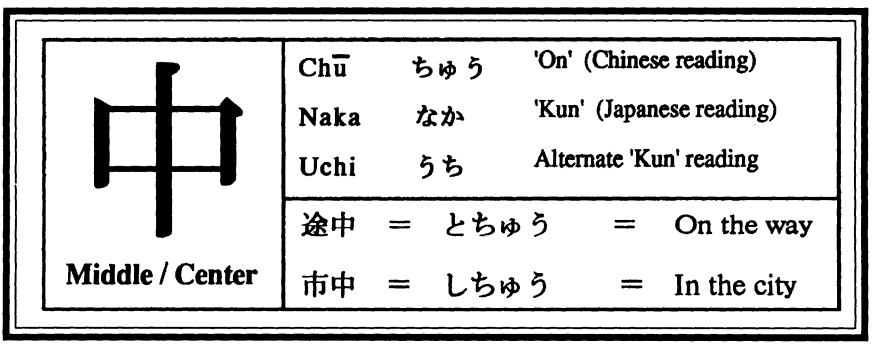

*Figure 1. Learning materials created using the **Japanese Language Kit***

According to Apple: "The **Japanese Language Kit** requires about 20 MB of free disk space. ... To install the **Japanese Language Kit**, a user simply double-clicks on the install icon, and the program will call for the appropriate disks. Japanese fonts require 6-9 MB each in order to accommodate more than 40,000 Kanji characters. Users who do not have sufficient disk space can choose to install only one TrueType font through the custom install menu. ...the user has the option of loading only the minimum configuration to conserve disk space" (Apple 1993b, 2).

The primary area of concern is memory; both System 7.1 and the **JLK** need quite a lot of memory. The system alone can take 25 MB of hard disk space or more, if one has a lot of other system resources (e.g., **Communications Toolbox, QuickTime, XTEND** resources, **SLIP/TCP**, or any of the thousands of system resources available in the Macintosh community) installed. During installation some extra space seems to be needed as

This content downloaded from 129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

"elbow room" while the **JLK** is settling in, at least an extra 10 MB in the authors' experience. RAM requirements are greater, too. The **JLK** will run in as little as 4 MB of RAM, but Apple says that 5 MB is a more realistic minimum configuration (Apple 1993a, 2). In our experience, running two applications such as **EgWord** and **SuperPaint** in 5 MB can be an unstable situation, as either application can run out of memory and suddenly freeze up. With RAM, more is always better. Practically speaking, for a wide range of machines from SE/30's to PowerBooks to Quadras to Power Macs, we have found that anything with 8 MB or more seems to run the **JLK** well, but it is definitely faster with more RAM.

Installation and user support are much less of a problem with System 7.1 and the **JLK**. Before, when a new user wanted to write Japanese, several hours were required to help set up the dual-system configuration and train the user. Now users are simply advised to purchase the **JLK** and **Nisus** and to call if they need help. Additionally, now Apple offers **JLK** technical support:

> Apple will provide technical support for the Language Kit through the 800-SOS-APPL technical support number. Our team in Austin is trained to support the product, and has access to English translations of Japanese text to help customers resolve issues encountered with the **JLK**. Support policies will vary outside the United States. ... we expect to support this product in English because the target customers for this product tend to be bilingual" (Apple 1993b, 3).

JAPANESE CHARACTER INPUT

After the preceding long discussion culminating in the successful installation of the **JLK**, describing how to use it is anticlimactic. As shown in Figure 2, when the **JLK** is installed, there is a new icon in the menu bar just to the left of the application menu.

This is the keyboard menu, which will be active if additional language scripts have been installed. Assuming that you have already opened an application in which you wish to enter Japanese text, first select a Japanese font such as "Osaka" and activate Kotoeri by typing "Command-Spacebar" or by using the keyboard menu. Then type the Japanese word in Romaji. Figure 3 shows the two-step in-line conversion process that takes place; Romaji is instantly converted into Hiragana which can then either be accepted or further converted into the appropriate Kanji.

