# Bringing Home the Word

Tom Cobb[1] and Marlise Horst[2]

**Résumé :** Les recherches des années 1980 et 1990 sur le vocabulaire ont insufflé de l'air frais dans la classe de langue. Dans maintes régions éloignées, les enseignants de l'anglais langue étrangère soupçonnaient depuis longtemps que la principale difficulté des apprenants était celle du vocabulaire, mais peu de travaux de recherche venaient le confirmer ou proposer des solutions. Puis, brusquement, Nation, Laufer, Meara, Schmitt et d'autres auteurs ont avancé un éventail d'idées très prometteuses, d'application concrète : le séquencement et l'évaluation du vocabulaire selon la fréquence ; la distinction entre le vocabulaire de base et le vocabulaire avancé, universitaire et technique ; l'interaction de la connaissance du vocabulaire et de la connaissance de la grammaire — autant d'idées qui ouvraient véritablement de nouvelles perspectives. Après avoir consacré une décennie à mettre ces idées en pratique et à contribuer, espèrent-ils, aux progrès ainsi rendus possibles dans des pays en développement (Arabie Saoudite, Oman, Hong Kong), les auteurs reviennent au Canada en se demandant quels aspects de ce travail y seraient applicables, le cas échéant, moyennant quels types de modifications, et ce qui pourrait y être greffé. Des idées d'une indubitable pertinence dans un pays en développement seraient-elles aussi judicieuses dans un pays développé ? Les auteurs brossent le tableau du vocabulaire tel qu'ils le trouvent au Canada à leur retour, décrivent ce qu'ils tentent d'y ajouter et formulent des suggestions quant aux mesures utiles à venir.

**Mots clés :** activités intensives de lecture, analyse de texte, apprentissage faisant appel aux corpus, apprentissage orienté par les données, mots apparentés, profilage de fréquence lexicographique, recherche et développement du vocabulaire

**Abstract:** The vocabulary research of the 1980s and 1990s brought a breath of fresh air into the language classroom. Teachers in many remote EFL locations had long suspected that vocabulary was their learners' main challenge, but there was little research evidence to confirm this or say what to do about it. Then, suddenly, work by Nation, Laufer, Meara, Schmitt, and others suggested a range of highly promising and usable ideas: the sequencing and testing of vocabulary by frequency; the distinction of basic vocabulary from advanced, academic, and technical; the interaction of vocabulary and grammar knowledge – these were all frankly revelatory. After a decade of applying and, we hope, contributing to these developments in developing countries (Saudi Arabia, Oman, Hong Kong), we returned to Canada wondering what, if any, of this work would be usable here, what would have to be modified, and what could be added to it. Would

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[1] Département de didactique des langues, Université du Québec à Montréal

[2] Department of Education, Concordia University

Correspondence should be addressed to Tom Cobb, Département de didactique des langues, Université du Québec à Montréal, 1205 rue Saint-Denis, Pavillion N, Montreal, QC H3C 3P8; email: cobb.tom@uqam.ca.

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ideas that made eminent sense in a development context make any sense in a developed country? Our paper describes the vocabulary scene we found in Canada on our return, what we attempted to add to it, and suggestions for next steps.

The two phases of our careers are complementary, spanning 30 years, one career-changing discovery, and two strongly contrasting pedagogical environments. This is the story of our "discovery" of vocabulary research while teaching EFL in the Middle East and how this worked for training ESL teachers later in Canada.

## Arabia: 1,000 words and other tales

What did English language teaching look like in the Arabian Gulf in the 1980s? Oil-rich nations were pouring money into English-medium higher education in hopes of developing a home-grown class of doctors, engineers, and other professionals to supplant the many expats who typically performed these functions. Universities were built, English teachers were hired, and hopes were high. But many students arriving at these institutions were placed in extremely difficult positions by governments in a hurry, such as being asked to study medicine in English after a single year of language instruction. Students struggled to complete the preparatory courses, pass the exit test, and move on to their content courses. Many seemed doomed to repeat the same pre-science, pre-medicine, or pre-commerce English course session after session.

