

Numbers or numerology? A response to Nation (2014) and McQuillan (2016)

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On Ongoing Exchanges

A sign of maturity in a scholarly discipline is the presence of ongoing debates, or, in really mature disciplines, titanic feuds (Gore Vidal and William Buckley Jr., Norman Mailer and Noam Chomsky, or closer to home B.F. Skinner and Chomsky). A small and hardly titanic instance of this form of exchange has taken shape in one corner of applied linguistics and was inadvertently launched by a 2007 paper of mine (“Computing the vocabulary demands of L2 reading”). It dealt with a question almost everyone in reading and vocabulary has had something to say about, whether reading alone can build an adequate reading lexicon in a second language, or whether some sort of extra vocabulary training will normally be required. Like the best debating topics, this one is riddled with definitional issues (What is adequate?) that form some portion of the excitement. My paper was a simple corpus investigation with rudimentary tools of the reading-alone question, not the in-principle version but just the in-fact one of why typical second language (L2) lexicons seem to plateau soon after about 2,500 or 3,000 word families, leaving readers with only 90% lexical coverage in the academic texts they must read, which is somewhat short of the 95% to 98% coverage research by Nation (2006) and others which have shown to be needed for comprehension.

The Original Finding

I proposed that one good answer to this question (in the case of adult academic ESL learners with one year to prepare for content study in English) was that such learners typically do not seek or receive vocabulary training, and so are implicitly volunteering for a ‘reading alone’ experiment willy-nilly, and that if you count the number of times they are likely to meet words at the 4,000 frequency level and beyond, it will typically not be enough for reliable learning of those words to occur. For example, *conspiracy*, a typical fourth-thousand word (by Nation’s, 2012, BNC-COCA frequency scheme) will occur in any of its possible forms just 24 times in a non-specialist corpus of 1 million words of general US English. One million words is not an unusual annual diet for first language (L1) school learners reading self-selected texts, but L2 learners with 2,500 known word families are unlikely to get through more than a quarter of that in a year’s worth of reading, leaving *conspiracy* and its cohort with roughly six occurrences and hence placing it under the borderline of learnability (lately averaged at 12 occurrences). This computation, I argued (2007), could reasonably be multiplied throughout the system. Thus is the plateau explained and an angle provided on the crisis of the high-paying but often failing foreign

language learner in US and UK universities.

I thought this counting-up approach was a plausible, evidence-based, solutions-oriented and practitioner-usable explanation of some phenomena I and others had been working with in the academic reading classroom. But reading alone has its strong adherents, sometimes in unexpected places, and they were not slow to find problems in my simple explanation. All they have done, however, is tidy up some loose ends and make it stronger.

The Critics

McQuillan and Krashen (2008)

Quick to engage almost as soon as the paper came out were Jeff McQuillan and Stephen Krashen (2008). These researchers seemed to have a long list of studies ready to go where L2 readers got through vastly more text than Cobb (2007) had estimated, indeed up to a half million words a year, which in the case of *conspiracy* would have given it 12 hits and a potential anchor in the lexicon. The only problem, I responded after looking carefully at the data of the studies they were citing (Cobb, 2008), was that few instances of *conspiracy* or other words of the kind would be found in the reading in question, since these texts being read at such speed and in such quantity were in fact simplified texts where such words would not be found (in any significant number). So to my argument should be added the stipulation that sufficient vocabulary would not be learned from reading alone in the amount that can be read *of texts where vocabulary growth would be possible*.

Nation (2014)

Next onto the field, and with a change of venue from *Language Learning & Technology* to *Reading in a Foreign Language*, was Paul Nation (2014). I was inclined to look carefully at what Nation would want to add or subtract from my argument since I knew he supported a role for both direct and indirect instruction in vocabulary growth (unlike my first critics who have an axe to grind against any form of unnatural learning). Also Nation is a major player in both the coverage research already mentioned and the corpus frequency work on which my argument was based. Would Nation's response force me to modify my position?

The official brief of Nation's study is to reconcile Cobb with McQuillan and Krashen but it seems more about convincing Cobb that there is somehow a case for the amount of student reading McQuillan and Krashen fantasize about, and yet of texts that would actually contain the learning content that had originally been at issue. How will Nation make this argument? I wondered.

