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**Buchbesprechungen – Comptes Rendus – Book
Review**

Book Review

Zev Handel. 2019. *Sinography: The Borrowing and Adaptation of the Chinese Script*. Brill. Leiden. Volume 1 in *Language, Writing and Literary Culture in the Sinographic Cosmopolis*, Ross King, David Lurie and Marion Eggert, editors. xiv + 369 pp., ISBN: 978-90-04-38632-7.

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1 Introduction

Over the course of the millennia, humans have invented numerous notational systems to record and communicate many kinds of information. Most of these systems have been limited in the *kind* of information they can convey: a numerical system, for example, can convey information about quantities, but would be rather unsuited for explaining how to play chess. One class of notational systems holds a privileged place in that it allows people to encode natural language, and thus can convey whatever information can be conveyed via language or speech: writing systems. Writing systems do this by representing linguistic information, and there is a considerable amount of variation among writing systems in how they do this. But one point that is usually not disputed is that all fully functional writing systems must encode pronunciation in some way, and writing systems are typically classified—into *alphabets*, *abjads*, *syllabaries* and so forth—according to how phonological information is encoded. That much is generally agreed upon.

What is less agreed upon is how to treat the fact that many writing systems clearly encode more than just phonological information. The *fact* that they do is not in dispute, but the status of *logography* as a separate taxonomic group has been debated for decades. In Gelb's (1952) original teleological view, ancient writing systems were logographic and then, at least in the West, logography was lost in favor of much more compact phonographic systems. But later scholars, such as DeFrancis (1984, 1989) and Unger (e.g. Unger and DeFrancis, 1995), have disputed that logography has a special status, arguing instead that all systems are basically phonographic, with the main difference being the amount of additional information that is included in the writing system. For DeFrancis, Chinese writing is *morphosyllabic*, meaning that each character encodes a syllable but (usually) also includes some semantic information about the morpheme it writes. In prior work—Sproat (2000), and see also Rogers (2005)—I took this idea one step further and, breaking with tradition, separated out phonography and logography into

two dimensions, which could in principle vary independently: one could have a syllabary with a very limited amount of logography, or an alphabet with a high degree of logography. Systems are therefore not either logographic or something else: rather they are one or another kind of phonography, and have logography to a greater or lesser extent.

Enter Handel, who argues in this superb treatment of Sinographic writing systems, that logography indeed should be considered a separate taxonomic category, for the simple reason that when a logographic script is adapted to a new language, it follows a predictable pattern of adaptation. The pattern is modified to some extent by the typological characteristics of the target and source languages, but the same patterns of both *semantic* and *phonetic* adaptation (on which see below) occur again and again. Handel supports this claim by a detailed examination of the adaptation of Chinese writing to one typologically very similar language, Vietnamese, and two typologically very different languages, Korean and Japanese. He supplements the main study with more cursory but nonetheless compelling comparisons with the adaptation of Chinese writing to Zhuang languages, and to Khitan and Jurchen; and with an example from a different “cosmopolis”, the adaptation of Sumerian writing to Akkadian. All in all, this makes Handel’s book the most useful and thorough study of logography ever written and a must read for anyone who wants to understand how writing systems work.

In what follows I summarize Handel’s arguments, followed by a critique of his basic thesis and some more minor issues. Though I am not personally very fond of the term, I will in this review adopt Handel’s (and others’) term *sinogram*, to refer to what in common parlance would be termed *Chinese characters*.

2 Summary of the contents

The introductory chapter lays out the basic research topic of the book in the form of two fundamental questions:

What happens when a logographic script is borrowed to write a language other than the one it developed with? How do typological differences between the languages affect that process and to what degree do they constrain the possible outcomes? (p. 3)

Handel proposes as hypotheses that two mechanisms—semantic adaptation and phonetic adaptation—are available; that linguistic typology affects to what degree the language will adopt which mechanisms; and finally that since the result will inevitably introduce ambiguity, that languages will introduce devices to reduce ambiguity.

