Extricating Reading Science from entrenched Anglocentrism, Eurocentrism, and Alphabetism and Embracing Global Diversity: A Personal Journey

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Outline of the talk

- A personal journey and cautionary tale

- Anglocentrism

- Eurocentrism and Alphabetism

- Embracing global diversity: A new multi-dimensional perspective on writing systems

- Summary and conclusions

A personal journey

- Growing up in the monolingual Anglophone bubble

- Academic Socialization in the Anglocentric Bubble.

- First Steps Outside the Anglophone Bubble.
  - PA is not a linear/alphabetic string-of-beads view
  - Fluency important not accuracy

- Anglocentricities paper (Psych Bull, 2008)

On the Anglocentricities of Current Reading Research and Practice: The Perils of Overreliance on an "Outlier" Orthography

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In this critique of current reading research and practice, the author contends that the extreme ambiguity of English spelling–sound correspondence has confined reading science to an insular, Anglocentric research agenda addressing theoretical and applied issues with limited relevance for a universal science of reading. The unique problems posed by this "outlier" orthography, the author argues, have focused disproportionate attention on oral reading accuracy at the expense of silent reading, meaning access, and fluency, and have significantly distorted theorizing with regard to many issues—including phonological awareness, early reading instruction, the architecture of stage models of reading development, the definition and remediation of reading disability, and the role of lexical–semantic and supralexical information in word recognition. The dominant theoretical paradigm in contemporary (word) reading research—the Coltheart/Baron dual-route model (see, e.g., J. Baron, 1977; M. Coltheart, 1978) and, in large measure, its connectionist rivals—arose largely in response to English spelling–sound obtuseness. The model accounts for a range of English-language findings, but it is ill-equipped to serve the interests of a universal science of reading chiefly because it overlooks a fundamental *unfamiliar-to-familiar/novice-to-expert* dualism applicable to *all* words and readers in *all* orthographies.

Keywords: reading, word recognition, orthography, Anglocentrism

Is the Science of Reading Just the Science of Reading English?

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ABSTRACT

The science of reading has made genuine progress in understanding reading and the teaching of reading, but is the science of reading just the science of reading English? Worldwide, a majority of students learn to read and write in non-European, nonalphabetic orthographies such as abjads (e.g., Arabic), abugidas/alphasyllabaries (e.g., Hindi), or morphosyllabaries (e.g., Chinese). Over a decade ago, I argued that the extreme inconsistency of English spelling-sound correspondence had confined the science of reading to an insular, Anglocentric research agenda addressing theoretical and applied issues with limited relevance for a universal science of reading. Here, I ask if the science of reading has moved forward. Acknowledging some limited progress over the past decade, it is evident that even today, mainstream reading research remains entrenched in Anglocentrism, Eurocentrism, and another form of ethnocentrism that I call alphabetism. Even the two dominant theoretical frameworks for describing cross-script diversity, orthographic depth and psycholinguistic grain size theory, give little or no consideration to non-European alphabets or nonalphabetic scripts, promoting a one-dimensional view of script variation (i.e., spelling-sound consistency). Consideration of the full spectrum of the world's languages and writing systems reveals multiple dimensions of writing system complexity, each liable to create obstacles for the developing reader. If the science of reading is to contribute meaningfully to assessment, diagnosis, instruction, and intervention for all readers around the world, then we must extricate our field from entrenched ethno-

Anglocentrism

The extreme ambiguity of English spelling-sound correspondence has confined reading science to an insular Anglocentric research agenda addressing theoretical and applied issues with only limited relevance for a universal science of reading and literacy.

Share, 2008, Psychological Bulletin

The many Anglocentrisms....