What resources did the applied linguistics of the time offer English teachers like ourselves to tackle this daunting situation? In terms of materials, there were strategy-focused EFL books with names like *Reading for Meaning* as well as English for Specific Purposes (ESP) texts that highlighted advanced technical terms such as *dorsal* and *sphygmomanometer*. As for guidance from research and theory, there were papers by Corder (e.g., 1981) and others on how second language (L2) acquisition processes showed the influence of Chomsky's universal grammar, or Krashen's proposal (e.g., 1982) that L2s were basically acquired by the learners themselves, without a significant role for teaching. Second language acquisition researchers were interested in tracking the "natural" development of L2 grammar knowledge as learners are exposed to the new language and begin to use it. But in the environment where our learners lived, with the classroom and the teacher their main or only source of English, exposure to English was limited. Furthermore, it was unclear how to apply insights based on studies of learners' developing spoken language in our context, where the pressing need was for the students to be able to read English well enough to learn academic content through it.

Then, in the 1990s, new applied linguistics research, much of it grounded in gritty EFL contexts such as our own, offered a new way to understand the situation and possibly remedy it. For us, an observational study by Oman colleague Christopher Arden-Close (1993) was revelatory. It provided convincing evidence that these hapless learners were hopelessly under-provisioned in vocabulary for the goals that had been set for them. The central problem was not failure to find main ideas in texts (or other strategy concerns), nor unfamiliarity with specialist terminology. The students simply lacked knowledge of the frequent English vocabulary used in their exit tests (and subsequently in subject-area textbooks and lectures, where concepts like *dorsal* were explained via simpler terms). This research struck a chord with many teachers at the chalkface; while many theoreticians had been attending

to the nature of L2 grammar acquisition, teachers saw that their students needed to know more L2 vocabulary. It was indeed the case that few, if any, of these universities had any idea what the vocabulary level of their learners was, or what the vocabulary demands of their program were. Another bombshell was Nation's (1990) book, which brought together the frequency-based vocabulary research of pioneers like West (1953) and Palmer (1938) with new and publicly available computer software like *Range* and *Vocabprofile*. These ideas and technologies suddenly made it possible to measure learners' vocabulary knowledge in relation to the level of the materials that were being used to instruct and test them.

Frequency analysis made it possible to establish not just how many words learners knew but also the value of those words. Put simply, when high-frequency word families (headwords and basic inflected and derived forms) are unknown, the effect is devastating because these families make up the overwhelming majority of the words in any text. Nation (1990) used his *Range* software to demonstrate "what an academic text looks like" with words known and unknown from various frequency levels. Meara (1995) argued strongly that language learners should build up a basic recognition lexicon of the roughly 2,000 most frequent words before doing anything else. Laufer (1989) explored the relation between number of words known and level of comprehension realized. Milton and Meara (1995) explored rates of vocabulary growth in different learning conditions. All this research was practical and highly relevant to our situation.

With these new tools and findings in hand, we could clarify the problems we were dealing with in the key area of academic reading. It was now possible to (a) test learners' vocabulary level, (b) test the vocabulary of the texts and tests they were facing, and (c) work out their rough rate of vocabulary growth per time-unit of study. Performance on Nation's (1990) *Vocabulary Levels Test* showed that our learners were starting with fewer than 1,000 word families and were adding only a few more in their intensive English courses, while the exit test that most of them were failing sampled a 3,000-word lexicon. The existing resources available for remedying this shocking mismatch were basically two: EFL course books designed for European learners and a set of graded readers. A *Vocabprofile* analysis of the course books in use in our institution showed that none of them even contained, let alone taught, the 3,000-word vocabulary level used in the exit test (Cobb, 1995). An analysis of the rate of lexical growth from reading simplified stories showed that these contained few items beyond the most frequent 1,000 words, and that the rate of word learning, even when measured generously, was very low: one new word in five (Horst, Cobb, & Meara, 1998). Admittedly, the students were picking up some new word knowledge incidentally through their reading, coursework, and discussions with instructors, but at far too slow a pace to meet the proficiency demands of studying university subjects using textbooks designed for native speakers of English within a one-year time frame.