This chapter also gives some basic definitions and, importantly, defines what Handel means by logography — I say *importantly* because this term, while frequently used in the literature on writing systems, is also frequently only vaguely defined, often leaving the question of what exactly the term covers up to the reader. The following is how Handel uses the term:

In a logographic system, the basic graphic elements represent meaningful elements of the spoken language, so that identically pronounced but semantically contrastive elements have distinct graphic representations. (pp. 7–8)

This is indeed a reasonable definition of logography, but it is not the only possible way in which a system can be said to be logographic, as we argue in forthcoming work (Sproat and Gutkin, forthcoming); we will see another notion at play below in the Critique. Then Handel introduces some notation and defines possible ways in which a logographic writing system might be *adapted* to writing another language. Important concepts are:

- *direct adaptation*: using a sinogram in the target language to represent a Chinese borrowing, e.g. using 三 to represent the borrowed Chinese word *sān* ‘three’. As Handel notes (e.g. Table 1.1, p. 15), Chinese borrowings happened in all the languages to be considered over a long period resulting in multiple layers of *Sino-xenic* vocabulary.
- *semantic adaptation*: using a sinogram for a word that means the same or almost the same as the original meaning of the word represented by that sinogram in Chinese, e.g. using 三 to represent the native Japanese word *mi(tsu)* ‘three’.
- *phonetic adaptation*: using a sinogram for its Chinese sound value (filtered through the phonetic processes imposed by borrowing and the target language’s phonetic properties), e.g. using the Sino-Japanese pronunciation of 二 *ni* ‘two’ to represent the syllable *ni*—the source of the katakana syllable ニ *ni*.
- *semantic adaptation + phonetic adaptation*: after semantic adaptation, use the adapted term to represent the sound of the *target language* word, e.g. using the native Japanese pronunciation of 三 *mi* ‘three’—the source of the katakana syllable ミ *mi*.

Chapter 2 describes the Chinese writing system from the earliest times to how it is used in Modern Chinese, starting with a brief overview of the typology of the Chinese-language from Ancient Chinese onwards. One of the points noted (p. 40) is that semantic adaptation of a phonetic-semantic compound character such as 鯉 *lǐ* ‘carp’—semantic component 魚 ‘fish’; phonetic component 里 *lǐ*

‘village’, but meaning irrelevant in its use as a phonetic component—seems to be completely unattested in Chinese: that is, such sinograms seem never to have been adapted to write a semantically related but phonetically distinct morpheme. This kind of adaptation seems to have occurred in Chinese only at the earliest phases when the glyphs involved were still somewhat iconic. In contrast, such adaptation is rife in the adapted sinographic writing systems that Handel discusses in the bulk of the book.

Characteristic of logographic writing systems (p. 46) are *taxograms* (p. 43), also known in Chinese studies in English as (*semantic*) *radicals*, components like the 魚 ‘fish’ portion of 鯉 *lǐ* ‘carp’, above. While they are clearly the most salient feature of overtly logographic writing systems, we shall suggest below that they cannot be taken as necessary for a system to be considered logographic. Purely phonetic use of sinograms in Chinese occurred early especially when transcribing foreign words, including Sanskrit and Pali terms in Buddhist literature. This phonographic usage set the stage for phonetic adaptations in the daughter writing systems. Handel turns next to a brief discussion of the phonology of Middle Chinese, the stage of the language most relevant for the earliest borrowings of the script. The chapter ends with a discussion of the adaptation of the script to write Chinese vernacular languages, most notably Cantonese.