- Coltheart-Baron Dual-route theory
- Accuracy versus fluency
- Oral versus silent reading
- Phoneme awareness
- When and how we teach reading
- Definition & diagnosis of RD/dyslexia and the "wait-to-fail" model
- Stage models of reading development
- ....and more

The Myth of Normal Reading

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Abstract

We argue that the educational and psychological sciences must embrace the diversity of reading rather than chase the phantom of normal reading behavior. We critically discuss the research practice of asking participants in experiments to read "normally." We then draw attention to the large cross-cultural and linguistic diversity around the world and consider the enormous diversity of reading situations and goals. Finally, we observe that people bring a huge diversity of brains and experiences to the reading task. This leads to four implications: First, there are important lessons for how to conduct psycholinguistic experiments; second, we need to move beyond Anglocentric reading research and produce models of reading that reflect the large cross-cultural diversity of languages and types of writing systems; third, we must acknowledge that there are multiple ways of reading and reasons for reading, and none of them is normal or better or a "gold standard"; and fourth, we must stop stigmatizing individuals who read differently and for different reasons, and there should be increased focus on teaching the ability to extract information relevant to the person's goals. What is important is not how well people decode written language and how fast people read but what people comprehend given their own stated goals.

Feature Review

Over-reliance on English hinders cognitive science

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English is the dominant language in the study of human cognition and behavior: the individuals studied by cognitive scientists, as well as most of the scientists themselves, are frequently English speakers. However, English differs from other languages in ways that have consequences for the whole of the cognitive sciences, reaching far beyond the study of language itself. Here, we review an emerging body of evidence that highlights how the particular characteristics of English and the linguistic habits of English speakers bias the field by both warping research programs (e.g., overemphasizing features and mechanisms present in English over others) and overgeneralizing observations from English speakers' behaviors, brains, and cognition to our entire species. We propose mitigating strategies that could help avoid some of these pitfalls.

Highlights

The cognitive sciences have been dominated by English-speaking researchers studying other English speakers.

We review studies examining language and cognition, contrasting English to other languages, by focusing on differences in modality, form-meaning mappings, vocabulary, morphosyntax, and usage rules.

Critically, the language one speaks or signs can have downstream effects on ostensibly nonlinguistic cognitive do-

The myth of language universals: Language diversity and its importance for cognitive science

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Abstract: Talk of linguistic universals has given cognitive scientists the impression that languages are all built to a common pattern. In fact, there are vanishingly few universals of language in the direct sense that all languages exhibit them. Instead, diversity can be found at almost every level of linguistic organization. This fundamentally changes the object of enquiry from a cognitive science perspective. This target article summarizes decades of cross-linguistic work by typologists and descriptive linguists, showing just how few and unprofound the universal characteristics of language are, once we honestly confront the diversity offered to us by the world's 6,000 to 8,000 languages. After surveying the various uses of "universal," we illustrate the ways languages vary radically in sound, meaning, and syntactic organization, and then we examine in more detail the core grammatical machinery of recursion, constituency, and grammatical relations. Although there are significant recurrent patterns in organization, these are better explained as stable engineering solutions satisfying multiple design constraints, reflecting both cultural-historical factors and the constraints of human cognition.

The weirdest people in the world?

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Abstract: Behavioral scientists routinely publish broad claims about human psychology and behavior in the world's top journals based
on samples drawn entirely from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies. Researchers – often
implicitly – assume that either there is little variation across human populations, or that these standard subjects are as
representative of the species as any other population. Are these assumptions justified? Here, our review of the comparative
database from across the behavioral sciences suggests both that there is substantial variability in experimental results across
populations and that WEIRD subjects are particularly unusual compared with the rest of the species – frequent outliers. The
domains reviewed include visual perception, fairness, cooperation, spatial reasoning, categorization and inferential induction, moral
reasoning, reasoning styles, self-concepts and related motivations, and the heritability of IQ. The findings suggest that members of
WEIRD societies, including young children, are among the least representative populations one could find for generalizing about
humans. Many of these findings involve domains that are associated with fundamental aspects of psychology, motivation, and
behavior – hence, there are no obvious *a priori* grounds for claiming that a particular behavioral phenomenon is universal based on
sampling from a single subpopulation. Overall, these empirical patterns suggests that we need to be less cavalier in addressing
questions of *human* nature on the basis of data drawn from this particularly thin, and rather unusual, slice of humanity. We close
by proposing ways to structurally re-organize the behavioral sciences to best tackle these challenges.

