

Writing Systems and Orthographies

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Introduction

Academic discussion of writing systems (grammatology) extends to both detailed descriptions of the mechanics of particular systems and/or visceral theoretical debates involving linguistics, anthropology, archaeology, sociology, history, and/or psychology. Issues are raised concerning competing views of reality (e.g. Street, 1984, p. 130) and the power of Western thought in relation to non-Western knowledge and its dissemination (e.g. DeFrancis, 1989, p. xi). This review of literature leans towards cross-national and comparative studies, although it is biased by the writer's limitation to works in English. Under the headings of definitions, typologies, values, first and second language literacy learning, and other factors, it only touches the surface of a massive body of work.

What is a Writing System?

Stubbs (1980, p. viii) rather dramatically states

...there is...nothing approaching a coherent theory about the relations between reading and writing, or between written and spoken language, or about the place of written language in society and the purposes it serves.

Authors generally agree with Gelb (1963, p. 12) that writing is *'a system of human intercommunication by means of conventional visible marks'* (italics in the original). If one construes 'marks' liberally, body sign languages (as in sign languages used by the deaf) can be included, and the definition encompasses systems such as musical notation and those that indicate kinesics (e.g. Basso & Anderson, 1977). Gauer, equating writing with information storage, takes this stance (1984, p. 14). Many others (e.g. Coulmas, 1989, p. 17) consider as writing only those systems with 'conventional [unambiguous] relation to language' (De Francis, 1989, p. 7). Beneath these distinctions lies debate not only on the primacy of oracy versus literacy, but also on the importance of literacy as 'social practices' (Street, 1984, p. 1; see also Stubbs, 1980).

Gelb (1963, ch. 6), followed by Coulmas (1989, ch. 2), DeFrancis (1989, ch. 2), and others, distinguishes 'full writing' systems from their 'forerunners' as having gone beyond pictures/icons and mnemonic devices to a firm relation between symbol and sound.

A primitive [picture/icon] writing can develop into a full system only if it succeeds in attaching to a sign a phonetic value independent of the meaning which the sign has as a word. This is phonetization, the most important single step in the history of writing. In modern usage this device is called "rebus writing". (Gelb, 1963, p. 193-194)

Gelb attaches a developmental directionality to writing systems (p. 210) starting from picture writing through `word-syllabic, and `syllabic' to `alphabetic' systems. With racist overtones, he considers alphabetic writing to have `conquered the world' (pp. 183-189). Challenges to this position as Euro-centric are discussed below.

Coulmas (1989, pp. 38-39) makes the distinction between: a `writing system', which `makes a selection of the linguistic units to be graphically represented' (e.g. syllable writing or phonetic writing); a `script', which `makes a specific selection of the possibilities of a given system in accordance with the structural conditions of a given language' (e.g. Chinese script or Arabic script); and `orthography', which `makes a specific selection of the possibilities of a script for writing a particular language in a uniform and standardized way' (e.g. Standard German/Swiss German orthography).

What are Types of Writing Systems?

Mountford (1996, pp. 627-628) divides writing systems **functionally** into orthographies, stenographies (shorthands), cryptographies (for concealment), pedographies (for ease of learning a standard orthography), and technographies (scientific tools). However, the bulk of academic discussion (in English at least) on writing systems focusses on the **relationship between spoken language and sets of written symbols**. Gray (1956, p. 31) uses a typology of characters in writing

established in the nineteenth century (Daniels, 1996a, p. 6), arranged 'in order of their historical development'.

1. Word-concept characters, commonly called ideographs (more properly called logographs), as in Chinese. Each character used in writing represents an idea or concept, more strictly a morpheme, i.e. a meaningful linguistic form, rather than a sound. [e.g., "cheated" has two morphemes, "cheat" and "-ed", each with its separate meaning]

2. Syllable-sound characters, often called syllabaries, as in Cherokee Indian or Japanese. Each character used represents the sound of a syllable, which may consist of a single phoneme or a group of phonemes. [e.g., "cheated" has two syllables, each with its own beat in the rhythm of the utterance]