The third chapter then moves on to the first of the major adaptations of Chinese writing that Handel discusses, that of Korean. One of the important points is the big typological difference between Chinese, a largely isolating and inflection-free language, with Korean, an unrelated and heavily agglutinative language. This presented a number of challenges to using sinograms to writing Korean, since to represent the language fully one needed not only to adapt sinograms to writing native Korean content words, but also for writing the various agglutinative affixes marking case, verb tense and so forth. Handel shows how this was accomplished in the earlier informal *hyangch’al* system and the more formal *idu* system, the latter remaining in use in official contexts until the pre-modern era, when the natively developed Hangul phonemic script eventually took over as the standard for writing Korean. An important part of the discussion in this chapter focuses on *kugyŏl*, the annotation system used to gloss Chinese texts into Korean, which was central in the development of ways to write the Korean language itself. The time of the earliest introduction of Chinese writing into the Korean peninsula is uncertain, but it seems likely that the initial phases probably involved native Chinese speakers. Korean is typologically very different from Chinese, as Handel’s summary of Korean language structure (Section 3.2) takes pains to emphasize. Of course Korean has also changed, particularly phonologically, with dramatic changes such as the loss of initial consonant clusters even since the introduction of Hangul writing in late Middle Korean.

The fourth section of the chapter introduces the glossing systems and their relevance for the development of vernacular writing. *Kugyŏl* included simplified sinograms used to represent simple (mostly CV) syllables, and were used to mark Korean grammatical particles in a way highly reminiscent of the use of *hiragana* in Modern Japanese. The topic of vernacular writing itself is introduced by taking up the writing of place names: under United Silla, all place names were to be given a Chinese written form, which explains why today, with the single notable exception of *Seoul*, all Korean place names appear to be Chinese in origin.¹ Handel shows that the two techniques of semantic and phonetic adaptation were used in this process. The discussion then proceeds to the use of the *hyangch'al* adaptation of sinograms, in particular in the *hyangga* (鄉歌 'folk song'), and details the types of adaptation used. All of the types of adaptation that Handel had previously discussed were in fact used in Korean, and there were also sinographic innovations, in particular the *protoalphabetic* use of sinograms within novel sinograms to represent individual consonants, such as 𪛗 for /tol/ (돌) 'stone', where 石 means 'stone' and 乙 was conventionally used in Korean to represent final /l/. One of the particularly interesting adaptations of this kind was the representation of the initial consonant clusters that were possible in Middle Korean (these have since been replaced by fortis initial stops in Modern Korean), creating sinograms where the first component represented the onset prefix, and the remainder the rest of the onset plus the coda. An example is 𪛗 'dung', used to represent Middle Korean /ston/, Modern Korean 똥 /tton/, where the novel sinogram consists of two components, 𪛗 *si* representing /s/, and 同 *tong* representing /ton/ (p. 108). Such protoalphabetic uses of sinograms to represent a single consonant follow on a long tradition dating back to *hyangch'al*. The later and more formalized tradition of *idu* is detailed in Section 3.7, followed in Section 3.8 by an analysis of the chapter's main points. The chapter ends with a discussion of why Hangul ultimately succeeded in displacing sinography in Korea, at least part of the problem being that the complex syllable structure of Korean made it much harder to adapt Chinese writing than was the case in Japanese, with its much simpler syllable structure. That is as may be, but there is also no doubt that the rapid takeover of Hangul in the last century or so was probably motivated more by political considerations of nationalism than by details of Korean language structure, especially in light of the Japanese Imperium's attempts to suppress Korean linguistic identity.

One might have expected the **following chapter** to be about Japanese, which is typologically very similar to Korean, and which solved many of the problems of transplanting sinograms in similar ways, but instead Handel turns to Vietnamese,

¹ Even Seoul has been previously referred to historically with a variety of Chinese names.