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

Compared to typing English at 75 wpm, this is a cumbersome procedure, but compared to alternatives for producing Japanese text, it is the present state of the art. When combined with Macintosh's other graphics strengths, producing mixed text documents for any purpose is now feasible. For conversion to Kanji, the lookup dictionary is consulted.

The Kanji Dictionary

A dictionary is usually thought of as a spelling checker that can be either a stand-alone application or integrated into a word processing application. The function of the "dictionary," however, is different when working in Japanese. In either **KanjiTalk** or the **JLK**, the dictionary is part of the system software, and its function is to look up Kanji based on the user's phonetic input. As shown in Figure 3, conversion from Romaji to Hiragana to Kanji is a three stage process. From Romaji to Hiragana (r-h) is an almost straightforward phonetic conversion. The only problem

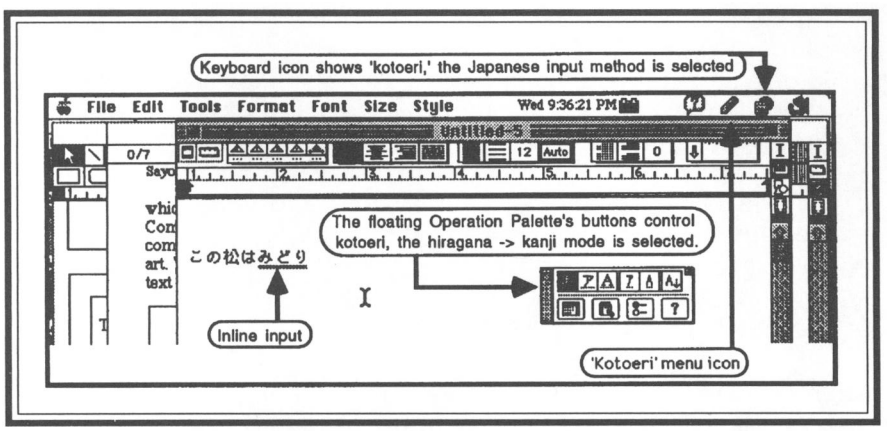

*Figure 2. Working with the **Japanese Language Kit***

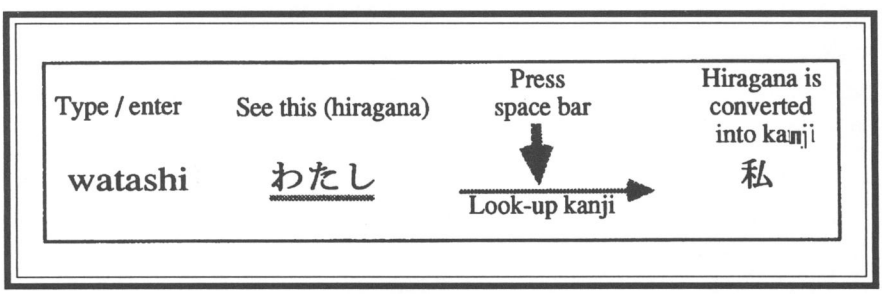

Figure 3. In-line input example

This content downloaded from 129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

is that there are several systems for romanizing Japanese, so the r-h conversion algorithms have to be able to take these into account. The **JLK** supports most popular systems including a modified Hepburn system and the National system. Another option is direct Hiragana input; for this, the Japanese keyboard is supported with a keyboard control panel and via Kotoeri.

Once the word is phonetically spelled in Hiragana, the system's conversion engine (Kotoeri) looks up all of the Kanji that match the phonetic spelling and gives the user the most frequently used Kanji for that sound. This process is not exactly straightforward, however, because in Japanese, there are many homonyms — words that sound alike — which all have different meanings and thus different Kanji. So, the function of the Japanese dictionary is to look up and present the possible matches, not to check spelling. How would the dictionary know when a user entered "ba," if s/he wanted the Kanji for "horse" or the Kanji for "wing" or any of the 10 other possibilities for that sound? The dictionary will offer the most commonly used Kanji, but if that is not the correct choice, then a list of possible matches is offered to the user as shown in Figure 4.

