

The internal structure of writing systems:

A cognitive approach

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In our view, current conceptions of reading acquisition remain incomplete and unsatisfactory. We trace the limitations of these conceptions to a prevailing assumption—that writing operates solely through a direct mapping between graphic units and linguistic units (Gelb, 1963). In response, we propose a novel account of the internal structure of writing systems that describes the cognitive mechanisms involved in their invention.

We view writing as a cognitive tool for representing speech. More specifically, it can be considered a memory aid that allows people to recall speech verbatim through material representations. Consequently, the internal structure of writing is subject to the constraints of the cognitive system, particularly to the limitations of the human memory system. Although memory readily supports paired-associate learning between print and speech, its capacity is insufficient to store every possible print-to-speech pairing individually. Faced with these limits, early writers turned to cue combination: multiple graphemes, each acting as a cue, were combined to convey a single sign— a process similar to the disambiguation strategies described by Boltz (1986) for Chinese.

In this talk, we illustrate our approach by tracing how writing developed to overcome three major obstacles:

- (1) the limited usefulness of simple grapheme-to-word associations, addressed through cue-combination mechanisms;
- (2) the challenge of writing polysyllabic words; and
- (3) the challenge of representing complex syllables.

The systematic use of cue combination in most writing systems gradually produced distributional regularities between written and spoken forms. We conclude by discussing the implications of these regularities for theories of reading acquisition.

Boltz, W. G. (1986). Early Chinese writing. *World Archaeology*, 17(3), 420-436.

Gelb, I. J. (1963). *A study of writing*. University of Chicago Press.