a language again unrelated to Chinese, but typologically very similar to it. Evidence suggests that a native Chinese-speaking population persisted in Vietnam much later than it did in Korea, and concomitantly a distinctively Sino-Vietnamese pronunciation of Chinese words was much later in emerging. The Vietnamese tradition of glossing Chinese texts also diverged from the glossing system for Korean, in part because the similar structures of Vietnamese and Chinese necessitated fewer aids for the reader in transmuting the Chinese text into the local language. The Vietnamese sinographic writing system, Chữ Nôm, diverged in several respects from Korean, notably in developing a rich set of novel semantic-phonetic sinograms to represent native words. In many cases these involved using as semantic components pieces that are never used as semantic components in Chinese. Thus while 苦, consisting of the ‘grass top’ 艸 and 古 (Mandarin *gǔ*) could be used to represent the Vietnamese word *cỏ* ‘grass’,² so also could 韎 which uses the full sinogram 草 (Mandarin *cǎo*) as the semantic component. Handel makes the convincing case that in the first case the role of the semantic component is the same as it is in Chinese, to give a general category for the word’s meaning—i.e. a *taxogram*. Whereas in the second case the component 草 has a synonymous meaning with the intended target, so in this case the phonetic component 古 merely serves to further clarify the intended word. In principle, in that case, 草 could have been used on its own to write *cỏ* as it is used in Modern Japanese to write the native word for grass *kusa*, or as it was in older Korean to write the native word *p^hul* 풀. But Handel argues that Vietnamese had very few of these semantic adaptations, and suggests a processing reason for this: in the absence of morphological clues, such as one might expect in Korean (or Japanese), that one was dealing with a native word, it would not be clear whether 草 represented the native word in a given text or a borrowing from Chinese. Still, if predictability were necessarily the goal of sinographic writing systems, one could not explain the many cases in Japanese where a great deal of linguistic and pragmatic context is needed to decide on which exact word is intended by a given written form. Thus is 塩水 ‘salt water’ to be read as Sino-Japanese *ensui* (appropriate if one is talking about the sea, or a salt water pool), or native *shiomizu* (appropriate if one is giving cooking instructions)? Is 風 (native) *kaze* ‘wind’ or (Sino-Japanese) *fū*, derived from the Chinese word for ‘wind’ but with the sense of ‘style’ (e.g. メキシコ風 *mekishiko fū* ‘Mexican style’)? Is 私 ‘I’ to be read as *watashi* (normal form) or *watakushi* (humble form)? These are just three examples of many where the Japanese writing system simply fails to represent a salient distinction that certainly introduces

² The fact that the thus-derived 苦 happens to coincide with the normal sinogram for ‘bitter’ (Mandarin *kǔ*) is effectively a coincidence.

processing complexities of the kind Handel apparently assumes in his hypothesis about Vietnamese.

The fifth chapter turns to another agglutinative language, Japanese, notably the only language (besides Chinese) to have retained its sinographic orthography into the modern era. This chapter is shorter than the treatment of Korean, which can be justified by the fact that in many ways the development of sinography in Japanese followed along very similar lines to the development in the structurally extremely similar Korean. Still there are some important differences: unlike Korea, Japan was never under Chinese suzerainty, and did not have a sizable population of native Chinese speakers in its territory. Borrowing of Chinese words into Japanese is much more clearly layered and most *kanji* typically have, in addition to a native pronunciation, at least two Chinese-derived pronunciations, dating from different periods of contact (likely via the medium of Korean). Japanese syllable structure is notably simpler than that of Korean (and was even simpler in early Japanese), making it straightforward to adapt sinograms as a syllabary, which is of course the origin of the two syllabaries, *hiragana* and *katakana* in use in Japanese today. As did Koreans and Vietnamese, the Japanese also developed their own sinograms, termed 国字 *kokuji*, but in Japanese these were almost exclusively semantic-semantic compositions (as I also pointed out in Sproat, 2000). Some of these are quite common in Modern Japanese: 嵐 *arashi* ‘storm’, 峠 *touge* ‘(mountain) pass’, 鱈 *tara* ‘cod’, the latter having also been borrowed into Chinese and treated the only way it could be treated in Chinese, as a *semantic-phonetic* compound pronounced *xuě*—魚 ‘fish’ + 雪 (= ‘snow’) *xuě*.