We concluded that what was needed was a dedicated vocabulary course, and we looked for ways to teach the large numbers of words our students most needed to know as quickly – yet to as "deep" a level – as possible. Once the frequency analyses and testing had revealed which words were the most important to study, the challenge was to devise a pedagogy that would develop deep, transferable word knowledge – of the type that is normally gained slowly over years of many meaningful encounters in context – rapidly and in quantity. Deep learning meant going beyond merely matching words to definitions; the newly acquired vocabulary had to translate immediately into improved performance in real language use, such as understanding the reading passages on the English exit test (and shortly thereafter in English-medium university textbooks). These exigencies coincided with the availability

of a new computer lab at our institution and pressure to put it to good use. The first author stepped forward with ideas for the then-novel concept of "concordancing." Figure 1 shows one such activity that was devised for our students. In the lower part of the figure, concordance lines for the target word *common* appear. The learner's task is to examine the five different uses in these contexts (gathered from their course books, graded readers, and other simplified sources) and select a meaning that fits them all from the upper part of the display.

The concordance format brings together occurrences of target words that learners might not consolidate when meeting them spread apart in time over the course of reading a simplified novel, for example. In addition to opportunities for frequent review and testing, the suite of concordance-based study tools included a feature that allowed them to choose the concordance line that made the word's meaning clearest to them and then add it to a personal glossary. The self-study design of the course was intended to make learning efficient. Any student who already knew *common* could quickly move on to study other less familiar words on the target lists.

Learners proved to be quite able to meet and retain hundreds of high-frequency vocabulary items, at a "deep" level as measured by their ability to transfer this word knowledge to novel reading contexts (Cobb, 1997, 1999). Students still struggled to attain the proficiency needed to study academic content in English, but the pass rates on the English exit exam went up and professors reported that students who had come through the vocabulary program were better prepared for their studies and more able to read their textbooks than previous cohorts. This approach to studying vocabulary (and other language features) later came to be known as data-driven language learning (DDL).

Returning to work in Canada was an inevitable next career step, but it was not clear if anything we had learned in a vastly different environment would be useful. Could we apply
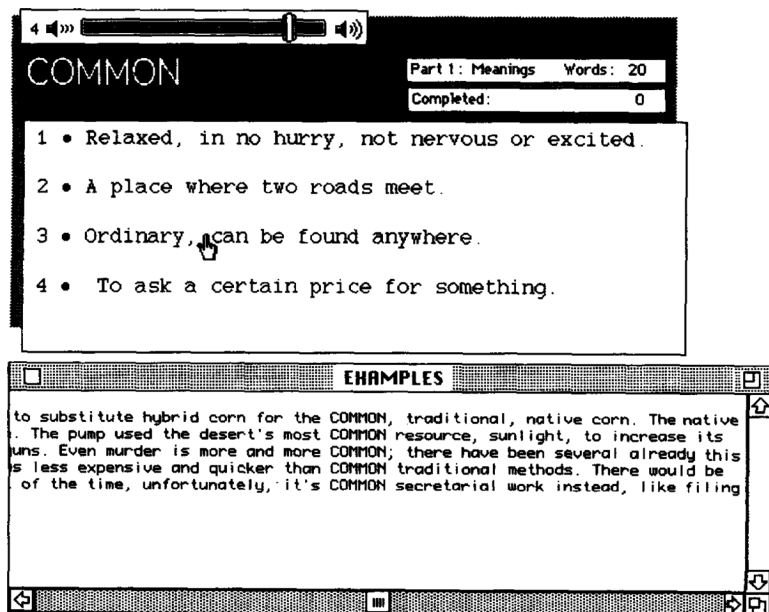


**Figure 1:** Concordance activity
Source: Reprinted from Cobb (1997) with permission from Elsevier.

insights from our experience to the Canadian context, or would we have to start over? The impact of what we will refer to as the New Vocabulary had been profound. Of course, earlier theory and research had hardly ignored vocabulary. Krashen and Terrell's (1983) Natural Approach emphasized acquiring new language – including vocabulary – through attending to comprehensible input, and figures such as West (1953) and others before him had championed the idea of creating lists of useful words. What felt new were the computer-powered concepts of frequency and coverage as guiding principles for designing language instruction, as exemplified in the work of Paul Nation, Paul Meara, Batia Laufer, Norbert Schmitt, and others. They and we saw lexis as central to SLA; it was no longer a "neglected aspect" (Meara, 1980, p. 221). We took up university jobs in Montreal in the late 1990s convinced of the following:

1. Vocabulary knowledge is primary, underlying other aspects of L2 proficiency.
2. Corpus methodologies are critical in identifying the lexical characteristics of learner productions, language tests, and learning materials, and for creating effective, needs-based vocabulary-learning tools.
3. Though learners can acquire new vocabulary knowledge through meeting unfamiliar words in their reading and elsewhere, incidental acquisition is slow, requiring more contextual encounters than are often available.

