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The Orthographic Orthodoxy: How Japanese Flies in the Face of Typical Literacy Development

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Abstract

The Japanese writing system stands at odds with the current "universal" understanding of cross-cultural literacy. While much research has advanced our understanding of literacy in general, it is important to understand the many differences Japanese is characterized by, and how these differences manifest in terms of typical early literacy development in Japanese. In this chapter, we contrast similarities and differences between Japanese and Western scripts. We particularly outline orthographic and psycholinguistic features of first and second language literacy acquisition in Japanese. Based on our review, we argue that Japanese literacy development stands in sharp contrast to "universal" literacy development. We also discuss future directions of research given our current understanding of the literature.

Keywords: Japanese, nonlinearity, multi-scriptism, literacy development

17.1 Introduction

17.1.1 The Features of Japanese Writing

Mark Van Doren once remarked that, “There are two statements about human beings that are true: that all human beings are alike, and that all are different. On those two facts all human wisdom is founded” (Norenzayan & Heine, 2005). Bearing these ideas in mind, literacy researchers must consistently struggle with being generalists (by investigating universal aspects of literacy) and being specialists (by investigating script-level differences in literacy). To some degree, the playbook for understanding literacy development has already been written. Skills like phonological awareness, vocabulary knowledge, listening comprehension, working memory, and many other skills generally predict reading ability across many studies and time periods (e.g., Melby-Lervåg et al., 2012; Quinn & Wagner, 2018; Verhoeven & Perfetti, 2022). However, much of the literature is built off the backbone of English-based research (Share, 2021). Indeed, factors like orthographic depth, breadth, and complexity all seem to contribute to cross-cultural differences in literacy (Inoue et al., 2017; Katz & Frost, 1992; Nag et al., 2014; Ruan et al., 2018; Song et al., 2016). Therefore, an inconvenient truth remains unresolved: Does our understanding of literacy translate to complicated writing systems like Japanese?

The core of this question relates to one simple but nevertheless unique feature of the Japanese language, which is its “multi-scriptism.” Reading is accomplished using not just one script, but three scripts together.[1] These scripts, as shown in Figure 1, include the borrowed Chinese characters of *kanji*, which are logographic morphological units, their cursive versions in *hiragana*, and their angular versions in *katakana* (Taylor & Taylor, 2014, pp. 31–35). As we outline below, these scripts may sometimes employ other features such as

[1] Technically there also exists a fourth script, *romaji*, but its usage is relatively limited among native speakers (Leong & Tamaoka, 1998). Tamaoka (2014) summarized several interesting experiments related to the differences in romaji processing between Chinese and English learners of Japanese. However, due to word limit constraints and the limited emphasis on romaji here, these were not included in this chapter.

diacritics or combinatory constructions, which stand apart from writing systems like the English alphabet. Per the theme of this book, these combined features make Japanese scripts "nonlinear" (see Chapters 1–3). If we were to place scripts on a continuum moving from linear to nonlinear, English or Latin scripts are "static" and would be firmly situated on one extreme (linear). Japanese, due to its much more "dynamic" nature, as we will illustrate in this chapter, would be far towards the other extreme of the spectrum (nonlinear).

Each Japanese script has unique features compared to alphabetic writing systems. Hiragana, for example, is a visually simple syllabary made up of 46 basic symbols. Diacritics are added to signify sound changes for each symbol, such as the base character <く>, which sounds like /ku/, and <ぐ>, which sounds like /gu/, making up around 110 unique morae (simple syllables, see Koda, 2017, for more details). This distinction is important, as the *mora* is the processing unit of Japanese, whereas the *phoneme* is the usual phonological unit used in alphabets (Tamaoka, 2014, p. 422). Katakana has a similar collection of graphs and phonetic equivalences to hiragana, although it is usually learned later after children have mastered some basic hiragana (Koda, 2017). In a similar vein to hiragana, the character <カ> is a basic symbol which sounds like /ka/ and <ガ> changes the sound to /ga/. These two scripts differ dramatically from kanji, which is a script containing thousands of visually complex and orthographically opaque characters (where sound rules are unclear, see Taylor & Taylor, 2014). Each graph contains its own morpheme with a unique meaning, their combination resulting in expanded vocabulary (e.g., the word <大人>, or 'adult', comes from the characters <大> and <人>, which mean 'big' and 'person' respectively). Unlike hiragana and katakana, which have only one reading, kanji also take on both *on-reading* and *kun-reading*,

sounds which are based on either Chinese or Japanese origins respectively (Leong & Tamaoka, 1998).