Chapter 6 presents a comparative analysis that reviews the material discussed in the previous chapters, and provides a synopsis of how the similarities and differences between the three languages play into the theory introduced in the beginning chapter. The chapter is also a segue into the two following chapters, which move, respectively, out of the main “Sinographic Cosmopolis”, and then out of the “Sinographic Cosmopolis” entirely.

Chapter 7 discusses the adaptation of sinograms to Zhuang, an isolating (family of) language(s) and Khitan and Jurchen, two extinct agglutinative languages. In many ways the case for Zhuang strongly resembles Vietnamese, whereas to the extent that one can tell, Khitan and Jurchen are more similar in their adaptation to what happened in Korean and Japanese. None of these languages make for perfect comparisons because the sociological and political situations were different in each case from the cases previously discussed, but the broad similarities nonetheless seem to support Handel’s basic thesis. One problem that arises with Zhuang, though, is that semantically adapted loans such as 月 ‘moon’ representing native Zhuang *ndwen*, seem to be far more prevalent in Zhuang than in Vietnamese. It is not clear what this implies for Handel’s processing argument

for why such cases are rare in Vietnamese given that Zhuang, like Vietnamese, is an isolating language, and presumably the same problems with semantic adaptation would arise.

Chapter 8 moves from the “Sinographic Cosmopolis” to the “Sumerographic Cosmopolis” with a brief discussion of Sumerian writing and its adaptation to Akkadian. Again this is not a perfect parallel to the East Asian situation: Sumerian writing already showed similarities to the way Japanese writing uses sinograms, meaning that it was a “mixed system” by the time the Akkadians started to adapt it to write their own language. Sumerian was not an isolating language, but an agglutinative language, like Korean and Japanese. Also, Akkadian introduces a new type of language into the mix, namely an inflectional language with root-and-pattern morphology. Nonetheless, the adaptation of Sumerian to Akkadian is at least broadly similar to the East Asian case, in particular the situation of Japanese and Korean, thus lending further support to Handel’s theory.

Chapter 9 offers a very brief conclusion, followed by a short **appendix** that summarizes an exercise Handel used in one of his classes where students were instructed to come up with a writing system for English based on sinograms: the students had previously been given 40 sinograms to memorize the meanings and (Mandarin) pronunciations of. Handel notes that the students quickly came up with both semantic and phonetic adaptation strategies. Handel subsequently used his example along with samples from several other languages that actually used sinographic systems, in a Twitter thread as a challenge where the reader was supposed to guess the underlying language. I am happy to report that I correctly identified his final example as English.

The book ends with a useful set of indexes of sinograms.

3 Critique

3.1 What is logography?

A good place to start a critique of Handel’s thesis is with a suggestion he makes about the Akkadian adaptation of Sumerian writing. Noting that Akkadian tends to be rich in phonograms, and more sparse in logograms, Handel suggests that one reason for this may be Akkadian’s Semitic root-and-pattern morphology, whereby a given consonantal root can appear in different forms with different vowels, possible gemination of consonants, and infixes. Representing a root with a logogram meaning, say, *write*, would hide from the reader the actual intended form of *write* that is appropriate for the given context, which would make that representation inadequate.

The problem with that argument is that this is *precisely* how traditional Semitic segmental writing systems derived from the Proto-Sinaitic epigraphic scripts *did* represent roots. In particular prior to the invention of the so-called *matres lectionis* (the use of consonant symbols to represent some long vowels), and *well* before the development of diacritization systems such as the Masoretic Hebrew pointing system, the original Semitic scripts represented only consonants, so that the same root would indeed generally be written the same way, with the correct vocalization to be understood from the context. This obviously makes reading more difficult and requires a good knowledge of the language on the part of the reader. But it does have the advantage that the same root will always, or at least mostly, be *represented in writing in the same way*.