Like my study, Nation's (2014) is a corpus investigation of the reading-alone question and seeks to compute how many running words of different corpora would be needed simply to contain a minimum of 12 instances of each of the most frequent 9,000 words of English (as shown in his 2006 study to equate to 98% coverage). In other words, it is my study extended with some of the resources developed in the intervening seven years. Among his findings, for example, are that

812 of the fourth thousand word families would be met at least 12 times in a novel's corpus of 534,000 running words. This pretty much lines up with my *conspiracy* example above where six occurrences are found in 250,000 words, except Nation (very usefully) works the calculation up the scale into the zones where 98% coverage may lie. A summary of his findings, with rounding, is that a million words are needed to meet three-quarters of the fifth 1,000 word families 12 times, 2 million for three-quarters of the seventh 1,000, and 3 million for the ninth-thousand.

This is a welcome refinement, but why are we talking about 'three-quarters' of thousand lists being met 12 times? This is almost certainly due to the type of corpus used in the study, which consisted entirely of older English novels, which are known to be systematically low on 'academic' or sub-technical vocabulary. For example, items from Coxhead's (2000) Academic Word List comprise just 1.69% of Lawrence's *Lady Chatterley*, but over 9% in a random 20,000 words under the heading 'technology' from Wikipedia (as can easily be confirmed at www.lex Tutor.ca/vp/comp/). This is nothing new. Gardner (2004) details the 'qualitative difference' between the narrative v. expository lexis (in school texts, but there is no reason to think the finding is not general). All to say, there is room for yet another run of this study using a corpus that is not exclusively literary.

But how does this interesting extension of my original finding get us any closer to a reconciliation with McQuillan and Krashen (2008)? Unfortunately this is only achieved with a little wishful thinking. At the beginning of the corpus part of the paper Nation warned he will be "temporarily put[ting] aside the vocabulary load issue" (p. 2) or, in other words, not considering whether or how fast learners would be able to read these texts, what density new words would appear in, etc. Then when he does return to the load issue in another part of the paper it is only to state that all these calculations would only have any practical bearing if we can *assume* that L2 learners can learn 1,000 new word families a year, as young L1 learners do:

If we expect second language learners to increase their vocabulary at around the same yearly rate [of 1,000 families a year], then they will need to increase the amount they read each year, starting for the 2nd 1000 word level at under 200,000 tokens and rising to 3,000,000 tokens a year for the 9th 1000 level. This may be asking a lot, however, "as there is no published research to support this figure for learners of English as a foreign language" (Nation, 2014, p. 7). Nevertheless, "it is an optimistic goal to aim for" (p. 7).

"No published research to support this figure" indeed, but there is research to support a different figure. Milton and Meara (1995) tallied learners' vocabulary growth in periods abroad not at 1,000 but at 550 words a year. Anyway, empirical data is not needed to calculate that even if 1,000 word families per year was a truly realistic target in L2, then, at this rate, learning 9,000 words would take (assuming learners left home with about 2,500) six years plus, or about what it takes in L1.

I find the wishful reasoning of the cited passage, which is reiterated at the end, at odds with the number crunching elsewhere in the paper. But it has company. At another point in the same paper (p. 7) Nation mentions 'speed reading' as a way of making some of this extraordinary amount of learning-through-reading happen, despite having said in a different publication (Quinn, Nation & Millett, 2007) that in speed reading training materials, "There should be no or very

little unknown vocabulary” (p. 2). Nation presumably meant here that a learner who had once mastered speed reading techniques would then be able to speed read materials with significant amounts of new vocabulary as well, but as far as I know this has not been verified in a longitudinal study.

An interesting extra with Nation’s (2014) paper is the announcement of a new set of graded readers developed with Laurence Anthony (2013) in the aim of systematically introducing 8,000 word families to learners through a planned progression. However, no empirical data or even corpus figures are provided for how this controlled lexical buildup would work through the k-levels (how many hours and years etc.), nor is it entirely clear whether with so much pedagogical design incorporated into such texts this could really be called reading alone or natural reading. So, as for what I would modify in my original conclusion after reading this, it would be only that post-3000 will be hard going for reading alone *unless you have six years for the job*.