With Japanese, mature readers must build sentences like an orthographic carpenter, using each script as a sort of toolbox to get the job done. The writer picks out kanji for nouns (e.g., <友達> for 'friend', where both characters are kanji) as well as verb and adjective stems (e.g., <好き> for 'like', where the first character is kanji). Sentences are usually "glued together" with hiragana, commonly used as grammatical functions (e.g., inflection in the words <食べる> for 'to eat' and <食べた> for 'ate') or alternative functions like transcribing kanji sounds via *furigana* (e.g., 'I' is normally written in kanji as <私> and transcribed phonetically in hiragana as <わたし>; Koda, 2017; Taylor & Taylor, 2014). Finally, one can sprinkle in some katakana for loan words when necessary (e.g., <テレビ> for 'television' or <スーパー> for 'supermarket'). Much like a carpenter constructs a house with wood, nails, and screws, one can see from these examples that crafting a sentence in Japanese requires the convergence of multiple scripts. An example sentence is shown in Figure 2, which demonstrates the complexity of building sentences in Japanese.

Armed with this knowledge, it should be obvious that these orthographic properties should in some way influence literacy acquisition given no other languages use multiple scripts in the same sentence (Verhoeven & Perfetti, 2022). In the following sections, we will explore how these script differences influence first language learners (hereafter referred to as L1 Japanese learners), particularly focusing first on early literacy development (at the graph and word level), followed by mature development (at the sentence and passage level). We follow that discussion with important distinctions for second language learners of Japanese

(hereafter referred to as L2 Japanese learners). The primary focus of our discussion will highlight the unique psycholinguistic properties of Japanese literacy acquisition. Thereafter we provide some important discussion on future areas of research.

As an aside, we will focus mostly on kanji and hiragana for the remainder of this review. Katakana, which is almost exclusively used to represent onomatopoeia or the 10% of foreign words in Japanese (Akita & Hatano, 1999; Taylor & Taylor, 2014, p. 38), is learned later than hiragana (Koda, 2017, p. 3), and shares the same mora representations as hiragana (as discussed above). Consequently, less research has investigated the unique role katakana plays in literacy acquisition. Because of this, previous reviews typically talk about hiragana and katakana together, making distinctions when they are meaningful (Akita & Hatano, 1999; Koda, 2017; Taylor & Taylor, 2014). Therefore, we have organized our review in a similar fashion.

17.2 Literacy Development in Japanese

17.2.1 Early Literacy Development

Of the many irregularities of Japanese, one unique consequence of the multi-script nature of Japanese is what we may call “unequal acquisition”, where learning rates between scripts are not identical. For example, hiragana is learned earlier and more rapidly than kanji, with some studies showing complete ceiling of hiragana reading scores by Grade 2 (Akita & Hatano, 1999; Koda, 2017; Koyama et al., 2008). Perhaps because of this, hiragana is also generally named faster than kanji (Leong & Tamaoka, 1998). Contrarily, kanji takes years to learn (Grades 1 to 9 in compulsory education), due mostly to its large inventory size and visual complexity (Koda, 2017).

These differences in learning rates have practical and sometimes surprising implications that are unique to Japanese. While researchers in other languages need only monitor scoring of a single script, researchers of Japanese literacy development must

simultaneously balance ceiling scores of easier hiragana with floor scores of difficult kanji (see Koyama et al., 2008, for a direct example). Interestingly, this trajectory may even *reverse* for kanji in later writing. For example, adults often anecdotally claim that they forget complex kanji due to the replacement of manual writing with typing on computers or phones (see Almog, 2019). As such, the early development of hiragana is quite rapid and consistent, whereas kanji development is comparatively slow and may even be unstable with respect to age.