An additional degree of complexity arises when a word using two or more Kanji is entered. Kotoeri will usually get frequently used words like "Tokyo" right on the first attempt, but this is not always the case with less commonly used words and the names of people and places. This article does not presume to present a full discussion of the nuances of written Japanese; rather, the point here is that users must know enough Japanese to accomplish their task. Discussion of Katakana has been omitted here

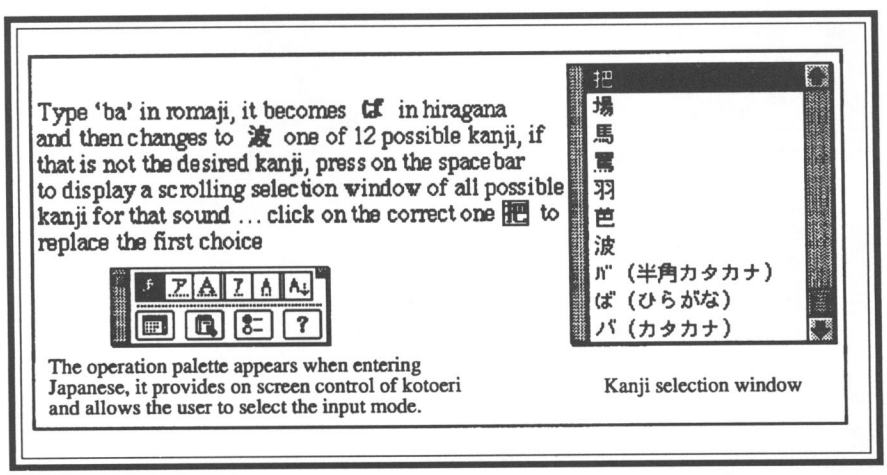

Figure 4. Look-up dictionary example

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

since it is used only for foreign words and conversion to Kanji would be illogical — in fact, an impossibility. One may enter Katakana "on the fly" by depressing the "caps lock" key. The Japanese operating system, the **JLK**, and Japanese word processing applications are not translators; they simply make Japanese accessible to anyone on the Macintosh, and that in itself is a significant accomplishment.

TrueType Scalable Kanji Fonts

With **KanjiTalk** 7 and the **JLK**, Apple introduced TrueType Japanese fonts. It is impossible to understate the value of TrueType Japanese fonts; they are scalable over a wide range of sizes and print beautifully. The graphic aspect of computer — generated Kanji characters is always noticeable in any type of document, and as 600 dpi laser printers become standard, the visual quality and attractiveness of Japanese text should enhance its communicative effectiveness. This applies as much to correspondence or advertising as to educational materials. Figure 1 shows a simple example of how English and Japanese can be mixed together with the **JLK** installed. It was totally created with the graphics layer of **Nisus** 3.47 using different sizes and styles of the HonMincho font which comes as a standard font with the **JLK**. Any Japanese teacher can create materials such as these with very little practice. In fact, students could also produce their own self-study aids or bilingual newsletters. The following vignette from Apple is illustrative of the ease and speed with which the academic world is embracing the **JLK**.

JLK Limitations

WorldScript enables those of us who are most comfortable working with the English (or other native language) system to have full access to Japanese via the **JLK**. It enables us to work with just one system configured with all the crazy system gadgets we love, like the singing trash can, "The Grouch," and we can say *Sayonara* **KanjiTalk**! The same of course applies to other languages for which language kits are available.

WorldScript Savvy Applications

WorldScript and the **JLK** only add Japanese language capability to the system software; they do not automatically give applications the ability to use Japanese. For this, software applications must be updated by the manufacturer to be **WorldScript** savvy. To date, the number of such programs is limited, but most major software producers now have Japanese market versions that will work well with the **JLK**. Japanese market versions however, are usually more expensive and not well

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

supported outside of Japan. The types of applications for which one might want a Japanese version include database, page layout, and spreadsheet applications. Table 2 gives a list of **JLK** compatible and savvy applications as of the release date for the **Japanese Language Kit**.