In the next section, we detail what we see as our most significant research contributions with reference to these imported beliefs.

### The Canadian experience

Arriving in Quebec in the late 1990s, we were struck by the diversity of situations for language teaching and learning. There were learners of English at our Montreal universities who, like our students in Oman, simply needed to know more of the vocabulary of academic English. But there were other, less familiar, populations such as child and adolescent learners in Quebec's communicatively oriented ESL classrooms, immigrant learners of English at community centres, teachers of English in training, and learners of L2 French – all of whom had specific and different vocabulary needs. In our teaching and research over the next 20 years, we worked with all of these populations, and each of our original views was tested and refined in the language-learning crucible that is Canada.

### *Vocabulary knowledge is central*

We soon noticed that in the North American applied linguistics scene, vocabulary was still on the periphery of mainstream SLA research. In the late 1990s, lexis was considered just one of many aspects of a second language to be acquired – hardly occupying the central role it had in the contexts in which we had been working. None of the university teacher-training programs we were applying to offered a vocabulary pedagogy course for future English teachers, while courses in teaching grammar, writing, reading, and speaking were plentiful. But some Canadian researchers were clearly interested in vocabulary. In 1996, for example, *The Canadian Modern Language Review* (*CMLR*) published a special issue on vocabulary, which featured valuable and interesting work by Merrill Swain, Birgit Harley, Lise Duquette, Patricia Raymond, and others. But this research, while very high quality in many regards, nonetheless fitted with the prevailing view of lexis as a supporting actor in SLA. The New Vocabulary, with primacy of lexis, computer-powered concepts of frequency and coverage, and program-development readiness, was not really present.

Yet in the wider spheres of linguistics, psychology, and cognitive science, the importance of lexis in language acquisition was expanding exponentially. Its centrality, whether in L1 or in L2, had been convincingly argued by researchers such as Bates and Goodman (1997) and by theorists Tomasello (1988) and Ellis (1994). Chomsky himself (e.g., 1995) had moved to the position that syntax begins in words rather than freestanding forms that words fit into. Interest in the New Vocabulary had indeed begun to take hold in Canada, perhaps as a result of these theoretical developments. A study by Qian (1999) on the breadth and depth of lexical knowledge continues to be one of this journal's most-cited articles. The change was also evident to us in the rapidly increasing number of users of the *Lextutor* website in Canada. *Lextutor* (www.lextutor.ca), which was launched online in 1998, had evolved from the software tools developed by the first author to identify frequent words in our Omani students' learning materials and create concordancing activities. The site continues to be accessed by thousands of teachers, researchers, and students every day, with Canada always in the top five user zones.

In 2006, when we were asked to edit a second special vocabulary issue of *CMLR* (vol. 63, no. 1, Horst and Cobb [2006]), the author response was overwhelming and the accepted submissions spilled over into a second issue. These articles continue to be widely read and cited today. As of this writing, seven of the 10 most-read *CMLR* articles are vocabulary papers from the 2006 special issue; three of these are by Canadian authors (Horst & Collins, 2006; Ovtcharov, Cobb, & Halter, 2006; Wood, 2006). In fact, *CMLR*'s most-cited article is Paul Nation's (2006) contribution to that special issue, "How large a vocabulary is needed for reading and listening?" This landmark study epitomizes the New Vocabulary: Using frequency lists blended from the British National Corpus and the Corpus of Contemporary American English, and the known-word coverage criterion of 98%, Nation (2006) determined that learners of English need to know at least 8,000 word families for unassisted comprehension of written English, and 6,000 for spoken. This study represents corpus-informed vocabulary research at its best, providing a practical goal for teachers and learners and a model for future investigations.

