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Mnemonic methods in foreign language vocabulary learning: theoretical considerations and pedagogical implications

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Second Language Vocabulary Acquisition

A Rationale for Pedagogy

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and

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terms, low-frequency words. And, like Coady, they advocate different pedagogical approaches for the different types of words: direct teaching for high-frequency vocabulary, indirect teaching (i.e., incidental learning) for low-frequency vocabulary. In all cases, however, Nation and Newton encourage use of a variety of communicative activities, especially those involving depth of processing; and they provide extensive description and discussion of such activities. They also give considerable attention to "fluency activities" and "richness activities," both of which help develop quick lexical accesses, while at the same time urging caution in the use of semantic fields, antonyms, and other associative activities.

In Chapter 13, Michael Lewis introduces the Lexical Approach, which broadens the notion of lexical item to include lexico-grammatical chunks of language. Indeed, Lewis defines lexical items as "socially sanctioned independent units," and he identifies and describes four different types: words and polywords; collocations; institutionalized utterances; and sentence frames or heads. He gives special emphasis to institutionalized utterances, or highly conventionalized locutions such as "If I were you, I'd ____." Because of their fixedness, he considers such sentences to be lexical items and argues that they, rather than grammar, should form the basis of language learning programs. In the second half of the chapter, Lewis describes the methodology that can be used to develop such an approach, including an extensive variety of sample exercise types.

As noted by Zimmerman in Chapter 1, the Lexical Approach gives much more emphasis to oral vocabulary than do other approaches of recent years. This is due in part to the fact that ordinary spoken language contains a higher proportion of fixed expressions than does written language. In Chapter 8, Arnaud and Savignon observe that even advanced EFL learners often are slow to master such expressions (what they call "complex lexical units") because they lack exposure to L2 speech. Their research clearly underscores the need for a vocabulary learning pedagogy, such as that described in Lewis's chapter, in which lexico-grammatical chunks of language are explicitly taught.

10 *Mnemonic methods in foreign language vocabulary learning*

Theoretical considerations and pedagogical implications

Jan H. Hulstijn

Introduction

I would like to begin this chapter with a personal experience, one that will probably be recognized by many readers as familiar. English is a foreign language for me. (Throughout this chapter, I will use the abbreviation L2 both for second and for foreign language.) I consider myself an advanced learner of that language. I receive great amounts of input in written form (professional literature) and oral form (radio, TV), but almost every day I read or hear some unfamiliar words. When I deem a new word important, I first make an attempt to infer its meaning from the context, I then look it up in my dictionary in order to check my inference, and finally I write the word down in a notebook, together with its context. Yet, I tend to forget the meaning of most of the words thus processed soon afterward. The next time I come across one of them, I remember having seen it and looked it up, I sometimes remember the context in which it originally appeared, but I cannot retrieve its meaning. I feel very annoyed, consult my dictionary once again, but take no further measures in order to better anchor the word in memory.

Why is it that I couldn't remember the word's meaning the second time? What was wrong with my infer + look up + write down strategy? The most likely answer to these questions is that I might have done enough for immediate comprehension but not enough for retention over time. More precisely, I had not done enough to firmly link the word's form with its meaning. There is empirical evidence in the literature that inferring a word's meaning from the context, checking one's inference by consulting a dictionary, and writing the word down in a notebook (or, better yet, on an index card, or in a computerized personal L2 database) fosters an elaborate processing of the word and therefore facilitates its retention in memory (Huckin & Haynes, 1993; Nation, 1990; Schouten-Van Parreren, 1989). However, this procedure offers no guarantee for the retention of the link between the word's form and its meaning. It is only sometimes the case that such a link constitutes itself spontaneously, without a conscious effort on the learner's part. This is usually called "inciden-

tal" vocabulary learning (Hulstijn, 1989, 1990, 1992, 1993; Nagy, Anderson, & Herman, 1987). Quite often, however, learners need to intentionally learn words in order not to forget them. When they find a word very difficult to learn and remember, they might be well advised to apply a mnemonic technique, such as the keyword method (discussed later in this essay), which helps to facilitate the linking of a word's form with its meaning. However, as we will see, the keyword method has its critics, and it seems that it is not well known and seldom practised in L2 instruction.

The main aim of this chapter is to strike a balance between opponents and proponents of the keyword method and other mnemonic techniques. It will be argued that, on the one hand, the keyword method should not be seen as a substitute for the inferring technique, but as a helpful addition. On the other hand, it must be acknowledged that the keyword method and other mnemonics often cannot be applied (simply because a suitable mediating word cannot be found) and that therefore its usefulness should not be overestimated.