At the graph or word level, orthographic features of hiragana may influence how early Japanese readers harness phonological skills to read. Because hiragana and katakana are orthographically transparent scripts, it is no surprise that phonological awareness (specifically mora awareness) generally has a positive association with hiragana literacy (Hemelstrand & Inoue, 2024; Inoue et al., 2017; Muroya et al., 2017). In one study, however, when controlling for factors like age and vocabulary knowledge, mora awareness seemed to be a unique but nonetheless weak predictor of hiragana (Inoue et al., 2017). In another study, the association between hiragana fluency and mora awareness was consistently linear across different time points. However, the association shifted longitudinally by ability, where exceptional readers had the strongest predicted gains in hiragana reading fluency after about four years, whereas the association was negligible for poor readers (Hemelstrand & Inoue, 2024).

Elements of morphological awareness can vary in Japanese based on what type of reading is performed. With respect to purely kanji forms of nouns (called *jukugo*; e.g., <日本> for ‘Japan’), one can only be concerned about lexical compounding ability. However, in the case of kanji-hiragana formations, morphology gets additionally complicated by inflectional and derivational constructions in reading. As an example, the kanji-hiragana base word <飲む> for ‘to drink’ can be converted to <飲んでいる> to mean ‘drinking’ and <飲ん

だ> to mean ‘drank’ by changing the hiragana word endings (called *okurigana*) in order to reflect grammatical tense.

Because of this, morphological awareness tasks generally show positive and more unique associations with kanji reading when controlling for other potentially confounding variables (Inoue et al., 2017; Muroya et al., 2017). This finding may not be universal though. If kanji compound words are constructed with morphemes with opposite concepts, they are processed slower and thus may slow kanji naming (Tamaoka & Hatsuzuka, 1998). Additionally, this may vary by reader ability and grade level. One study showed that morphological awareness associations with kanji accuracy varied considerably for early readers, where the association was exponential for excellent readers and inconsistent for poor readers. After four years, students with exceptional kanji ability continued to have stronger and more consistently linear associations with kanji accuracy, whereas this association was inconsistent for poor readers (Hemelstrand & Inoue, 2024).

17.2.2 Later Reading Development: Sentences and Paragraphs

Obviously, the Japanese people do not read each graph in isolation once reading skills mature; thus, eye movement studies have been illustrative of script differences in sentence-level reading. As an example, some studies have shown that mean fixation times are much shorter for kanji over hiragana, the mean probability of fixating on a character was higher for kanji over hiragana, and saccade lengths are generally longer when reading kanji-based text over pure hiragana-based text (Kajii et al., 2001; Osaka, 1989). In other words, kanji are more likely to be fixated upon in a sentence, those fixations are shorter on average, and the Japanese reader seems to take longer to scan sentences that include more kanji (hence the need for longer saccade lengths). These three details seem to indicate a “preference” for using kanji as some signaling device for the structural elements (e.g., where the nouns are in a sentence) in parafoveal vision, but their visual complexity may in some part slow down

sentence reading in the process. Additionally, unlike English reading, which slows down when spaces are removed (Rayner & Morris, 1992), it has been shown that this depends on the type of script in Japanese. Specifically, adding spaces makes hiragana-only sentences read slower, while mixed hiragana-kanji sentences seem to be read faster when spaced (Kajii et al., 2001; Sainio et al., 2007). This could perhaps be due to the fact that spacing in Japanese better signals which parts of the sentence are important, given that each script serves different purposes. Consequently, this makes Japanese somewhat different from "linear" reading in alphabetic languages, as the procedural mechanisms for reading sentences seem to be more "nonlinear" and change based on spacing and script.