In looking back, we hope that our efforts to give vocabulary a more prominent role in both research and practice in Canada have been fruitful. But we admit to ongoing concerns (Cobb, 2010; Horst, 2013). Too often, in our view, vocabulary is still undervalued within SLA.

### *Corpus methodologies are critical*

We arrived in Quebec eager to see how the corpus-informed approach that had proven so useful to us overseas might address learners' needs in our new context. This section focuses on three main areas: L2 French, learner corpora, and computer-assisted language learning.

As we were now surrounded by French, this provoked questions: What insights might a corpus-informed approach reveal about the French language and the lexical characteristics of French learner productions? We suddenly realized that almost all of the New Vocabulary research we knew of related to English and learners of English. Answering our new questions prompted a quest for existing French corpora and frequency lists and the creation of a new lexical-frequency profiler modelled on *Vocabprofile* but for French. *Vocabprofil* (available at lextutor.ca/vp/comp/) was launched in 2003.

An early study using this software addressed the question, "Is there room for an academic word list in French?" (Cobb & Horst, 2004). The *Academic Word List* (AWL) consists of 570 mid-frequency or "sub-technical" English word families that recur frequently across subject areas in university textbooks (Coxhead, 2000). AWL words are not domain-specific concepts

but are typically used to explain these concepts: examples are *capable*, *insert*, *legal*, *terminate*, and *debate*. The question was worth answering with regard to French, since with knowledge of the 2,000 most frequent English families and the 570 families on the AWL, learners of English can "shortcut" their way to a high level of known-word coverage in their university reading, somewhere around 90%. Might a similar shortcut also be available for learners of French? We found that French uses its high-frequency lexis more efficiently than English. That is, for learners who know the 2,000 most frequent French words alone, more than 90% of the words in most academic texts written French will be covered already, with the remaining 10% occupied by specialist and other low-frequency words. In other words, it seemed there was "no room" for a specifically academic strand somewhere beyond 2,000 words.

A second study looked at the vocabulary component of an oral language test for learners of French entering the Canadian civil service (Ovtcharov et al., 2006). The rubric for this high-stakes test stated that vocabulary diversity was a criterion for success, but no actual list of words or expressions typically used in the civil service nor method for calculating lexical diversity was given. *Vocabprofil* was used to analyze the use of frequent and infrequent French words in transcripts of these oral interviews; candidates' use of vocabulary of various frequency levels was pitched against their test scores. The results showed that vocabulary diversity did indeed significantly predict test success, specifically speakers' use of fewer word families from the high-frequency 1,000 band of French vocabulary and more from the less frequent 2,000 and 3,000 bands. This finding bore similarities to the work we had done in Oman: Vocabulary was a big factor in the learners' success, yet the words learners needed to know had not been specified, measured, or taught.

*Lextutor*'s lexical-frequency profiling facility for English (*Vocabprofile*) was used in several Quebec-based learner corpus studies. The tradition of investigating corpora of learner writing, pioneered by Granger (1998) in Belgium, appeared to be relatively new to North America when we undertook this work. Our research explored corpora of L2 English writing produced by child learners (Horst & Collins, 2006) and university students, including ESL teachers in training (Cobb, 2003; Morris & Cobb, 2004). The studies of university students broadly confirmed the usefulness of exploring the corpora for patterns in the learners' use of frequent and less frequent words. For example, lower use of 1,000-level items and higher use of AWL items predicted the trainees' success in different aspects of their teacher preparation course, in particular their scores on a grammar test (Morris & Cobb, 2004), incidentally reinforcing the grammar–lexis interaction mentioned earlier. The study of child learners required refining *Lextutor*'s corpus tools to identify other indicators of lexical development. A facility for calculating variety in the learners' use of morphological inflections proved to be particularly important. Other indicators of the young learners' progress included decreases over time in the use of French vocabulary and overly formal French-like English words (Horst & Collins, 2006).