Chapter organization

In this chapter, some examples of the keyword method will be given first. Research on the keyword method will be reviewed. Then some possible reasons for the fact that it is seldom applied in the classroom are given. The following two sections deal with the psycholinguistic literature on the bilingual mental lexicon and the role of imagery in memory. From this perusal of the literature it is concluded that there are no theoretical reasons to suspect the keyword method of playing an inhibiting role. On the contrary, its role is a facilitating one. In the final section, some practical guidelines for vocabulary learning and teaching are provided, giving both the inferring technique and mnemonic techniques their proper place.

The keyword technique: Some examples

The keyword method comprises three stages: (1) an L1 or L2 word, preferably referring to a concrete entity, is chosen based on acoustic and/or orthographic similarity with the to-be-learned L2 target word; (2) a strong association between the target word and the keyword must be constructed, so that the learner, when seeing or hearing the target word, is reminded immediately of the keyword; (3) a visual image must be constructed combining the referents of the keyword and the target word, preferably in a salient, odd, or bizarre fashion in order to increase its memorability. As Kasper (1993, p. 250) points out, "the important point to remember is to stress that the students concentrate on remembering the

image of the interaction between the keyword and the foreign word. It is also important to make each image as unique as possible and to use a different keyword for each word." Here are some examples:

- An English learner of German, trying to remember the meaning of *Raupe* ("caterpillar") could associate *Raupe* with the English word *rope* (sound similarity), and construct a mental image representing a caterpillar stretched out in more than its fullest length (exaggeration helps!) on a rope.
- An English learner of French, trying to remember *paon* ("peacock"), might use the word *pawn* as mediator, imagining a chess board on which all pawns look like peacocks.
- French *ruisseau* ("brook," "gutter"); English keyword: *rust*. Mental picture: rust-coloured water streaming in the gutter of a narrow street.
- French *soupape* ("valve"). English keyword: *soup*. Mental picture: a valve from which a tall fountain of tomato soup spouts into the mouths of some mechanics. Alternative verbal mediator phrase: "to soup up an engine."
- French *vis* ("screw"). English keyword: *to vise*, or *a vise* (in American English).
- French *brancard* ("stretcher"). English keyword: *branch*. Mental picture: an improvised stretcher made of two long tree branches with which members of an expedition group carry a wounded colleague.
- French *colombe* ("dove," "pigeon"). English keyword: *Columbus*. Mental image: Columbus standing on the foredeck of his ship, like Noah on his ark, with a pigeon in the air coming from the as yet invisible American coast.
- Three examples cited from Kasper (1993): (1) Spanish *payaso* ("clown"). English keyword: *pie*. Think of a clown throwing a pie at his friend. (2) Spanish *llega* ("to arrive"). Keyword: *leg*. Mediating sentence: "The *payaso* 'arrives' at the circus on one 'leg.'" (3) Spanish *pequeño* ("small"). Keyword: *pecan*. Mediating sentence: "The 'small' *payaso* ate a bag of 'pequeño' nuts."

Note that in the mediating sentences of examples (2) and (3) the earlier learned Spanish word *payaso* is used, not the English word "clown."

If possible, keywords should be taken not from L1 but from L2 vocabulary with which the L2 learner is already familiar: An ESL learner familiar with *duck* could use this word as a keyword for the target word *decoy*. Using rhyme as a mnemonic is often a better technique within the L2 than across languages; for example, the target word *reel* can be remembered with the rhyming sentence "A reel is like a wheel."

When it is impossible to find a concrete keyword, other mediating words based on sound similarity may help out:

- French *fâché* ("angry"); English keyword: *fascist*. Linking sentence: "A fascist makes me 'fâché.'"
- French *se blottir* ("to crouch," "to nestle"). English keyword: *to blot out*. Linking association: "*Se blottir* makes me think of *to blot out*. When you want to blot out a serious error, you feel so ashamed that you would like to make yourself invisible and crouch away."
- French *serment* ("oath"). English keyword: *sermon*. Linking association: "a sermon about Saint Peter, who swore three times that he didn't know who Jesus was."
- An ESL learner may learn the target word *barb* with the aid of the L2 carrier sentence "A barb is barbaric!"

Sometimes only one or a few letters or sounds can be used to link the L2 word with its L1 equivalent:

coin = corner

anéantir = to annihilate

béclage = closing with bars, chains, etc.

ébouriffer les cheveux = to ruffle your hair

feutre = felt

selle = saddle

Research on the keyword method

Investigations on the effectiveness of the keyword method were first conducted by Atkinson (Atkinson, 1975; Atkinson & Raugh, 1975). The keyword method became well known through the many studies of Levin and Pressley (summarized in Pressley, Levin and McDaniell, 1987).