Japanese localized applications include:

Acta 7 1.03J	**Canvas** 3.0J	**MacWord** 2.0T2J
Illustrator 3.2J	**EgWord** 4.2J	**Quark Xpress** 2.04J
PhotoShop 2.01J	**FileMaker Pro** J 1.0v2	**SoloWriter** 1.3J
Premiere 1.01J	**GreatWorks** J	**WordPerfect** 2.2J
PageMaker 4.0J	**HyperCard** 2.1J	**Lotus** 1-2-3 1.1J
Persuasion 2.0J	**MacDraw** Pro 1.5v1	**FreeHand** 3.1J
SuperPaint 3.0J	**MacWrite** II 1.1v2J	**PrePrint** 1.0J

WorldScript savvy applications include:

Nisus 3.4	**AllScript** 1.81	**WordPerfect** 2.1 *
WinText 2.7	**AllPage** 1.82	

(Source: Apple, June, 1993)

* **WordPerfect** 3.0 was released in early 1994 and is now fully **WorldScript** savvy and PPC native.

*Table 2. **KanjiTalk** and **Japanese Language Kit** compatible and* **Japanese Language Kit** savvy applications

LOW COST TEXT EDITORS AND THE JLK

One may ask about using the free or nearly free word processing capabilities of **Teach Text**, **Teach Text Japanese**, **TextEdit**, or **Simple Text** to write Japanese? It is possible, but such basic text editors do not provide in–line or "on the fly" text conversion (see Figure 3) and lack most of the capabilities of a true word processing program. Since **TextEdit** is the text engine for **HyperCard**, it is possible to incorporate Japanese in **HyperCard** stacks if users also have the **JLK** installed. For attractive Japanese or multilingual word processing or materials development, a full featured application such as **Nisus** or **WordPerfect** is needed.

At this point, there is a great need for more **WorldScript** savvy applications. **Nisus** and **WordPerfect** are world-class word processing programs that work in many language systems. The case of Chinese, Japanese, and Korean, the symbolic languages, is more complex and requires the more elaborate language kits. **Nisus**, for example, is able to work with 16 languages with only the local system or a language extension (not to be confused with a language kit) as shown in Table 3.

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

In addition to word processing, some paint and draw applications work well with the **Japanese** and **Chinese Language Kits**, but most of the "power user" applications like **PhotoShop** or **Quark Express** are not yet **WorldScript** savvy. Whether they will be in the future is probably based on economic realities — if there is sufficient demand, more applications will be upgraded to full **WorldScript** savvy status. To articulate that demand, Apple has focused on user groups outside the educational community. The following is another vignette from Apple's files that illustrates the value of the **JLK** in commercial fields.

Communications with the JLK

Communications is a much more complicated area for reasons that are as much political as technological (Wired Electronic Magazine 1994), but Internet access is beginning to expand in Japan. There are specialized **JLK** savvy versions of Internet applications like **Eudora** or **Turbogopher** available via ftp from The University of Washington (ftp.uwtc.washington.edu in "/pub/Japanese") and other ftp sites.

Unicode

Unicode is a new international industry standard for encoding written characters; it promises to be almost all things to almost all people as far as fonts and character sets are concerned. It is expected to replace ASCII which is limited to 256 characters with a set of over 65,000 characters that could, in theory, encompass all written languages. "Unicode is the next major step in multilingual computing on the Macintosh. Apple was one of the founding contributors to the Unicode consortium and is an active participant. Apple will support Unicode in future releases of system software" (Apple 1994a, 15).

At this time Unicode is still a dream for Macintosh users. **WorldScript** is not Unicode compliant. People at Apple and at Taligent, the Apple — IBM software joint venture, are working feverishly to make Unicode a reality, but it is not here yet. One thing is sure, when it arrives we're all going to need more memory.