Recent research has identified measures that specify the lexical characteristics of learner corpora in ways other than classic lexical-frequency profiling (Crossley, Cobb, & McNamara, 2013). We recognize that *Vocabprofile*'s rough classification of words into 1,000-family frequency bands makes it a blunt research instrument, and we have seen the need for more finely grained measures in our own work. However, the pedagogical usefulness of band-based profiling is undeniable. If, for example, *Vocabprofile* analysis shows that a group of learners underuses AWL vocabulary in their writing, teachers are provided with a piece of clear, actionable information about the words their students need to study. How

teachers would use more finely grained information provided by more complex measures (e.g., Coh-Metrix) is far less clear (see also Cobb & Horst, 2015).

Although we never again experienced the urgency of our course-building experience in Oman, two interesting opportunities to design, implement, and investigate programs of corpus-informed computer-assisted vocabulary instruction arose during the 2000s. One was a preparatory course for learners of English accepted into academic programs at the second author's university (Horst, Cobb, & Nicolae, 2005). Participants studied AWL vocabulary, technical vocabulary relevant to their majors, and large amounts of self-selected vocabulary gleaned from course readings – using *Group Lex* software incorporated into the *Lextutor* site. Following the design of the software used in Oman, learners entered words and examples into an online dictionary format that included a self-testing option and other study activities including concordancing. The study demonstrated the feasibility of a computer-assisted course that challenged university learners to study many more words than is usual in preparatory ESL courses and again confirmed the usefulness of concordancing activities.

The second project had the first author as linguistic consultant helping to design a suite of electronic vocabulary learning games called *Word Coach*, developed by *Ubisoft* of Montreal (Cobb & Horst, 2011). At the heart of *Word Coach* was an overall frequency-based syllabus of words, with each learner starting play at a point determined by performance on a dynamic Yes/No vocabulary test. Games focused on spelling and meaning recognition and retrieval, at a fast pace and with immediate feedback. Two groups of adolescent francophone ESL learners in a Montreal school who used the game for several months were investigated in a longitudinal pre-post control-group experiment. Notable findings were a dramatic decrease in players' lexical access times for common English words and decreased reliance on L1 words in a storytelling task. In both the online course and the *Word Coach* games, learners greatly expanded their recognition vocabularies, with increases of hundreds of new words. We saw, therefore, that our earlier experience of designing and implementing corpus-informed vocabulary instruction could be usefully replicated in Canada.

These courses joined the by-then growing trend to data-driven language learning, which within a few years had provided enough learning-outcome data to be successfully investigated in a meta-analysis. This study established a strong overall effect size for the approach (Boulton & Cobb, 2017).

### *Learners can acquire new vocabulary through reading, but . . .*

In the Oman context, we had investigated the efficacy of extensive reading for promoting acquisition of large numbers of new words in a short time frame (Horst et al., 1998). Incidental vocabulary acquisition had also been explored in a number of other reading studies (e.g. Pitts, White, & Krashen, 1989), but we were not aware of any research conducted in Canada. Our 1998 investigation had two outcomes that we felt were important to pursue further. First, the study had shown that the learners acquired only very small amounts of new vocabulary through reading a level-appropriate simplified novel. We wondered whether word-learning effects could be better captured using a sizable corpus of graded readers and more sensitive measures. The 1998 study had also identified repetition effects. There was a modest correlation between the number of times a word occurred in the simplified novel and the extent to which its meaning was retained. We were interested in how multiple contextual encounters with new words (in both concordances and extensive reading) contributed to the acquisition process. Given the number of Quebec institutions

using simplified ESL readers in their programs, further investigations of extensive reading seemed warranted. The two studies discussed below are among *CMLR*'s most-cited articles.

The size-of-gains question was investigated in a program of extensive reading for immigrants at a community centre in Montreal (Horst, 2005). The research involved creating a corpus of dozens of graded ESL readers available to the participants; this made it possible to anticipate the words that they would eventually meet in the books they selected. Participants were pre-tested on their knowledge of a sizable sample of these items; then, once the reading program was completed, individualized post-tests assessed each reader's knowledge of words that had been identified as unknown at the outset. Testing was sensitive to partial levels of knowledge. Despite these methodological innovations, however, the findings confirmed the modest gains of the earlier research; learners acquired semantic knowledge of new words at the rate of no greater than one in five.