Other studies have investigated sentence and passage level differences in reading for Japanese using behavioral or neuroimaging methods. One longitudinal study showed that, after accounting for other skills (e.g., vocabulary, morphological awareness), kanji reading was a unique predictor of reading comprehension (Inoue et al., 2022). However, hiragana reading was not predictive of reading comprehension in this model, indicating that kanji supersedes hiragana for mature reading development. Additionally, at least one fMRI study showed that kanji reading led to activation in areas associated with pictorial and spatial processing, whereas hiragana sentences led to activation in more phonologically-based areas (Buchweitz et al., 2009). This is reasonable given that kanji is more visually and phonetically complex than hiragana. The summarized evidence above seems to indicate that reading beyond the word level elicits quantifiable differences that are less common in other written languages (for comparisons to other written languages, see Part II for findings in alphabetic languages and Parts III, V, and VI for other Asian languages). In addition, the unique attributes of Japanese literacy extend to second language (L2) acquisition.

17.3 Extending to L2 Japanese Acquisition

While first language (L1) learners have their own unique path to learning Japanese, attention may need to be paid to an ever-growing population of Japanese learners: those who speak Japanese as a second language (L2). L2 learners of Japanese may include college students who learn as part of their classes, migrant workers in Japan, heritage learners, or even children in international schools with Japanese curricula. According to a survey conducted in 2015 and published in 2017, 3.65 million people are currently learning Japanese as a second language, which is a 22% increase from the survey's previous numbers in 2006 (Mori et al., 2021). As more immigrants come to Japan to make a life for themselves (Oishi, 2012), language necessarily becomes an important obstacle for foreigners in Japan, which we should seek to understand. The question then remains: How does L1 Japanese acquisition differ from L2 Japanese acquisition? For this topic, we will first summarize the learning of L2 Japanese reading in adults below. We will then review previous studies on visual word recognition in L2 Japanese, focusing on the orthographic and phonological factors that influence L2 Japanese reading.

17.3.1 Learning to Read in L2 Japanese

Given the differences in orthography and phonology between Japanese hiragana and kanji as described above, it is natural to assume that effective teaching and learning methods for the two scripts are also different. Learning kanji is usually more challenging than learning hiragana for L2 Japanese learners and requires well-designed strategies to help them overcome the barrier of learning kanji (Iwashita & Sekiguchi, 2009). In the following, we focus mainly on the teaching and learning of L2 Japanese kanji, which are based on its unique orthography (for reviews, see Mori & Mori, 2011; Mori et al., 2021).

L2 Japanese learners with an alphabetic L1 background find it more challenging to learn kanji compared to those with a logographic L1 background (Iwashita & Sekiguchi,

2009). This difficulty may due at least in part to the challenge of shifting from a linear and unidimensional alphabetic decoding process in their L1 to a parallel and multidimensional one in L2 Japanese (Tollini, 1994). Moreover, because kanji has an opaque relationship between orthography and phonology, it is essential for learners to build strong connections between these elements and their meanings to enhance reading performance. For instance, Matsumoto (2013) recommends that teachers highlight and emphasize individual kanji by asking learners about their etymological roots, pronunciations, and other words that use the same kanji. Teaching radicals explicitly and providing their pronunciation when teaching phonetic radicals are also crucial (Iwashita & Sekiguchi, 2009).

It is important to note here that the preferred (and perhaps effective) learning strategies may differ depending on learners' L1 backgrounds. In fact, it has been shown that L2 Japanese learners with an alphabetic L1 use rote learning strategies more frequently than those with a logographic L1 (Grainger, 1997, 2012), who often prefer orthography-oriented strategies, such as grouping kanji with similar radicals (Gamage, 2003). In a study of Japanese language educators' strategies for teaching kanji, Shimizu and Green (2002) showed that rote learning was the most commonly used strategy in kanji instruction in the United States (see Gamage, 2003; Grainger, 2005, for similar findings in Australia). This method contrasts sharply with L2 teaching/learning of alphabetic languages (e.g., French), where rote learning is often minimal (White, 1995). This may also partly explain why L2 Japanese learners with an alphabetic L1 find kanji learning particularly challenging.