Summary of reviews

A critical but mainly positive evaluation of the method and a discussion of some questions that remain to be answered can be found in Cohen (1987) and McLaughlin Cook (1989). McLaughlin Cook, who reviewed the literature on visual and verbal mnemonics in general (not limited to the keyword method), pointed out that mnemonic techniques may be less suitable for children and mentally handicapped people. It has not been sufficiently shown that they are able to spontaneously and independently apply mnemonics. McLaughlin Cook further concluded that there is little evidence that verbal mnemonics are less effective than imagery mnemonics. One important issue needing further investigation is whether subjects will cease to use mnemonics when instruction to do so is no longer provided. This point will be taken up in the practical guidelines at the end of this chapter.

The most thorough review of the keyword literature and a discussion of a number of issues of contention are found in Cohen (1987). His verdict on the keyword method is mainly positive, although some questions remain open for further investigation (pp. 57–58):

- How well can learners use mnemonics under time pressure during oral conversation?
- What is the lag time involved when a mnemonic device is being used? Perhaps it will cost a speaker more time to retrieve a word from memory via a mnemonic device than the listener is willing to wait.
- Research is needed over longer periods of time (longer than 1 week, as in laboratory studies conducted so far), focusing on the role that mnemonic devices actually play on a daily basis. When does the keyword "drop out," such that the learner does not even remember it?
- A description is needed of the trial-and-error process of self-generated associations, in an effort to learn more concerning efficient ways of generating such associations.

Review of recent investigations

Since the publication of the reviews just summarized, investigations were carried out by Desrochers, Gélinas and DeRoy Wieland (1989), Desrochers, DeRoy Wieland and Côté (1991), Moore and Surber (1992), Levin, Levin, Glasman and Nordwall (1992), Ellis and Beaton (1993a, 1993b) and Hogben and Lawson (1994). These studies will be briefly reviewed in this section. (Other recent studies will be mentioned later in this chapter.)

Desrochers et al. (1989, 1991) applied the keyword method to the learning of the grammatical gender of German nouns by substituting the concepts of a woman, a man and an inanimate object for the feminine, masculine and neuter genders, respectively. It was found that instructing English and French learners of German to recode the gender tag and to include its representation into an interactive mental image along with the referent of the German noun facilitated the recall of genders. This effect was more pronounced in the case of French learners of German than in the case of English learners of German, perhaps because native speakers of English are less familiar with grammatical gender than are native speakers of French.

Moore and Surber (1992) had American first-year, second-year and third-year students of German (L2) learn a list of twelve L2 nouns and twelve L2 verbs with concrete, imageable meanings under one of three conditions. In the Keyword condition, Ss were given an L1 translation as well as a keyword for each L2 target word. In the Context condition, Ss were given, for each L2 target word, the L1 translation and three L2 sentences containing the target word (written in upper case). They were

instructed how to attend to contextual clues. Subjects in the Control condition were given only the L1 translation of each L2 target word. Subjects in all conditions were told that they would be tested afterward both on an English test in which they would have to provide the L1 translations of the L2 words, and on a German sentence completion test in which they had to fill in the missing German word that would fit the context. Three weeks later, identical but unannounced delayed posttests were administered. (No mention is made of pretests to assess to what extent Ss were already familiar with the target words prior to the learning phase.) Overall, there were no significant differences between the three groups on the English immediate and delayed posttests, although the second-year students in the Context condition performed significantly better than those in the Control condition on both the immediate and the delayed posttest. On the German tests, there was a significant overall main effect for treatment. Among the first-year and second-year students, Keyword and Context groups performed significantly better than the Control groups, but no significant differences were obtained between Keyword and Context groups. Interpreting their results, Moore and Surber speculate that "by the third year it may be that students have developed their own strategies to the point where an additional intervention does not help and might possibly interfere" (1992, p. 292). Furthermore, they find it surprising that students in the Context condition were not superior to those in the Keyword condition, even on the German test, a task that would seem to favor the Context learning activity. The following study to be reviewed (Levin et al., 1992), however, did find the keyword method to be superior to a contextual method.

Levin et al. (1992) compared the keyword method, using verbal and visual cues, with the more conventional context method, using only verbal cues. In the latter method, the target word (e.g., the pseudoword *gunnel*, meaning "fish") was embedded in a carrier sentence ("The pole broke when the powerful gunnel took the bait"). In the keyword method, the target word was associated with a similar sounding word, *gun*, and a picture was shown in which the fisherman's pole had the appearance of a gun. Four experiments were conducted. In all four experiments, subjects in the keyword condition performed better than subjects in the contextual condition, even on a posttest in which subjects had to fill in the target words in new sentences, not previously encountered. These experiments are important because this study compared the keyword method with the effects of a method in which target words were embedded in meaningful contexts, whereas in previous research, Levin and associates had compared the keyword method with the learning of isolated target words (paired-associate learning).