Old questions about meeting new words in multiple contexts were further explored in a learning-from-reading study with Montreal high school ESL learners led by graduate student Rick Zahar. This study of reading a simplified novel (Zahar, Cobb, & Spada, 2001) confirmed the repetition effect: Words repeated frequently in the graded reader were more likely to be learned. The research also identified a proficiency effect: The repetitions played a far greater facilitating role in beginning learners' acquisition than it did in that of advanced learners. The evaluation of the sentence contexts surrounding the target words in terms of the quality of meaning clues shed light on the learning process. Why might learning from multiple contexts such as those met over the course of reading a graded novel (or assembled in a concordance program) result in robust vocabulary acquisition? One hypothesis would be that the explanation lies in access to a single clear example. The provision of several contextualizations for a word allows learners to find a clear one. Alternatively, the explanation might be that the act of perusing multiple examples – some helpful, some not – makes the difference. Maybe the less informative contexts expose a gap and motivate a search for a way to fill it. The findings of this study favour the second explanation. The research showed that words were not learned from impoverished contexts, nor from rich contexts, but from mixed-quality contexts, such as can normally be found in reading (or in concordance lines drawn from a corpus of authentic materials).

In conducting these reading studies, we were increasingly aware of the limitations of assessing gains simply in terms of a participant's ability to assign a correct definition to a previously unknown word. We had first encountered the idea of multiple dimensions of vocabulary knowledge in work by Meara (1996), and then again in Canada in research by Segalowitz (e.g., Segalowitz & Segalowitz, 1993) that posited automaticity as a dimension of word knowledge that might "deepen" existing knowledge. The idea that the main benefit of extensive reading might be something other than or in addition to its potential for imparting new semantic word knowledge was explored in a study of lexical access speed (Horst, 2009).

Increasingly, we also questioned the idea that exposure to input alone is sufficient for the development of a full L2 lexicon, as it appears to be in L1 (as put forward by Krashen, 1989, and others) – especially after Nation (2006) had determined that as many as 8,000 word families would typically have to be known to reach the 98% level of known-word coverage needed for comprehension. Given that learners acquire new words incidentally at a low rate and need many repeated encounters for a new word to "stick," acquiring thousands of new words through textual encounters necessarily entails a very great amount of L2 reading – much more, we surmised, than many learners we were familiar with were managing to do. Because 1,000- and 2,000-level vocabulary makes up such a large proportion of any written

text, incidental acquisition of these high-frequency words is logically possible and indeed plausible; they are fairly likely to be met often. But L2 vocabulary growth from input tends to plateau after that, typically somewhere in the middle of the 3,000-level word families, as summarized in Laufer's (2000) report on a number of EFL vocabulary-size studies. The first author hypothesized that this plateau might be explained by limited exposure to 3,000-level and other less frequent words in reading input. Using software developed to pitch random samples of third-, fourth-, and fifth-1,000 words against corpora modelling what L2 learners of different levels could be expected to read, he determined that few post-2,000 items were present in sufficient number for learning to occur (Cobb, 2007). That is, it was possible to explain the third-1,000 slump in terms of insufficiency of the input. This paper proved to be controversial, generating a strong reaction from proponents of the learning-from-input position and a dialogue that has continued for a number of years (Cobb, 2016).

We would like to emphasize that our position is not anti-reading. On the contrary, we recognize that there are many word-learning benefits associated with L2 reading (detailed in Horst, 2019), and these include the acquisition of small amounts of new semantic knowledge. But on the basis of our experience and research (and our reading of the work of Laufer [2006], and others), we conclude that for second language learners who need to learn large numbers of new words in a few months or years, input supported by dedicated vocabulary training and intentional study is simply more efficient than input alone.

## Unfinished business

### French/English cognates

The issue of French/English cognates was of immediate interest to us on arrival in Quebec because, for years, we had seen how learners with non-cognate L1s (Arabic, Chinese) struggled to initiate vocabulary acquisition from a no-similarities basis. Cognates are words that are formally similar in both languages, for example French *bœuf* and English *beef*. Early experiences with introducing frequency-based vocabulary-size testing into the Quebec institutions where we were working showed that francophone learners had higher vocabulary-size scores than we were used to seeing. The logical explanation for this seemed to be the presence of French/English cognates among the target words and answer options on Nation's (1990) *Levels Test*. However, the first author found that these high scores did not predict broader language proficiency as well as the primacy-of-vocabulary theory would suggest it should. But when the test was modified to include only Anglo-Saxon vocabulary items and no cognates, most test-takers scored substantially lower, but the knowledge they did have of non-cognate English vocabulary (or lack thereof) proved to be a strong predictor of performance on a measure of writing, grammar, and listening (Cobb, 2000). As we had seen before, the New Vocabulary approach provided clear information about the kind of vocabulary these learners most needed to know.