Majority of humanity do not learn to read in an alphabetic writing system and even most users of alphabets are neither native English-speakers nor speak an Indo-European language.

Another obstacle: Eurocentrism and Alphabetism

Many Western scholars – (Gelb, Havelock), assume that alphabets are most advanced/superior/optimal.

Share, 2014, Frontiers in Psychology

THE ALPHABET

A KEY TO THE HISTORY OF MANKIND

DAVID DIRINGER
ELLIS MINNS

Alphabetic bias evident in….

- Omission of ". . .*in English*" *qualifier in journal article titles.*
  New Whiz-Bang+++ Model of Reading". . . in English?

  Only English has universal applicability?

Alphabetic bias evident in....

- Unqualified generalizations about reading "across languages" and/or "across orthographies" in papers that refer almost exclusively to English or to European alphabets (e.g., Ziegler & Goswami, 2005)

Alphabetic bias evident in….

- Even the most authoritative texts on the psychology of reading (e.g., DeHaene, 2009; Rayner et al., 2012) continue to espouse Gelb's outdated views about the history of writing.

- *"The history of writing suggests a clear evolutionary trend...These systems evolved to syllabic systems and finally to alphabetic systems....Such an evolutionary argument suggests that alphabets are fitter (in the Darwinian sense)...." Rayner et al., 2012, pp.46–47).*

Alphabetic bias evident in....

- Implicit or explicit acceptance of Gelb's long-discarded evolutionary (uni-directional) theory of the history of writing in leading texts on reading development aimed at educators. . .

"   *Taking the final step toward the creation of true alphabetic writing system, the Greeks assigned a symbol to each consonant and vowel of their language...In many ways, the individual development of the children who are discovering the alphabetic principle in English writing recapitulates human history (*Moats, 2000, p. 82-83*)*

Alphabetic bias evident in….

- Reference to non-alphabetic systems as imperfect or defective (*DeHaene, 2009; Rayner et al., 2012)*

Alphabetic bias evident in….

- The use of alphabetic terminology (e.g., letters, graphemes) to describe and label the functional architecture (and even the anatomical brain structures) of reading ("letter detectors," "letter-box area", "universal letter shapes", DeHaene, 2009) purported to be universal in reading.

摩訶般若波羅蜜多心経

観自在菩薩行深般若波羅蜜多時照見五
蘊皆空度一切苦厄舎利子色不異空不
異色色即是空空即是色受想行識亦復如
是舎利子是諸法空相不生不滅不垢不浄
不増不減是故空中無色無受想行識無眼
耳鼻舌身意無色声香味触法無眼界乃至
無意識界無無明亦無無明尽乃至無老死
亦無老死尽無苦集滅道無智亦無得以無
所得故菩提薩埵依般若波羅蜜多故心無
罣礙無罣礙故無有恐怖遠離一切顛倒夢
想究竟涅槃三世諸佛依般若波羅蜜多故
得阿耨多羅三藐三菩提故知般若波羅蜜
多是大神呪是大明呪是無上呪是無等等
呪能除一切苦真実不虚故説般若波羅蜜
多呪即説呪曰
羯諦羯諦 波羅羯諦 波羅僧羯諦 菩提薩婆訶
般若心経

FIGURE 32. The Heart Sutra in standard Chinese script (*kǎi shū*; Stevens 1988: 123).

إِنَّا خَلَقْنَٰكُمْ مِّن ذَكَرٍ وَأُنثَىٰ

Thuluth

FIGURE 28. A Qur'ānic passage in a variety of calligraphic styles (Zakariya 1978: 103): *'inna ḫalaqnākum min ḏakarin wa 'unṯā* 'Behold, we have created you male and female' (Sura 49:13).

Current frameworks for describing writing system diversity highly alphabetocentric

- *Orthographic Depth* and
  Psycholinguistic Grain Size Theory:
      deeply entrenched in Anglophone and
      Eurocentric/alphabetocentric
      perspectives
- Each promote a one-dimensional view of script variation, namely, spelling–sound consistency.