CONCLUSIONS

The **Japanese Language Kit** has finally brought the ability to use Japanese characters in various Macintosh applications to non-Japanese people who need to use written Japanese in their lives. It is suitable for extensive writing in Japanese or for just occasional use. Installation is as easy as

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

Nisus language capabilities with a complete language kit:
Fonts, an input method, script resources and ***WorldScript*** *II (2 byte character languages)*

Chinese	Japanese	Korean

Nisus language capabilities without a language extension:
Localized fonts and keyboard/keyboard extension are helpful, but not absolutely necessary.

British	English	Finnish	French
German	Italian	Portuguese	Spanish

Nisus language capabilities with a language extension:
Fonts, script resources and ***WorldScript*** *I*

Arabic	Czech	Farsi	Hebrew
Hungarian	Polish	Russian	Thai

Source: Nisus Software, Inc.

Table 3. Foreign language capabilities with Nisus word processing

with any other piece of Apple software, and support is available via a toll free number from Apple customer support in Austin. Since the **JLK** has become available, internal support has been virtually unnecessary. Once people know what packages to purchase, they can usually install it without help. Writing Japanese with a computer has become a matter of knowing the language rather than having to master an intimidating computer set-up.

The (Modular) Universal System?

Apple seems to be trying very hard to achieve a certain kind of universality with Macintosh system software. All localized versions of the basic operating system (currently System 7.1 or 7.1.2 or 7 Pro), are **WorldScript** ready and can accept all language kits as they become available. "Language Kits can be installed on any (language) version of the Macintosh system. The **Japanese Language Kit**, for example, can be used on the French version of System 7.1 (or later) in order to use Japanese

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

characters within an application. The **Chinese Language Kit** can be used on the Japanese system (**KanjiTalk**) and the **Japanese Language Kit** can be used on the Chinese system; essentially, any Language Kit on any Macintosh, anywhere in the world" (Apple 1994a, 3).

The effort needed to develop and bring to market text creation and manipulation systems for symbolic languages such as Japanese is truly a great accomplishment. This article has discussed some of the stages through which Japanese language capability for Macintosh has passed, culminating with Apple's **WorldScript** technology, a near universal Macintosh operating system. Unicode and **QuickDraw** GX — a new display and printing technology currently in development will be the core of the next generation of multilingual system software. Future improvements in multilingual computing will undoubtedly depend on faster, more powerful computers and cheaper memory. Perhaps one day soon we will be able to use voice input and train our computers to understand Japanese with a Texas twang. Today however, those who need some Japanese capability, but whose native language is not Japanese, can say, "*Sayonara* **KanjiTalk**!"

APPENDIX

LANGUAGE KITS: CONFIGURATION AND FEATURES
(Apple Computer 1994, 6.)

Japanese Language Kit

- Japanese language support and system font (Osaka)
- Input method (Apple Kotoeri)
- Two TrueType fonts (HonMincho and MaruGothic) and two
- Postscript fonts (SaiMincho and ChuoGothic)
- Installation and User's Guide (English)
- Macintosh Japanese Input Method Guide (Japanese and English)

Chinese Language Kit

- Chinese language support (traditional and simplified) and system fonts (Taipei and Beijing)
- Input methods: Cangjie, Dayi, Parrot, Pinyin, and Zhuyin for traditional Chinese, and WubiXing, WubiHua, Pinyin, and Code for simplified Chinese
- One traditional TrueType font (Apple LiSung Light) and one simplified TrueType font (Song)
- CD ROM containing additional TrueType fonts (LiGothic Medium for Traditional, and Hei, FangSong, and Kai for Simplified Chinese)

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

- Installation and User's Guide (English, with summary in Chinese)
- Macintosh Traditional Chinese Input Method Guide (Chinese and English)
- Macintosh Simplified Chinese Input Method Guide (Chinese and English)

Printers supported

- Recommended: QuickDraw printers, including the Apple StyleWriter line, the Apple Personal LaserWriter line, and the ImageWriter line
- Also works with PostScript-compatible printers, including the Personal LaserWriter LS and the Personal LaserWriter NTR. (Note: PostScript printers will output Japanese, but performance may vary.)

