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## BOOK REVIEWS

**Richard Sproat.** *Language, technology, and society.*  
Oxford: Oxford University Press, 2010. Pp xiii, 286.

**Reviewed by Terry Joyce**

Reflecting his considerable contributions to writing and writing systems research, principally Sproat (2000) (see Penn (2001) for review), most scholars of writing systems and scripts will undoubtedly be familiar with Richard Sproat's name (or, at least, with the orthographic form, even if not everyone pronounces it correctly; Sproat (2010:242f) points out that many people mispronounce it and kindly provides guidance on the matter). While certainly not immediately obvious from its title, however, the first half of *Language, technology, and society* is also fundamentally concerned with writing and writing systems. Sproat (2010:1) remarks that, for much of human history, there has essentially been only one technology available "to enhance and mimic our linguistic abilities"; namely, writing. In contrast, the second half focuses on various language-related technologies, by briefly tracing out their histories, summarizing current developments, and speculating on future progress. Structurally, the material is organized under ten chapters, which are supplemented by a glossary, a list of phonetic symbols, notes, and a bibliography. The book is also extensively illustrated through the inclusion of 103 figures and nine tables.

The first five chapters together, arguably, represent an extended exposition on the relationship between language and writing systems. After a brief sketch of how the first full writing system of Sumerian probably developed in illustration of how language and technology first came together through writing (Chapter 1), Chapters 2 and 3 are closely related in advancing the relationship discussion. Through lengthy reflections on the separate notions of conventionality and scope for symbol systems in Chapter 2, Sproat argues that "all writing systems represent elements of language – not ideas or something else" (p. 9), while Chapter 3 turns to describe "how the various representable elements – phonemes, (some) syllables, (some) morphemes, and (some) semantic features – are combined into working writing systems" (p. 34). The bulk of the chapter consists of three main sections on Chinese writing, syllabic writing, and segmental writing (including a separate subsection on Korean hangul). In the first of these sections, Sproat essentially presents the argument, strongly associated with DeFrancis (1989), that the Chinese writing system is "largely constructed on the basis of sound" (p. 39), while the two subsequent sections cover a wide range of writing systems that function at the syllable

and phoneme levels, respectively. Consistent with the more generalist style of the book, it is worth mentioning that Chapter 3 does not address any typological issues; indeed, there are no references to formal typologies of writing systems (not even to Sproat (2000)). In defining decipherment as “the discovery of the relationship between a set of symbols and a particular language” (p. 90), Sproat’s detailed examination of its methodology in Chapter 4 also serves to reinforce the running theme that writing systems represent units of language. Focusing more on issues surrounding literacy and its social impact, Chapter 5 presents some examples of script engineering, which largely testify to the difficulties of attempting to raise literacy levels through tinkering with a script, and also presents some interesting data on various economic factors correlated with literacy levels, which suggests that literacy is not correlated with script complexity.

Excluding the recommendations for further reading (Chapter 10), the second half of the book essentially consists of four chapters that discuss the past, present, and future of language-related technologies beyond writing. After briefly outlining early attempts at mechanized speech, Chapter 6 offers fairly detailed accounts of typewriting – such as carefully examining some misconceptions concerning the QWERTY keyboard and the problems of typewriting in some scripts – and electronic encodings – tracing from early telegraphic codes to the Unicode standard for multilingual computing. Chapter 7 describes the modern technologies of speech recognition and speech synthesis, such as the Hidden Markov Model (HMM) and unit selection synthesis. While noting the impressive progress made within these domains over recent decades, Sproat’s presentation is also nicely balanced by his more skeptical outlook that future advances are likely to be much more modest in nature, unless researchers achieve significant advances in understanding the complexities of natural language processing. The pragmatic message of Chapter 8, on machine translation (MT), seems to be that, while MT is still far from perfect, despite considerable improvements since the mid-1960s, the demand for MT technology within our modern information-based societies is undoubtedly greater than ever before. In concluding with some speculations on the future, Chapter 9 both reiterates the technologist’s refrain of the book – that language technologies augment our linguistic abilities – and calls for wisdom regarding the possible social implications of utilizing the technology of writing – given the potential inherent in all tools for both ill and good.

In tendering any overall assessment of the book, it is vital to remember that it developed out of a former course of the same title aimed at sophomore undergraduates and, thus, the stated target audience of the book is the *educated layman*, rather than scholars of writing systems or developers of language technology. Also, by its very nature, in attempting such a bold synthesis between rather diverse areas, the book unquestionably attempts to cover a wide range of topics. It is, therefore,

quite understandable that the reader is often referred on to more extensive discussions available elsewhere (such as for the history of writing systems, esthetic aspects of scripts, Sequoyah, and printing). In contrast, however, in a number of other cases, the intention to provide more thorough treatments is explicitly indicated (such as for the symbolological problem faced by Waste Isolation Pilot Plant, Blissymbolics, decipherment methodology, typewriting, and electronic encodings). With its original blend of diverse topics, on the one hand, but acknowledged fluctuations in the depth of coverage in some areas, on the other hand, it is somewhat difficult to imagine the book being adopted as the sole or principal textbook for a more general course. However, these same factors also mean that the book can potentially be an invaluable supplement to a wide variety of courses related to language, technology and society.

## References

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