3. Letter-sound characters, as in all alphabetic languages. Each letter represents the sound of one, or sometimes more, phonemes. [or a combination of letters can represent one phoneme, e.g., "cheated" has five phonemes in English, represented as "ch", "ea", "t", "e", and "d"]

This typology is frequently used but is also frequently disputed. As Gelb notes:

There are no pure systems of writing just as there are no pure races in anthropology and no pure languages in linguistics. (Gelb, 1963, p. 199)

Indeed, many authors start with a typology such as that quoted from Gray and then discuss at length why a certain writing system/script does not fit the pattern. For example, Sampson (1985, p. 143) has suggested that the Hangul system for Korean marks features that are finer sound distinctions than phonemes (see also Taylor & Olson, 1995, p. 2).

Concepts in Western literature about non-Western writing systems, specifically Chinese, led DeFrancis (1989, p. xi-xii, p. 220ff.) to write a book to correct 'misrepresentations' which, he claims, have created misunderstandings about the nature of all writing systems. He goes to some length to demonstrate the fact that Chinese characters generally convey significant sound-based information and the impact of that fact on writing system theory. Academic literature in English has benefitted enormously by increasing numbers of publications on non-Western writing systems by native speakers (e.g. various authors in Taylor and Olson, 1995). A well-known example of international exchange began with a quote from Halle (1969, p. 18) to the effect that learning Chinese characters is like learning so many telephone numbers. Wang (1980, p. 200) suggested that Halle's comparison was 'to compliment the Chinese for memory feats of which few mortals are capable!'

Taylor & Taylor's (1983, p. 115) solution to such classification problems seems to make sense in light of disputes over (mis)typing of writing systems. They provide a chart on which various writing systems are described as strongly coded, weakly coded or not coded at all for each of the language unit levels of phoneme, syllable, morpheme, word, meaning, and function/content.

What is a Good Writing System?

Hairsplitting over typologies pales in contentiousness beside the assessment of value of writing systems. Earlier in this century, reverence for positivism, ethnocentricity, and faith in the power of English were largely unquestioned in Britain and North America. Therefore, it is not surprising that phoneme-oriented orthographies based on linguistic analysis of speech were idealized. As a linguist struggling with the priority society placed on written language over spoken, Bloomfield (1933, p. 21) "scientifically" pronounced that '[w]riting is not language, but merely a way of recording language by means of visible marks.' He, along with other would-be reformers of English spelling such as Charles Darwin and William James, 'assume[d] that the deleterious effects of orthographic irregularities on learning to read are obvious and without need of demonstration' (Venezky, 1980, p. 2). Authors more closely involved with designing practical writing systems for "exotic" languages espoused basic adherence to phonemically based systems (e.g. Lado, 1957, p. 96), but Pike in 1947 encouraged a distinction between technical, practical and scientific orthographies, and

Nida in 1963 indicated that phonemic orthographies should be altered to preserve the forms of morphemes and to reflect as much as possible the orthography of the dominant language of the area (discussed in Stubbs, 1980, p. 95). In 1964, Smalley provides five criteria for an optimal new writing system.

- 1 maximum motivation for the learner;
- 2 maximum representation of speech;
- 3 maximum ease of learning;
- 4 maximum transfer;
- 5 maximum ease of reproduction. (in Coulmas, 1989, p. 226)

Still in this intellectual climate where, as Gaur (1995, p. 29) says, 'universal literacy and the alphabet were seen as the panacea for all social, economic and (in countries under colonial rule) political ills', we can again pick up the thread of Gelb's claim that all development in writing systems was in the direction of greater 'phonetization' so that '[t]he development of a full Greek alphabet, expressing single sounds of language by means of consonant and vowel signs, is the last important step in the history of writing' (1963, p. 184). Also, in the middle of this century, anthropologists were wrestling with a perceived dichotomy between modern and primitive societies (e.g. Lévi-Strauss, 1964). This dichotomy has been variously called the Grand Dichotomy or the Great Divide, and Gelb, for example, devoted a chapter to discussion of 'Modern Writing among Primitives' (1963, ch. 7).