System requirements

- Apple Macintosh computer with at least 4 megabytes of RAM (5 MB recommended for multiple applications)
- Hard disk drive with at least 20 MB available
- Apple SuperDrive floppy disk drive
- Apple Macintosh System 7.1 or later
- A Japanese or **WorldScript** savvy application

REFERENCES

Apple Computer (1994a). *Language Kits, WorldScript: The Enabling Technology.* Internal publication, Cupertino, CA: Apple Computer, Inc.

_____. (1993a). *Macintosh Japanese Language Kit Installation and User's Guide.* Cupertino, CA: Apple Computer, Inc.

_____. (1993b). "Japanese Language Kit Q & A." Press release, May 1993. Cupertino, CA: Apple Computer, Inc.

Cannon, J. (1993). *International Developer Technical Support External Release Notes: Japanese Language Kit, version f1c1.* (Final candidate), March 22, 1993. Cupertino, CA: Apple Computer, Inc.

Hatasa, K., P. Henstock, and T. Hsu (1992). "Handling Japanese Without a Japanese Operating System." *CALICO Journal* 9, 3, 26-35.

Lunde, K. (1993). *Understanding Japanese Information Processing.* O'Reilly and Associates, Inc. 103A Morris Street, Sebastopol, CA 95472, USA (Phone: 707-829-0515, Fax: 707-829-0104, E-mail ordering: order@ora.com).

Maciejewski, A., and N. Leung (1992). "The Nihongo Tutorial System: An Intelligent Tutoring System for Technical Japanese Language Instruction." *CALICO Journal* 9, 3, 5-25.

MacWorld (1984, November). "Macware News, Linguist's Software, MacKana/Basic Kanji." 90-91.

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms

Modern Language Association (1991). Fall 1990 Survey of Foreign Language Enrollments in U.S. Colleges and Universities. New York.

Nara, H. (1992). "Visual Salience as a Search Category in a Kanji Dictionary in Interactive Japanese: Understanding Writing Japanese." *System* 20, 1, 75-91.

Payne, P. B. (1989). *MacKANA and Basic Japanese Kanji, Users Manual.* Edmonds, WA: Linguist's Software.

_____. (1994, February 24). Linguist's Software, telephone interview.

Saito, Y. and T. Abbott (1994). "Computer Assisted Learning in Business Japanese Classes." *The Journal of Language for International Business* 5, 2, 1-8.

Wired Electronic Magazine 2.0.2 (1994, March 2). "Wiring Japan." Uploaded to America On-line.

AUTHORS' BIODATA

Yoshiko Saito-Abbott is an Assistant Professor of Japanese at The University of Texas at Austin. She earned her M.A. and Ph.D. from The Ohio State University in foreign language education and minor in instructional design and technology. She is active in research projects involving second language reading, computer assisted language instruction, and business and technical Japanese.

Thomas Abbott is a Management Consultant. He heads up Abbott, Saito & Associates. With over two decades of experience as a Japan specialist, he has received a B.B.S. in Economics from Ohio State and an M.B.A. from Southern Methodist University. He is ABD in International Management at UT-Dallas.

AUTHORS' ADDRESS

Yoshiko Saito
Department of Asian Studies
The University of Texas at Austin
2601 University Avenue
Austin, Texas 78712

Phone: (512) 471-5811
Fax: (512) 345-8782
E-mail: yoshiko@ccwf.cc.utexas.edu

Thomas F. Abbott
Abbott, Saito & Associates
5802 Rain Creek Pkwy
Austin, Texas 78759

Phone: (512) 345-6880
Fax: (512) 345-8782
E-mail: tom_abbott@capmac.org

This content downloaded from
129.21.35.191 on Wed, 26 Apr 2023 01:48:42 UTC
All use subject to https://about.jstor.org/terms