In sum, the findings reviewed above consistently indicate that when considering the teaching and learning of L2 Japanese reading, it is essential to take into account the effects of different L1s, especially the differences between alphabetic and logographic languages, on the learning of various Japanese scripts. This may be especially true for kanji, a script that is

more opaque and thereby more challenging for L2 Japanese learners without a logographic language background.

17.3.2 Orthographic Processing in Visual Word Recognition

Not surprisingly, the L1 that one learns to read can also have profound and long-lasting effects on how one reads in their L2 (see Bhide, 2015, for a review). Readers who first learn a transparent orthography (e.g., Spanish) tend to rely more heavily on the sublexical phonology pathway. In other words, these readers rely more on sound clues from parts of words. On the other hand, those who first learn an opaque orthography (e.g., English) rely more on morphological information (such as suffixes or word stems) and orthographic information (such as knowing that spellings like 'jr' are not a legal combination of letters). Additionally, readers who first learn to read a highly opaque orthography (e.g., Japanese kanji and Chinese characters) tend to use less sublexical phonology (Bhide, 2015). Therefore, it is expected that L2 Japanese learners with different L1 backgrounds may use different strategies and they may consequently experience varying levels of progress in learning different scripts in Japanese.

Indeed, Chikamatsu (1996, 2006) provided some evidence indicating that L1 background influences Japanese L2 learning. Chikamatsu (1996) manipulated visual familiarity (e.g., <えいが> 'movie' is more visually familiar than <てれび> 'television' because the latter is normally written in katakana: <テレビ>) and word length to test phonological and visual coding in Japanese kana word recognition. They used a lexical decision task that assessed orthographic processing, which required participants to judge whether a kana word was real or not. Results showed that Chinese learners of L2 Japanese relied more on visual information, while English learners of L2 Japanese utilized phonological information more in Japanese kana words (Chikamatsu, 1996). However,

English learners of L2 Japanese relied more on visual information when reading kana after they became more proficient in Japanese (Chikamatsu, 2006). These results demonstrate that the process of reading Japanese kana scripts depends on L1 characteristics, especially in the early phase of L2 learning.

Apart from kana, similar findings were observed with kanji. Using a lexical decision task with Japanese kanji compounds, Tamaoka (1997) found that Chinese learners of L2 Japanese responded faster and more accurately than English learners of L2 Japanese. Remarkably, this difference persisted even when variables such as the duration of study, textbooks used, and instructor influence were controlled for. Additionally, English learners made slower lexical decisions for visually complex kanji compounds compared to simpler ones, whereas Chinese learners showed no such difference (Tamaoka, 1997). Matsumoto (2013) also investigated the performance of L2 Japanese learners with logographic and alphabetic L1s (i.e., Chinese and English, respectively) in a lexical decision task on kanji words. She found that both intermediate- and beginner-level English learners of L2 Japanese made slower lexical decisions than beginner-level Chinese learners. These disparities could stem from the Chinese learners' more holistic approach to reading Japanese kanji, similar to native Japanese speakers. Contrarily, English speakers may be more inclined to analyze the individual components of a single kanji, thereby requiring extra processing time (Matsumoto, 2013; Tamaoka, 2014). Hence, L2 Japanese learners' L1 script knowledge may influence their lexical processing strategies for Japanese kanji. However, it is important to note that Chinese-Japanese words with similar phonological and/or orthographic features and the same meaning (i.e., cognates; discussed below) were included as stimuli in this study. As a result, an alternative explanation is that Chinese learners may take advantage of the shared orthographic representations of these characters when making lexical decisions, whereas English learners of Japanese do not.

Collectively, the above findings show that L2 Japanese learners may read faster or slower based on the written conventions of their L1, and may use different clues based on those differences in writing. The findings reinforce the script similarity advantage observed in alphabetic languages (i.e., L2 English learners with an alphabetic script as their L1 tend to make faster lexical decisions in English than those with a non-alphabetic language background; e.g., Djojomihardjo et al., 1994; Hamada & Koda, 2008).