And this in turn introduces a second notion in which a system may be said to be logographic, rather the opposite of the definition that Handel assumes, but one that is equally valid: a system is logographic if the same morpheme is spelled the same way, abstracting away from morphophonological changes; see Sproat and Gutkin (forthcoming). Thus in early Semitic writing, it would have been relatively straightforward to know how to spell a word, and two homophonous words (in terms of their consonant sequences) would have been spelled the same; from the point of view of Handel's working definition, this would not count as logographic. But flip the direction, and consider that the same written form may correspond to a variety of different spoken forms depending on morphophonological changes unreflected in the written form, and the system is logographic in this second sense.

And this sense of logography was relevant for a case that Handel does not consider in his book, the case of the adaptation of Aramaic writing to Middle Persian languages. In this case the scribes, who were literate in the Semitic language Aramaic, adapted that apparently phonographic writing system to unrelated Indo-European Persian languages. Much of the resulting use of the script in Persian was indeed phonographic, but with the interesting twist that common verbs and nouns that were clearly intended to be Persian words, were *spelled* as the semantically equivalent Aramaic roots or words (Skjærvo, 1996). Thus the Persian verb *būd* 'be' could be spelled as *YHWWN* reflecting the Aramaic Semitic root for 'be'; *pus* 'son' could be written with *BRH* from Aramaic 'his son'; *māt* 'mother' could be written as *'MY* from Aramaic 'my mother'. These *aramaeograms* or *heterograms* seem a puzzle until one considers the logic involved, which is the exact same logic as a Korean or Japanese scribe would have used when adapting the Chinese character 火 'fire' to write their native words, Korean *pul* (불) or (Old) Japanese /p^wi/: namely, that this was the way one writes a word meaning 'fire', so we will simply adapt that spelling to write our own word for this concept. In other words, *aramaeograms* are nothing more or less than semantic adaptation.

In one way this is further support for Handel's thesis, in that it simply offers another example of how logography can be adapted across writing systems. But at another level it is a bit of a problem for his argument, since throughout his discussion he is working with a system, sinographic writing, that wears logography on its sleeve, and he clearly suggests that it is this extroverted logography that is crucial in how sinograms were adapted. The Middle Persian case suggests, rather, that even a writing system where the individual pieces do not look like anything other than phonographic symbols can still behave logographically. Of course there is nothing new in that suggestion: among others, Barnhart and Bloomfield (1961) and Sampson (1985), suggested that English is at least somewhat logographic, despite using an ostensibly segmental writing system. Their reason was that English has many instances of sets of words that sound the same, but are spelled differently, *which of course fits Handel's working definition of logography rather nicely*. Furthermore, as I argued in (Sproat 2000), this aspect of English—the apparently logographic idea that *words meaning different things should be spelled differently even if they sound the same*, can clearly be adapted to other writing systems, as happened when an orthography was developed for Manx Gaelic, inspired by English orthography. But logography is not overtly advertised in English (or Aramaic) the way it is in sinographic scripts, and this in turn suggests that while logography is real, it is not a category from the same set as the various phonographic categories but a separate dimension, exactly what I proposed in (Sproat, 2000).

Subsequent to the book under review here, Handel has discussed Persian heterograms in a conference presentation (Handel, 2020). His interpretation of this case is as a “*singular exceptional event of semantic adaptation of a phonographic script out of hundreds of historical borrowing events; in contrast semantic adaptation is typical when a logographic script is borrowed*” (Handel, 2020, slide 33, emphasis and underlying his). Handel's statistics on this point are of course not wrong, and scripts that wear logography on their sleeve are definitely prone to the kind of borrowing he documents whereas ostensibly phonographic scripts are generally not. But given the right combination of events—a script being used logographically and a strong scribal tradition in that script, both of which conditions also characterize the Sinographic Cosmopolis—the same psychology may come into play. Heterograms are the exception that proves the rule, suggesting that it is not the *form* of the script that dictates its fate, but rather *how it is used*. The 16th century English wag who decided that *dette* should be spelled *debt* because it came from Latin *debitum* certainly understood that phonographic elements could be used to mark off a particular word by an idiosyncratic graphical form, surely a key feature of logography.