Diringer (1948), McLuhan (1962), Havelock (1976), and Goody and Watt (1968) make links between alphabetic literacy in ancient Greece, popular literacy, democracy, and the rise of major facets of Western civilization such as logic and history; according to Goody and Watt (1968, p. 67) 'it was only when the simplicity and flexibility of later alphabetic writing made widespread literacy possible that for the first time there began to take shape in the Greek world of the seventh century B.C. a society that was essentially literate and that soon established many of the institutions that became characteristic of all later literate societies'. In response to criticisms, Goody (1977) later explicitly distanced himself from the Grand Dichotomy and tried to loosen causal links in his argument between (alphabetic) writing (which he described as a technology of the intellect) and characteristics of modern civilization. Also in this vein, Olson (1977) claimed that (alphabetic) literacy permits a kind of logical competence that is in some way autonomous from people's ordinary interpersonal functions of language.

Responses to these various claims about the supposed qualities of alphabetic writing include Graff's 1979 historical study showing that such democratic and economic benefits claimed for literacy do not necessarily follow when lower class people, especially, become literate. Others (e.g., Daniels 1996b, p. 27) point out that an alphabetic system is not the best for some languages because of their structures. Scribner & Cole (1981) teased out distinctions between schooling and literacy to show that literacy has some impact on the intellectual skills of those who are literate but not

schooled, but that these skills are not necessarily the kind of logical, autonomous ones predicted by writers such as Olson. Street (1984) took on Goody and others head on and proposed an 'ideological' model of literacy as grounded in social practice as opposed to the 'autonomous model' which posits an objective capacity of thought as a consequence of literacy. He calls particularly for cross-cultural research rather than attempts at universal theorizing to inform teaching practice. Finally, Bernal (1987) makes the elaborate case that northern Europeans from the 18th century on basically rewrote the history of cultural, intellectual, and linguistic relationships between the Greeks and their Asian and African neighbours of the second millennium B.C. He argues that racism and positivism required Europeans to conceptualize the roots of their civilization in 'Aryan' Greece rather than in Egypt or the Near East. A main thread to his argument rests on Western claims that alphabetic literacy arose in Greece.

How do Writing Systems Affect Learning to Read in the First Language?

Oceans of ink have been spilled on issues concerning learning to read (among children especially). Malmquist & Grundin (1980, p. 121) note that

- 1) the number of items of research [on learning to read] are extremely unevenly distributed among different geographical regions of the world,
- and 2) very few cross-national studies have been accomplished.

For the purposes of this review only cross-orthography studies will be discussed.

Gray's 1956 study of eye-movements of adult readers of fourteen widely different languages/scripts was ground-breaking since, as first of its scope, it helped to dispel unfounded conjecture about differences in reading various writing systems. His conclusion was simple: '[t]hese studies demonstrate that the general nature of the reading act is essentially the same among all mature readers' (p. 50).

Gillooly (1973) reported on a review of various cross-orthography and Initial Teaching Alphabet (i.t.a., a more phonemic writing system for English than regular English orthography) reading studies. Its conclusions have been borne out in many respects in subsequent research.

1. In the early stages of learning to read (i.e., in the first grade), phonetic writing systems have an advantage over traditional English orthography in terms of greater word recognition skills...
2. At the intermediate levels (grades four to six) children reading traditional English orthography (rather than a writing system with more simple, direct grapheme-phoneme correspondences) seem to have an advantage in terms of reading speed. This is most likely so because characteristics of our traditional English orthography (such as the use of

graphemic and lexical units) probably encourage children to read larger 'chunks' of printed material (higher-order units) at an earlier age than is so in countries employing a more phonetic writing system.

3. Once reading skill has been acquired (i.e., among mature readers), writing system characteristics no longer seem to exert any appreciable influence on the act of reading.

4. To the extent that reading disabilities are related to writing-system characteristics in the first place, they seem to be more a function of the base of a writing system (i.e., whether it is a syllabary, etc.) than of the writing system's rules of correspondence.