Ellis and Beaton (1993a, 1993b) conducted a psychometrically "clean" laboratory experiment using native speakers of English who had no

knowledge of German. They had to learn a number of German words, e.g. *Sperre* ("barrier"). Subjects, who worked individually on a computer, were divided into four treatment groups. Two groups learned the target words with the keyword method: the Noun Keyword Group was given a noun (*sparrow*) as keyword (Imagine a SPARROW on a station BARRIER). The Verb Keyword Group was given a verb (*spare*) as keyword (Imagine you SPARE a penny at a station BARRIER). The Repetition Group had to learn the target words in a traditional rote fashion with their L1 equivalents (*Sperre* = "barrier") by constant repetition. Subjects in the Own Strategy Group were instructed to use their own strategies to learn the target words with their L1 equivalents. Two of the many research findings are worth mentioning in the present context. First, it was found that subjects in the two non-keyword conditions (Repetition and Own Strategy) used various types of mnemotechnics (e.g., using a rhyming word, possibly referring to a concrete concept). That is why performance of all four subject groups was almost equally good in the receptive posttest, in which subjects had to provide the L1 equivalent of the target words (e.g., translate *Sperre* into "barrier"). Second, performance in the productive posttest (i.e., translate "barrier" into *Sperre*) was much lower than in the receptive posttest, again across all four groups. These results suggest (1) that mnemonic techniques may be effective learning facilitators, (2) that university students participating in a laboratory experiment often spontaneously apply mnemonic techniques (not the keyword method exclusively, but a whole range of formal and semantic associations), and (3) that such subjects tend to apply these linking techniques in one direction only, i.e., to get from the L2 word to its L1 equivalent (for later receptive use) rather than from L1 word to L2 target word (for productive use).

The last recent empirical study to be reviewed here was conducted by Hogben and Lawson (1994). They offered keyword training to thirty-two Australian high school learners of Italian (L2) who had already received three years of L2 instruction. Half of them were additionally trained in making other associative links to help them remember new words. Thus, students trained in the Standard Keyword (SK) method were compared with students trained in the Multiple Elaboration (ME) method. Overall, students in the ME group outperformed those in the SK group on all immediate posttest measures but not in the delayed tests, administered after 2 weeks. The authors conclude that even experienced L2 learners at high school level can benefit from strategy training and that, therefore, there may be no grounds for the concerns raised by Levin, Pressley, McCormick, Miller and Shriberg (1979), that the keyword method might not be as successful with older, more cognitively experienced students as with younger, less cognitively mature elementary school students.

Why does the keyword method seem to have so little appeal?

It seems that the keyword method is only rarely used in the instruction of foreign languages, at least in the Western world (Kasper, 1993; Oxford & Crookall, 1990, p. 19). In handbooks on foreign or second language instruction and in books on vocabulary teaching, the keyword method is either not mentioned at all (Morgan & Rinvulcri, 1986) or only marginally (Nation, 1990, p. 166; Taylor, 1990, p. 68; Wallace, 1982, p. 62). Similarly, textbooks on memory research pay little (Baddeley, 1990, p. 190) or no (Schwartz & Reisberg, 1991) attention to the keyword method.

One obvious reason why the keyword method has attracted little attention is that it can be successfully applied with only a minority of vocabulary items, i.e., with words referring to objects that can be perceived visually.¹ Furthermore, it is true that the keyword method is less effective for the production of L2 words than for their comprehension (reception). Yet these reasons, valid as they are, do not explain sufficiently why the keyword method is seldom advocated by teachers or textbooks. Why ban a powerful technique from the classroom only because it has limited application possibilities? My impression, obtained from in-service teacher-training courses, is that the most important reason is that teachers (and textbook authors), if not entirely ignorant of the keyword method, find it an "odd," "unnatural" technique, "not serious enough." Input in L2 language courses must be as authentic as possible, embedded in situations of quasi-natural communication. How can one, under such circumstances, possibly associate a target word (*paon*) with a keyword (*pawn*) whose meaning does not share any features with the meaning of the target word? These or similar arguments may well form the reason why the keyword method is seldom advocated in L2 classes. In the following sections I will try to show that the keyword method, temporarily using a somewhat "unnatural" mediator, does not at all stand in the way of "natural," "authentic," communicative L2 instruction.