Daniels & Share, SSR, 2018

Ten Dimensions of Writing System Diversity

Share & Daniels, WSR, 2015; Daniels & Share, SSR, 2018

I. Linguistic distance

Spoken/written divergence
    Dimensional, graded continuum

Extreme case Bilingual context, learning a totally unfamiliar, unrelated language (e.g., Africans speakers learning to read in English or French)

Diglossia

- 2 distinct (low-prestige and high-prestige) varieties of the same language exist side by side in the same speech community, used for different purposes

Dialect and register variation

Phonology

- *February* /februweriy/ versus /febyuweriy/

החתול

Lexicon

- *Discontinue/stop*

Syntax

    passive versus active

Discourse structures

II. Spatial arrangement: Multi-linearity and non-sequentiality

- Diacritics very common

German	Mütter
Ifè	lákű-kã
Arabic…	

FIGURE 28. A Qur'ānic passage in a variety of calligraphic styles (Zakariya 1978: 103).
...na ḫalaqnākum min ḏakarin wa 'unṯā 'Behold, we have created you male and female'
(Sura 49:13).

Non-sequentiality

Devanagari णी ⟨ṇī⟩   णि ⟨ṇi⟩

Hierarchical nesting

SAMPLE OF KOREAN

우리	나라의	말은	中 國의
우리	나라의	말은	중국의
: wuli	nalauy	malun	cwungkwukuy
uri	nara-e	mar-in	tʃuŋgug-e
our	country-'s	language-TOP	China-'s

III. *Visual uniformity, distinctiveness and complexity*

Hebrew   וזו ססדז דזר פכב

Armenian   Ⴀ Ⴁ զ զ ꞁ ꞁ ԲԲ

Tamil   அ உ இ

Thai   ข ฃ ฆ

Visual complexity *slows* identification speed (Chang et al., 2016; Nag et al., 2014; Pelli et al. 2006)

IV. Historical change:
Retention of historical spellings despite pronunciation change

Living languages constantly change

Orthography altered occasionally, if at all

The upshot…..

- over time, pronunciation is constantly "drifting" away from spelling.
- This "drift" major cause of depth/inconsistency/irregularity

IVa. Spellings same, pronunciations different

- *bough/cough/dough/through/tough*
  all once rhymed

IVb. Pronunciations (now) same, spelling different

- *meat/meet/mete*

  originally pronounced differently, pronunciations now merged

V. Spelling constancy despite morphophonemic alternation

- ⟨house⟩ /haws/ becomes /hawz/ when pluralized, but spelling retained ⟨hou̲s̲es⟩

VI. Omission of phonological elements

Hebrew & Arabic

all consonants written but not all vowels

מספר creates extensive homography

English stress not marked,

contráct (v.) cóntract (n.).

(African tone languages, many lack of tone marking, serious ambiguities)

VII. Allography

English ⟨A/a/ɑ⟩

Arabic initial, medial, final & separate

ب بـ ـبـ ـب/baːʔ/,   ع ـع ـعـ عـ/ʕ/

Chinese reduced form of radicals when used in semantic-phonetic compounds

水 'water' often takes the form 氵 in compounds 汁 zhī 'juice'

VIII. Dual purpose letters

Arabic & Hebrew ⟨و⟩ ū/w אהוי

English ⟨h⟩ doubles as a diacritic in the digraphs ⟨ch ph sh th wh⟩

بيت أورن

X. Inventory size "contained-extensive" (Nag) "orthographic breadth"

- Phoneme-based scripts 20-50 (upper and lower-case)

- Syllable-nested compound aksharas, Korean syllable blocks, several hundreds

- Morpheme-based Chinese radicals (~200), phonetics (700-800), Japanese Kanji 2000

Conclusions

- Avoid ethnocentrism in all its forms

- One size (spelling-sound consistency) does not fit all writing systems.

- Multidimensional framework implies that writing system complexity is a unique *combination* of dimensions

- Relinquish generalizations from any single orthography

- Exercise *extreme* caution applying Anglophone theories and findings to other languages and writing systems.

Thank you!

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