5. Our traditional English writing system seems to be a near-optimal one [sic] for learning to read and, therefore, no basis has been found for the claim by spelling reformers that our traditional English orthography should be modified. (Gillooly, 1973, p. 194)

Downing's 1973 book was a landmark in that it provided English speakers the opportunity to learn about how reading was taught to children in thirteen countries. However, the data in the descriptions were not organized so that direct comparisons of factors could readily be made. His discussion of studies of experiments in teaching reading using the i.t.a. (pp. 221-227) indicate that it seemed to be an advantage to the children using it *in the early grades*.

Kavanagh & Venezky's 1980 collection of articles on orthography, reading, and dyslexia had similar drawbacks to Downing's with respect to drawing comparative conclusions about the impact of writing systems on learning to read. The article on Finland by Kyöstiö confirms earlier findings that regularity of phoneme-grapheme correspondence (for which the writing system for Finnish is famous) is an advantage to the beginning reader but not to the more mature reader.

...the answer to the question of easiness in reading the Finnish language is affirmative as far as mechanical reading is concerned. But if by reading we mean higher level skill, the answer might be the same as in other languages: children have difficulties in comprehension and other more developed skills. (p. 49)

In the same volume, Grimes & Gordon consider the design of new orthographies and conclude that '...[although] orthographies ought to approach some optimum...an orthography could be considered optimal in terms of one kind of linguistic encoding, without necessarily being optimal in terms of another, or from the standpoint of learnability.' (p. 103). An interesting finding, reported by Lukatela and Turvey in that collection, indicates that Serbo-Croatian speakers who learn both the Roman and Cyrillic scripts for the language are profoundly influenced by the script they learned first even after many years of using both.

Finally, a collection edited by Taylor & Olson (1995) includes separate discussions of a range of languages and writing systems as well as direct comparisons across orthographies. Major conclusions are generally consistent with those already discussed here. It is noted that children's performance differs according to the script in word recognition and in types of errors, but that they tend to perform similarly when reading text, whatever the orthography. Stevenson (1987, p. 148), from his study comparing U.S., Taiwanese, and Japanese children learning alphabetic, 'logographic', and syllabic scripts, stated 'it is difficult to accept the hypothesis that problems in reading are closely linked to different writing systems.'

The more orthographies tend to reflect language sound rather than meaning the more disadvantageous they are to speakers of (non-standard) dialects. However, there is some agreement that, while such dialect speakers are somewhat disadvantaged in the early stages of learning to read sound-based orthographies, causes of reading failure are more likely found in other, sociolinguistic issues such as racism or classism (Downing, 1973, ch. 10; Stubbs, 1980, pp. 132-135; Taylor & Taylor, 1983, pp. 365-368). Less comparative attention has been paid to the fact that children's ability to attend to phonemes rather than syllables, as well as other aspects of their language, are not necessarily developed by early school age (Stubbs, 1980, pp. 8-9).

How Do Writing Systems Affect Learning to Read in a Second Language?

With respect to learning to read and write in a second language, there seems to be little grounds for concern that learning a different writing system will cause major problems. Venezky (1977) outlines three levels of skills to attend to in transfer to the orthography of a second language: (1) the function of an orthography; (2) types of relationships in the writing system; and (3) specific correspondences for letters. He cites no reasons for serious concern at any of these levels (pp. 48-49). Hornberger (1989, p. 288) created a multidimensional model for the study and description of biliteracy. One of the nine continua that form the model is the 'convergent-divergent scripts continuum.' Reviewing research on this factor, she notes studies in which similarity and difference between the first and second orthography created advantages and disadvantages. She cites Fishman, et al.'s (1985) study of four ethnolinguistic schools in New York which found no significant effects of the different orthographies involved.

What About Everything Else?

Space limitations have precluded discussion of many other interesting factors relating writing systems to education. For example, the ability to organize written material into 'alphabetical order' is a cornerstone of information processing (O'Connor, 1996). Handwriting and the variations in orthographic symbols (such as capital and

lower case letters in Roman alphabets) are widely considered in the literature. These relate in turn to discussion of tools and materials used for writing (e.g., Sirat, 1994). This leads to matters of printing, typewriters, and now computing, all strongly favouring alphabetic systems because of their relatively small numbers of symbols (Daniels, 1996c). We generally fail to appreciate the importance of our writing system(s) in our lives as fish fail to appreciate the role of the water they swim in.

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