Pete's response to Shanahan Post Feb 22

Thanks for this post Tim, and I appreciate the shout out for my work at the WordWorks Literacy Centre (www.wordworkskingston.com).

The idea of chunking large words into smaller parts to ease the process of accessing larger words is certainly a logical strategy. We remember phone numbers not as strings of single digits, but we group them to ease memory.

I think there is pretty much 100% agreement on this idea that "chunking" complex information into manageable pieces is a wise strategy. But it is also about chunking smaller pieces into larger pieces (e.g. letters into graphemes, graphemes into morphemes) to reduce cognitive load. The question about what kinds of structures to point to and how to point to them in reading is a very different question.

Word structures that can be sub-lexical typically addressed in literacy instruction are: onsets, rimes, syllables and morphemes. We should keep in mind that morphemes are unique compared to all other sub-lexical structures: only morphemes bind to pronunciations, spellings AND meanings of words. As far as I know, every theory of reading agrees that learners need to automate access to the identify of as many words as possible. I think there is pretty universal agreement that in terms of literacy learning, a word's identify is the binding of the pronunciation, spelling and meaning. In terms of leveraging spelling-meaning connections between words, drawing attention to morphemic units of spelling, has a clear advantage over syllables. Given that in English the pronunciation of morphemes shifts across related words, but tends to keep the spelling consistent (including suffixing changes) is also key to this question.

Bruce Howlett raised the topic of David Share's new paper on the universal combinatorial nature of language. This raises another issue that should enter this discussion. The basic idea is that given the limits of cognitive processing, languages need a limited (learnable) number of non-meaning-based structures that nest into a larger number of meaning-based sub-lexical structures (morphemes) which then nest into words. (Readers may be interested in the   video on the combinatorial structure of English orthography I published along with my colleague Marie Foley at this link: https://www.youtube.com/watch?v=ptZl41tS9DA). (Find the link to Share's article in video description.)

In their seminal paper on orthographic depth, Frost and Katz (1992) noted that languages in which syllable boundaries to not coincide with morphemic boundaries (e.g. Hebrew, English), an orthography system based on syllable structures would "not be optimal" (p. 69).

Consider dividing the words "action" and "grumpy" into syllables vs morphemes:

syllable division: ac / tion → action;   grum / py → grumpy

morphemic analysis: act + ion → action;   grump + y → grumpy

Syllables: If we draw attention to the /æk/ pronunciation and how it links to the <ac> spelling and the /ʃən/ pronunciation linked to the <tion> spelling, we should consider some implications that are often missed.

How to we help kids remember that the /æk/ is not spelled <ack> or <ak> or some other plausible GPC, or that the /ʃən/ is spelled <tion> when we see this same pronunciation in words like "musician" or "passion"? Similarly, there is no semantic priming going on with the spelling <grum> or <py> that plays any similar role elsewhere in the system. For spelling, how do we help the learner remember that the final "long e" phoneme is written with the <y> not the <ee> <e> <ie> or many other possible graphemes for this phoneme?

Because syllable boundaries are not constrained by morpheme boundaries, dividing words into syllables in English can be expected to hinder access to spelling-meaning correspondences that are offered by morphology.

Morphemes: By contrast, we can show how the <act> base with a reliable meaning connection is found in related words:

act + ion → action

act + or → actor

act + ing → acting

re + act → react

re + act + ion → reaction

Now we can draw attention to the fact that the <act> provides a spelling-meaning correspondence that makes sense of the grapheme-phoneme correspondences. The pronunciation of this base as a word itself, or in a word like "actor" helps the learner understand why we keep the <t> even though it is pronounced /ʃ/ (after an <i> or <u>).

With "grumpy" the morphological word sum directs attention to the "grump" which is meaningfully related to the base <grump>, and because the "long e" phoneme at the end is actually the pronunciation of the adjective suffix <-y>, we can remember why we need the <y> grapheme in this case.

In languages like English where syllable boundaries do not coincide with morphemic boundaries, I do not see how syllables can be "combinatorial." If we go from graphemes to syllables to words, there is no meaning-based sub-lexical structure--a hallmark of the language universal of combinatoriality.

This is NOT to say that instruction should avoid syllabic aspects of words. Children should know that for every syllable they perceive they should expect at least one vowel letter and that syllable stress can affect suffixing and more.

At this link is a document with a lesson on the morphology and phonology of the <act> morphological family:
https://drive.google.com/drive/u/0/folders/13bChsaQxLgqxhXDSQz_QGk5_o8PB3ozQ

The question of what sub-lexical "chunks" are most effective for instruction needs more research. However, I would argue that any benefits that come from chunking into syllables

needs to be tested in contrast to chunking words into morphemes--the only sub-lexical structure that binds spelling, pronunciation and meanings of words.

It seems to me that all the recent models of reading are pointing to the importance of the interrelation of pronunciation, meaning and spelling. This one page document is an intro to our "Morphology as a Binding Agent" model (Bowers & Kirby, 2010; Kirby & Bowers, 2017) and Duke and Cartwright's (2021) "Active Reading Model" which highlights this issue: https://drive.google.com/file/d/1yaCk6bXebv5qxbMjdAqKjxF_MPGz4nel/view?usp=sharing

I hope this context for your important post is helpful Tim.