17.3.3 Phonological Processing in Visual Word Recognition

Do L2 Japanese learners rely in any way on the sounds of Japanese words? Besides orthographic processing, the script similarity advantage mentioned above can also be applied to phonological processing. Using a word naming task, Tamaoka (2000) found that Chinese learners of L2 Japanese named words faster and more accurately than English learners of L2 Japanese. In addition, Mori (1998) used a task to assess memory for novel kanji with varying degrees of phonological cues (i.e., whether the radical of the characters was pronounceable or not) in L2 Japanese learners with different L1s. The results showed that English learners of L2 Japanese struggled when the phonological cues were not available, unlike their Chinese counterparts. This indicates that learners from a logographic language background employ more flexible strategies when decoding new kanji compared to those from alphabetic language backgrounds.

However, another line of research on cognate processing suggests that the role of phonology in visual word recognition in L2 Japanese may be limited. As mentioned above, cognates are semantic equivalents in two languages that share phonological and/or orthographic similarities (e.g., <テレビ> /terebi/ and <television>; Liu et al., 2023; Xiong et al., 2020). Theoretical models of bilingual language processing (e.g., the Bilingual Interactive Activation + [BIA+] model: Dijkstra & Van Heuven, 2002; Multilink: Dijkstra et al., 2019) suggest that cognate processing is facilitated by semantic, orthographic, and phonological

similarities through the co-activation of shared lexical representations across languages. Supporting evidence comes from studies with bilinguals of alphabetic languages (e.g., English and Spanish), which showed that phonological similarity facilitates cognate recognition in lexical decision tasks (e.g., Carrasco-Ortiz et al., 2021; Dijkstra et al., 2010; Haigh & Jared, 2007; Lemhöfer & Dijkstra, 2004).

There is growing evidence, however, that phonological similarity may not facilitate cognate processing in L2 Japanese. Multiple studies have accounted for this via lexical decision (Wong et al., 2024), masked-priming word naming (Liu et al., 2022, 2023), and masked-priming lexical decision tasks with event-related potentials (ERPs; Jiao et al., 2024). For example, Wong et al. (2024) asked Cantonese-Japanese bilinguals in Hong Kong to perform an L2 Japanese lexical decision task using Japanese two-kanji compound words of varying word frequencies. Real word stimuli included both Japanese-Cantonese cognates and non-cognates (i.e., Japanese words which do not exist in Cantonese). The results showed that while word frequency in both Japanese and Cantonese, along with participants' L2 Japanese proficiency, facilitated cognate lexical decision, the phonological similarity between Cantonese and Japanese did not influence decision speed. To put it another way, similar-sounding words between Cantonese and Japanese did not make cognates easier to recognize for L2 Japanese readers. These findings suggest that phonology may play a minimal role in the processing of cognates associated with Japanese kanji, compared with orthography and semantics. This stands in contrast to the majority of findings in alphabetic languages, where phonological similarity facilitates lexical decision (e.g., Carrasco-Ortiz et al., 2021; Haigh & Jared, 2007; Lemhöfer & Dijkstra, 2004; Zhang et al., 2019; Zhou et al., 2010).

17.4 Concluding Remarks

As one can observe from above, Japanese does not fit the "orthographic orthodoxy" of past literacy research. From an L1 perspective, we know that Japanese literacy acquisition is

quite unique in terms of unequal learning rates, by-script dependence on cognitive skills, the synchronized reading of combined scripts, and other related factors. From an L2 perspective, it is also quite evident that factors like the L1 background, the orthography and phonology of Japanese, and methods for learning can also shape literacy acquisition in L2 Japanese in unique ways. Because of these differences, it is erroneous to treat Japanese as "more of the same." The reality is that Japanese is a very unique but complicated construction of disparate graphs, which are used in a more synergistic way than alphabetic scripts.