L2 words in the bilingual lexicon

What sort of conception should we form of "words" in the "mental lexicon," i.e., the memory system in which knowledge of a vast number of words, accumulated in the course of time, has been stored? A proper

¹ Some authors (e.g., Kasper, 1993) claim that the keyword method can be successfully applied with abstract words too, but research has shown that its effect is significantly smaller when applied to abstract rather than concrete words (Johnson, 1985).

definition of "word" in the mental lexicon should account for the fact that language users store information, be it more or less complete, on a wide variety of word characteristics, such as orthography, phonological structure, pronunciation, morphological structure, syntactic characteristics, as well as various sorts of semantic information (literal, idiomatic, pragmatic and other meanings). Most theorists agree that it is impossible to draw a clear borderline between lexical knowledge and encyclopedic knowledge, and that therefore the mental lexicon cannot be regarded as an information module stored separately from other kinds of knowledge in long-term memory (Aitchison, 1987; Lakoff, 1987; Levelt, 1989). Furthermore, most theorists agree that words in the mental lexicon should not be regarded as clear-cut entities (Meara, 1992). This opinion is based on the fact that word knowledge may only be partially available at a given time, as in the "tip-of-the-tongue phenomenon." It is also possible that one may know a word form but not be familiar with its meaning; one may even have invented a concept but not (yet) have a word form for it.

For a long time researchers have wondered how L1 words and L2 words are stored in the mental lexicon (for a review, see De Bot, 1992). Are they located in a single store (the extended system hypothesis), in separate stores (the dual system hypothesis), or are similar words, such as cognates, stored in a common store and language-specific words in separate stores (the tripartite hypothesis)? Or is it the case that, although all words are located in a single store, the subset of L1 words are more strongly associated with each other than with those of the L2, as if L1 words and L2 words constituted two relatively separate "families" within the entire "community" of words (the subset hypothesis)? Most theorists nowadays support the subset hypothesis (De Bot, 1992; see also De Bot, Paribakht & Wesche, 1995), and, as we shall see, this has important consequences for an appraisal of the keyword technique.

The concept of spreading activation allows us to conceive of the mental lexicon as a dynamic system. For instance, two words may first be stored in an entirely unassociated fashion. Later they may be linked via only one formal or semantic feature, and still later via more features. Furthermore, the strength of all these associations may differ, and the strength of each individual association may increase, and even decrease, over time.

The concept of spreading activation gives us a new perspective on the debate, originating from Weinreich's seminal work on bilingualism (1953), over whether the relationship between L1 and L2 words should be seen as conceptually coordinate, subordinate or separate (De Groot, 1992, 1993; Hamers & Blanc, 1989, p. 10; Kroll & Sholl, 1992; Schreuder & Weltens, 1993). It may well be that an English speaker who has just embarked on the learning of French as a foreign language, wanting to express the French word for the concept war, can retrieve the French word *guerre* only via the native equivalent *war*. With increasing

proficiency and fluency, however, this learner may reach a stage in which *guerre* can be accessed directly from the concept war. In a stage of even further mastery of the foreign language, the meaning of *guerre* may obtain conceptual features not shared by the meaning of L1 *war*. To draw this illustration of the dynamic nature of the mental lexicon even further, one could imagine that this learner enters a fourth stage, deciding to follow a course for conference interpreters. In situations of fast translation, this learner might then end up linking the two words *guerre* and *war* directly with each other, hardly even accessing the concepts at all.

A psycholinguistic defense of mnemonic methods

What is the relevance for the keyword method of recent views on the mental lexicon outlined in the previous section? Let us assume that a learner decides to use the keyword method when she or he has noticed that the connection between form and meaning of a to-be-learned L2 word has not taken place spontaneously. The learner now links form and meaning of the word to be learned via the form of a similar-sounding other word, while constructing a salient, odd or bizarre visual image. It is crucial to note that the association via this bizarre mediator, whose meaning would not bear any relation whatsoever to that of the target word under normal circumstances, is meant to exist only temporarily. Thus, this bizarre, "unnatural" association may soon decay (i.e., the strength of the association may decrease substantially), after it has helped to establish a direct association between the target word's form and meaning. The notion of a dynamic and flexible mental lexicon in which many types of connections coexist (formal and semantic, within and across languages, with increasing and decreasing strengths) allows for a temporary beneficial role of mediators. As has been demonstrated by Crutcher (1992), keyword mediators thus do not permanently stand in the way of the forming of direct links between a target word's form and meaning.²

Few people would object to applying a keyword mnemonic when trying to commit to memory the (difficult) name of a person just encountered for the first time. In that case too, the keyword is not meant to live forever, but only has to serve temporarily. Of course, learning L2 vocabulary involves much more than committing names to memory. Learning a word (in L1 or L2) may be seen as an incremental process. The keyword method does not claim to offer a substitute for this entire process of adding all semantic and formal features to a node in the mental lexicon. It

² In a series of three experiments, Crutcher (1992) provided support for direct L1-word access after extended retrieval practice: Keyword mediation declined dramatically and L1 word retrieval became significantly faster over time, although the keyword mediators continued to influence the retrieval process covertly.

functions only to help establish *one* of the necessary links in the *initial* phases of this process.

Why do we remember concrete words better than abstract words?