3.2 Topics that might have been covered

What is missing from Handel's discussion? One topic that might have been treated in more detail is the many cases in Modern Japanese where apparently the same word is written with different sinograms, reflecting the fact that Chinese would use different characters for the different nuances. Sometimes the relationships are derivational, as in *kōru* (凍る) 'freeze' and *kōri* (氷) 'ice' where the latter is transparently a nominalization of the former; compare the entirely parallel relationship between Korean *ōlda* (얼다) 'freeze' and the nominalized *ōrŭm* (얼음) 'ice'. But in Chinese these are morphologically unrelated: *dòng* (凍) 'freeze' versus *bīng* (冰) 'ice'. Other instances of the phenomenon in Japanese actually seem to involve the exact same word, but with slightly different nuances: *hiraku* (開く) 'open' in the basic sense of, e.g., opening a door or a shell; *hiraku* (拓く) 'open' in the sense of pioneering and thus opening up new land; *hiraku* (啓く) 'enlighten', i.e. opening one's mind. Or: *tomaru* (止まる) 'stop' (e.g. a vehicle); *tomaru* (停まる) 'stop', also a vehicle, in particular a train at a station; *tomaru* (泊まる) 'stay, lodge', i.e. stop at a place; *tomaru* (留まる) also meaning 'stay'. There may be debate about some of these being really the same word (and certainly Japanese speakers may not *feel* they are the same word, precisely because they are spelled differently) but this is in any case a rampant phenomenon in Japanese, and one way in which Japanese writing is not merely *logographic* but in some ways *semasiographic*, insofar as these different spellings seem to focus on different meanings of what is ultimately the same etymon. This is entirely consistent with Handel's thesis insofar as it just means that in adapting Chinese writing, the Japanese chose characters that reflected the meaning of a particular word, without perhaps even considering whether they were spelling different nuances of the same word. Such examples can occur in other cases of logography: consider English *break* and *brake*, or *child* versus (archaic) *childe*. But Japanese is particularly rich in this regard.

Though it is largely orthogonal to the issues of this book, I might have expected to see some discussion of character simplification, which has been applied both in China and in Japan differently and at different times, and thus is an important sociolinguistic feature of the modern "Sinographic Cosmopolis". The result of this script engineering is that, for example, *Shibuya*, the ward where I currently live in Tokyo has, in addition to its normal modern Japanese *shinjitai* form 渋谷, three other ways in which it might in principle be written, fortunately differing only in the first character (1) 澁, which also has the following forms:

2. 澀 Traditional character form
3. 澁 *kyūjitai* (old-style characters)
4. 涩 Chinese simplified

At least the first spelling 渋谷, and the fourth 涩谷, are commonly seen on train displays, the latter for the benefit of Mainland Chinese visitors. The *kyūjitai* form of 澁 is still to be seen on older signs and in company names, and the traditional form 澀 is found on Chinese-language web pages from Taiwan that discuss the Tokyo ward. Where this issue crosses paths with Handel's main point is that these structural fiddlings do not change the fundamental nature of the writing system of any of the languages that use sinograms, and end up doing little beyond making an already complicated system more complicated. While character simplification in China was introduced with a purported goal of increasing literacy, there is little evidence that it had any such effect (DeFrancis, 1984) and there is plenty of reason to believe that the significant gains in literacy in China over the past half century have been due to economic improvements and concomitant access to education, not script engineering (I discuss this issue in Sproat, 2010). Logography, as Handel's book makes abundantly clear, is a complex enterprise: while it does not prevent universal literacy, it probably does not make it easier either. Creating four sinograms, where before there was only one, hardly seems to be an aid.

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