McQuillan (2016)

McQuillan’s (2016) paper followed on from both my original response to his paper with Krashen (2008) and from Nation’s (2014) paper just discussed. It seems to respond to my critique (that all the enormous quantities of L2 reading he and Krashen had cited had merely involved graded readers) inasmuch as the paper is entitled, ‘What can readers read after graded readers?’ The study is an uncharacteristic (for McQuillan) number crunching corpus study that starts with a description of Nation and Anthony’s (2013) advanced graded readers, which I thought sounded promising given that Nation had not really dealt with it, only to learn that McQuillan does not feel this is at all the way to go after graded readers. Instead, he has worked out at length in a sort of stacked young people’s story corpus that it is possible for learners to spontaneously come across naturally occurring learning sequences in typical unsimplified contemporary novels (*Twilight*, *Harry Potter*, which of course come at different naturally occurring vocabulary densities and compositions) that can take readers through the levels all the way to 9,000 word families (with 12 hits for new words, suitable ratios of known to unknown, etc.) via an enjoyable and thoroughly natural set of reading experiences. This would not involve any direct instruction: “It would be wrong to conclude based on the results of this study that adult L2 readers should test their vocabulary levels and attempt to ‘match’ themselves exactly to texts using a 95% or 98% vocabulary coverage criterion” (p. 74).

No, this can all be done without planning, calculation, or even a teacher’s help, but simply by readers self-selecting what they wish to read. Not quickly, however. Even learners who did discover the ideal sequence of reading experiences to get them all the way to Nation’s 9,000 would need “a little over three years of reading” (McQuillan, p. 65).

Again, as in Nation’s (2014) study but to a greater extent, a mass of numbers about coverage and k-levels has been assembled only to vaguely background a take-home message about the power of reading alone that does not follow from them. Where is the evidence that any significant number of learners can self-select their path to complete lexical development over a three-year period? For this, McQuillan (2016) sends us off to read Nell (1988), which is a fine but irrelevant study disclosing the many benefits (does anyone doubt it?) of pleasurable fiction reading for native and near-native speakers but has nothing at all about the vocabulary knowledge of the

learners or the vocabulary challenge of their texts. It especially has nothing about whether the subjects were able to self-select incrementally challenging texts in any sort of progression. The word ‘vocabulary’ does not occur even once in the 40-page paper.

Evidence bearing more directly on McQuillan’s (2016) claim can, however, be found. A study by McCrostie (2007) found that neither learners nor even their teachers could reliably predict the vocabulary learning burden of texts or even individual words. (That is why we use corpora and computer crunching to help with some of this.) And then there is the matter of the exclusive diet of literary fiction in both McQuillan’s (2016) and Nell’s (1988) studies, which as noted already does not represent the full lexicon. So, what I would add to my original formulation from a reading of McQuillan (2016) is that post-3,000 vocabulary pick-up will be hard going for reading alone *unless you have three years for the job and can magically determine, unaided, an ideal sequence of incrementally challenging texts over a period of three years.*

The Modified Finding?

In fact, I think I will not encumber my original finding with any farfetched stipulations about what could happen theoretically or in principle, or with unreal infusions of motivation or extra amounts of time that no real academic learner will ever be given—and leave the formulation as it was. L2 academic readers who begin their studies with 2500-3000 word families will need some help to get over the hump. It’s called teaching.

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About the Author

Tom Cobb has designed, taught, and coordinated almost every type of English reading course and program in a career spanning 25 years and five continents. He was early convinced that whatever the target skill, there would never be enough time for language learners to get as far with it as they need to, but that well instructed computers could radically increase the effectiveness of the time available. He now consults in language program development internationally, supplies learning and research tools to the profession through his website *The Compleat Lexical Tutor* (www.lextutor.ca), and helps young Montreal ESL teachers get the most out of computers and mobile devices in their classrooms and beyond. E-mail: cobb.tom@sympatico.ca