According to the conventional formulation of the keyword method, one should try to find a keyword with a concrete meaning; that is, the keyword should refer to objects in the real world that one can see (or feel or hear). This recommendation rests on the claim that one can better remember concrete concepts (e.g., *TABLE*) than abstract concepts (e.g., *Peace*). In the psycholinguistic literature, it has been consistently found that subjects perform better on concrete words than on abstract words, in laboratory tasks such as paired associate learning, word recognition, free recall of words, lexical decision and pronunciation (Nelson & Schreiber, 1992). Nelson and Schreiber offered four alternative hypotheses to explain these concreteness effects. Two of these are structural hypotheses, assuming either that concrete words are associated with a smaller number of other words than abstract words, making them easier to recall, or, alternatively, that concrete words have larger and more densely connected sets, making them easier to recall than abstract words. Nelson and Schreiber claim that they have been able to falsify both of these (mutually incompatible) structural, quantitative hypotheses.

The two remaining hypotheses are qualitative in nature. The *imaginability hypothesis* (associated, but not exclusively, with the work of Paivio, 1976, 1986) assumes that subjects are more likely to generate images for concrete than for abstract words. According to Paivio, semantic memory consists of two separate but interconnected subsystems, a subsystem of verbal concepts and a subsystem of visual concepts. Abstract words are associated with the verbal system only. Concrete words are associated with both. The additional visual storage of concrete words gives them their edge over abstract words in recognition, recall and lexical decision tasks. (Whether images are stored as virtual photographs, in a spatiovisual fashion, or somehow as codings of verbal propositions, is an issue that, according to Anderson (1978), may never be answerable. See also Schwartz and Reisberg (1991, pp. 490–492).

Finally, the *context availability hypothesis* assumes that contextual information, associated with the contexts in which words have been encountered, is more accessible for concrete than for abstract words. Nelson and Schreiber cannot choose between these two qualitative explanations, imaginability and context availability.

Schwanenflugel, Akin and Luh (1992; see also Schwanenflugel & Akin, 1994), however, tried to investigate to what extent imagery and

context availability influenced recall of concrete and abstract words independently. They found that, when rated context availability (prior contextual knowledge) was controlled, subjects still recalled concrete words better than abstract words. More important, no concreteness effects were found in relatively easy tasks but concreteness effects were found in relatively difficult tasks. On the basis of these findings, the authors argue that "imagery is used strategically only when prior contextual knowledge does not seem sufficient to enable task performance. . . . If a person is given a list of unrelated words or a series of unrelated sentences to recall, this may be seen as a difficult task for which calling on imaginal information might help beyond the simple retrieval of prior knowledge" (p. 103).

Implications of concreteness effects for the keyword method

The conclusion of Schwanenflugel et al. may help us to assess the potential relevance of the keyword method in L2 instruction. It shows that visual information may not be necessary or effective on many occasions, but may be very effective when subjects find their task difficult to accomplish. Trying to commit to memory the meaning of an L2 word that has been found difficult to remember, may well be just such a task in which imagery may prove to be effective.³

Summary

Three conclusions can be drawn from the previous sections. First, there are no reasons to ban the keyword method and similar mnemonics from the classroom. They are perfectly compatible with principles of vocabulary teaching that the L2 teaching profession has adopted in the last decades:

- New vocabulary items should not be presented in isolation (i.e., only with their L1 equivalent, and without a verbal L2 context) and should not be learned in rote fashion.

³ Crowston (1993) even argues that the advantage that the keyword method has over paired-associate learning may be due to the fact that the keyword method requires an elaborative processing of verbal and conceptual information, not necessarily to the fact that part of this information is visual in nature. Thus the success of the keyword method cannot be interpreted as straightforward evidence for Paivio's dual coding hypothesis. In line with this interpretation, Kasper and Glass (1988) have suggested that the keyword method facilitates recall by inducing learners to process item-specific information.

- New vocabulary items should be presented in a meaningful context (preferably authentic or quasi-authentic contexts, preferably offering enough clues to allow learners to successfully infer their meaning).
- Learners should elaborate on a new word's form and meaning in order to facilitate retention.

The keyword and other mnemonic methods should not substitute for these principles of contextual learning, but they must be added to the contextual method when necessary and applicable (Hall, Wilson & Patterson, 1981, p. 357). In short, as Stevick (1993) has said, imagination and memory are friends, not enemies.

Second, in contrast to behavioristic thinking about forty years ago (when Weinreich's influential book appeared), modern psycholinguistic theories of bilingualism do not see a subordinate organisation as inferior to or detrimental to the construction of a compound or coordinate organisation, nor should the establishment of a temporary, indirect link between the target word's form and meaning via a mnemonic mediator be seen as inhibiting or detrimental to the efficiency with which nodes in a lexical network can be accessed.