Because some distinctive features in Japanese are under-investigated, this means that there still remain a number of interesting and important avenues of research which may warrant exploration. It is important to see if differences in acquisition between Japanese scripts hold across studies. While researchers of other languages have achieved this aim with their own meta-analytic studies (e.g., Melby-Lervåg et al., 2012; Ruan et al., 2018; Song et al., 2016), Japanese studies have not been awarded this treatment, and thus this should be attempted to ascertain consistency and strength of effects between scripts across studies. Additionally, more complicated morphological elements related to mature reading in Japanese are under-investigated. The unique contributions of inflectional, derivational, and compound morphology may need to be examined in terms of how they are "weighted" with respect to predicting reading or writing outcomes. Moreover, while several previous studies have examined effective learning and teaching strategies for L2 Japanese learners with different L1 backgrounds (e.g., alphabetic and logographic languages) in an Australian context (e.g., Gamage, 2003; Grainger, 2005; Iwashita & Sekiguchi, 2009), more studies conducted in diverse contexts are necessary to understand the specialized needs in effective pedagogical practices for L2 Japanese literacy. Furthermore, since these studies mainly focused on Japanese kanji, the effective pedagogical practices for learning hiragana and katakana should also be examined, which may be beneficial for L2 Japanese beginners. In

addition, while most previous studies have focused on undergraduate students, it would be important to target other populations, such as migrant workers or children (e.g., foreigners who learn Japanese in international schools).

All in all, this chapter illustrates the unique, nonlinear nature of Japanese orthography with multi-scriptism. While it is important to investigate how literacy is achieved across cultures and contexts, it is crucial to account for where these assumptions do not hold. With further investigation of the distinct ways that Japanese and other nonlinear scripts operate, we can achieve a more informed science of literacy development.

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Figure 17.1

Examples of Kanji, Katakana, and Hiragana

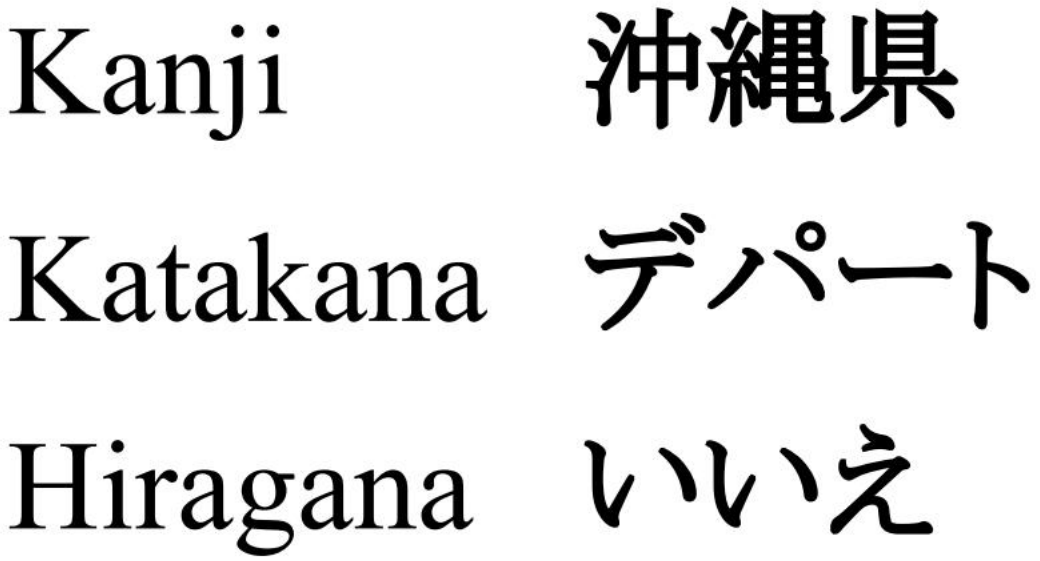


Figure 17.2

Example Sentence in Japanese



Note. The example sentence above (translation: “The calendar today says it is Wednesday.”) demonstrates a typical Japanese sentence constructed from multiple scripts. The black font shows characters written in katakana, the blue characters are those written in hiragana, and the red characters are those written in kanji.

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