This work prompted a re-tooling of *Vocabprofile* to calculate an index of the "cognateness" of a text that is entered. A project was envisioned in which this cognate index would be used to identify or create readings to test a putative learning sequence for francophone learners of English: running from texts with lots of cognates to start with, to develop fluency and confidence in English and no doubt some incidental learning, through a systematic reduction of the cognate level until learners were coping with entirely non-cognate texts. In another project with colleague Joanna White, the second author tested the effects of classroom activities designed to raise awareness of the many helpful French/English cognates

among primary learners of English in Quebec schools (White & Horst, 2012). Again, new projects were envisioned; the activities that had led to promising results with young learners could be expanded and adapted for older learners and other L1s.

With retirement, we now realize that our work on cognates is unlikely to get further development, at least as far as direct work by us with learners is concerned. The cognate-awareness strategy is advocated in a recent book (Horst, 2019), and the cognate indexing software is in place on *Lextutor*. We hope that our work will motivate others to continue exploring how learners' L1 vocabulary knowledge facilitates their L2 vocabulary development.

### More technology?

Work to develop and improve the *Lextutor* website is ongoing. Its user base continues to grow despite more recent corpus-based resources now available (LancsBox [http://corpora.lancs.ac.uk], SketchEngine [https://www.sketchengine.eu]). It is a continuing challenge to keep up with users' needs for ever-greater capacity and ever-higher levels of sophistication in frequency analysis. For example, Brezina and Gablasova's (2013) new definition of a core 2,500-word vocabulary ("a new general service list") includes *cash*, *coach*, and *bank* as nouns but not as verbs, and *conduct*, *cover*, and *construct* as verbs but not as nouns. Putting this list to work as a functioning profiler for users' texts will not be a simple matter.

### More theory?

A reviewer of this piece correctly noted that the main contribution of what we are calling the New Vocabulary is focused on needs analysis and vocabulary selection (which words should be taught), with less attention given to how words are learned. In coping with the pressing needs where we were working, we may indeed have given short shrift to important questions about the learning process. Yet, in looking back, we find we can identify theoretical and research perspectives that underpinned our work. Our ideas about learning vocabulary are consistent with accounts of language acquisition that emphasize the importance of repeated opportunities to link word forms to meanings as learners engage with language input – be it through examining concordance lines or reading graded novels. We also see value in intentional study that strengthens form–meaning mappings and builds automaticity through retrieval activities such as using electronic word cards or online quizzes. That said, we recognize that theoretical aspects of our work might have been usefully developed more fully. Questions about which mix of contexts lead to which type of lexical knowledge, the interaction of lexis and grammar knowledge, and investigations involving reaction time continue to pique our interest and may yet lead to more theoretically motivated contributions. So our retirements will be busy. We hope that our work has provided enough leads and conundrums to keep a few others busy too.

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**Tom Cobb** is busy maintaining Lextutor for an ever-expanding user base, for example, this summer integrating an algorithm into Vocabprofile to handle compounds. He occasionally joins ranks with other retired colleagues to tackle the thorny questions that time is suddenly available for, for example, a paper with Batia Laufer this autumn on the vexed question of lemmas versus families as the appropriate word counting unit. Any spare time is devoted to curriculum reform in developing countries with UNESCO.

**Marlise Horst** is busy writing books that take her vocabulary interests in slightly new directions. She finished a book for OUP in early 2019 that expanded the academic vocabulary concept from the university realm into school subjects. She finished a course book this summer for an immigrant ESL centre in Montreal where she once trained intern teachers and now gives a class herself one evening per week. She has enjoyed teaching graduate courses in Japan and she attends several research conferences every year.

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