Third, visual information may not be necessary or effective on many occasions, but using imagery appears to be effective when subjects find their task difficult to accomplish, in particular when a word's form and meaning do not happen to associate easily.

Practical guidelines

Modern foreign language pedagogy stresses the importance of teaching students appropriate learning and studying strategies (Brown, 1994; Oxford, 1989). Older students should and can be made responsible for their own vocabulary learning (Meara, 1993, p. 288). In the beginning, as well as during the language course, we must discuss with our students how they go about learning the language. As a teacher of Dutch to literate adults learning Dutch as a second language, I have found it extremely useful to:

- Talk with students about their expectations concerning their language study before and during the language course;
- Administer tests for various skills and subskills at regular intervals;
- Have them compare their test results with their expectancies;
- Evaluate with them their language learning strategies.

This procedure includes a discussion of vocabulary learning techniques. Students always favourably receive the lesson devoted to mnemonics. They talk about their frustrations in learning and remembering thousands

of words. They appreciate sharing with each other the memory tricks they use. Based on this experience, I offer the following practical guidelines.

Introductory lesson. In the introductory lesson about vocabulary learning, ask your students to mention examples of words they have learned spontaneously, incidentally. Then ask them why they think these words have been retained in memory without their conscious effort to learn and remember them. (Usually the words mentioned have occurred frequently and/or in the context of everyday life, offering the opportunity to establish a rich set of connections to other nodes in the mental lexicon.) Then ask them to give some examples of word forms whose meaning they have had to look up several times, words they have had particular difficulty learning and remembering. Help them to become aware of the fact that they have not forgotten the forms of these words, nor their meaning, but the link between form and meaning. Point out to them that it is necessary to find a mediator between the two.

Then discuss various mnemonics. Do not limit this discussion to the keyword method only. Research has shown that multiple elaboration techniques are better than a single keyword technique (Hogben & Lawson, 1994). The techniques students mention themselves invariably include:

- Forming an association with an L1 or L2 word similar in sound and meaning (e.g., true cognates);
- Decomposing a morphologically compound word (especially helpful with "transparent" compounds, i.e., compounds whose meaning can easily be derived from their constituent parts);
- Forming associations with familiar words based on some sort of sound similarity (e.g., rhyme);
- Forming nonverbal sound associations (e.g., the noise made by objects, animals or humans, associated with various sorts of affective responses of pleasantness, unpleasantness, etc.).⁴

Genuine examples of the keyword technique are seldom mentioned, which underscores its unfamiliarity. Give some examples of this method, and ask students to apply the technique on a few words. Give them some words with concrete meanings first, and then some words with abstract meanings. They will then discover how difficult it often is to come up with keywords satisfying both requirements, i.e., (1) form similarity and (2) a semantic characteristic allowing for the establishment of a salient (preferably bizarre), sensory (mostly visual) mediating link with the

⁴ In an experiment with German adult learners of Russian, Weise (1990) found that, when choosing mediating keywords, learners paid more attention to their phonetic similarity with the target words to be learned than to their potential value for establishing semantic cues.

meaning of the target word. Emphasize that using mnemonics in general, and using the keyword method in particular, (1) is often not necessary, because more natural links between form and meaning have established themselves in their memories, and (2) is often not possible, because a suitable keyword cannot be found. Students should thus become aware of both the values and the limitations of these techniques.

Time spent on a confrontation with the vocabulary learning problem in such a metacognitive way is time well spent, provided that we give students (1) the opportunity to relate the contents of such a lesson to their personal word learning experiences, and share their experiences with others, and (2) some examples of the various mnemonic techniques and the opportunity to apply the techniques successfully on at least some of the test words we provide them. (This implies that we must have ready an adequate keyword solution to at least some of these test words.)

Mnemonics in courses for intermediate and advanced learners. It should be noted that the associations made by inexperienced L2 learners who have just embarked on a beginners' course in a language linguistically unrelated to their mother tongue are of necessity of a much more restricted variety than the associations made by intermediate or advanced learners. The latter learners have a much broader knowledge base at their disposal, containing more candidates (words, derivational and compositional morphemes within the L2) for potentially successful associations with new words to be learned.

It is therefore especially worthwhile to talk about vocabulary learning techniques with students at intermediate and advanced levels. Two additional advantages accrue from discussing these matters with students at higher proficiency levels. First, it is these students especially who feel the vocabulary learning burden most pressingly, having to increase a limited elementary vocabulary of, say, 1,000 items to 5,000 items, or even to 10,000 items and beyond (Hazenberg & Hulstijn, 1996). Second, in the case of second (in contrast to foreign) language instruction, teachers often have little or no knowledge of the mother tongue(s) of their students. They therefore cannot offer their students helpful L1 keywords, nor can they evaluate with certainty the quality of L1 keywords brought forward by their students. However, intermediate or advanced students have enough L2 knowledge (1) to participate with profit in a metalinguistic group discussion on mnemonics, and (2) to form associations within the L2, rather than between L2 and L1.

Procedures during the language course. The introductory presentation and discussion of mnemonic techniques just outlined can be supplemented with the following procedure. At regular intervals, test your students on the words they have been instructed to learn and remember, preferably words they have encountered in collective reading or listening assignments. There are always some words that turn out to be difficult to

remember for most students. Present these words once again and ask the students to proffer associations that facilitate retention. The collective imagination of a group of students together with their teacher will always be richer than the imagination of a single learner or of the teacher alone. Therefore, the whole group stands to profit from this procedure, which need not take more than a few minutes of class time.

Encourage your students to include the sometimes bizarre associations thus proffered when they write the words to be learned in their personal vocabulary notebooks or databases, along with the remaining information about the words (including useful verbal contexts).

Furthermore, it seems appropriate to encourage students first to come up with their own mnemonic solutions for word retention problems. Only if they cannot find solutions themselves should the teacher offer a mediator. However, the teacher must point out that students themselves must assess and evaluate the usefulness of the various mediators offered, since the target words must be embedded in individual mental lexicons with individually different words and different interword connections. Generally speaking, learners who must, for whatever reason, be labelled as being novices profit more from teacher-induced and less from self-generated solutions than experts (Hall, Wilson & Patterson, 1981; Wang & Thomas, 1992). And, as McLaughlin Cook (1989) has pointed out, a technique once introduced and successfully applied does not necessarily become a natural habit. It is therefore necessary to remind students of the use of mnemonics repeatedly.

It is important to note here, along with Cohen (1987) and Nation (1982, pp. 25–29), that, following this procedure, mnemonic techniques must not be used with all words, but only with words that have shown up as being particularly difficult.

Nonvisual, verbal mediators. When students cannot find a keyword meeting both requirements of formal similarity and an imaginable, semantic relationship, they could try to find a mediator bearing a semantic relationship in a nonvisual way. Example: *Embed* the target word *barb* in the carrier sentence "A barb is barbaric!"

When students cannot find any suitable formally similar mediator, they are left with the conventional technique of trying to remember the target word in a semantically salient context, and to commit this sentence intentionally to memory (Ellis & Beaton, 1993a, 1993b; Kelly, 1986; McLaughlin Cook, 1989). This procedure requires rehearsal. Embedding in a meaningful context alone is not enough for successful retrieval of the word's meaning when the word form is encountered in a new context, as was illustrated with the personal experience cited at the beginning of this chapter.

Mnemonics for language production. When one wants to learn a

difficult word not only for reading or listening (receptive purposes) but also for speaking and writing (productive purposes), it is important to pay special attention to the usefulness of the keyword in arriving at the word's form when starting off from a concept or meaning. Additional measures must be taken to traverse the bridge in the opposite direction, a direction for which the bridge had not been constructed. Keyword method research has focused almost exclusively on its receptive function (e.g., helping learners to remember the meaning of *gunnel*, but not helping learners to remember the L2 word form for L1 *fish*). Perhaps the following jingle, cited by Keyser (1994) in her review of Harrison and Winters Welker's Spanish memory book (1993), could help English learners of Spanish remember both the meaning (receptively) and the form (productively) of the word *bailar* ("to dance"): "*Buy* larger shoes to *dance* in; *buy* smaller pants to *prance* in."

Let me add a personal experience here. I have come to learn many English words that were difficult to learn receptively (from form to meaning) by having been compelled to use them productively. When faced with expressing a certain concept in English, while writing an English article such as the present one, I look up the English word by using a Dutch-English dictionary, Webster's Thesaurus or Longman's Language Activator (starting off with a semantically related English word that I can think of). I then often recognize the desired word, as mentioned in these reference books, and use it in my writing. When I read or hear the same word later, I have no difficulty knowing what it means. This, then, seems to be another case in which L2 production may facilitate L2 comprehension (cf. Swain, 1985).

Rehearsal. It has been convincingly shown that even the use of a mnemonic mediator does not guarantee that L2 learners will remember an L2 word's meaning forever (Hogben & Lawson, 1994; Moore & Surber, 1992; Wang & Thomas, 1992). Rehearsal will remain necessary for the many words that L2 learners do not see or hear frequently enough through regular reading and listening. For these words, intentional rehearsal of the meanings and other relevant features (spelling, pronunciation, stress pattern, inflectional forms, grammatical gender, syntactic characteristics, etc.) remains the feat of the L2 learner wishing to become proficient in the L2. And as anyone knows who has tried to commit a great number of facts to memory, rehearsal at regular intervals is much more effective than massive rehearsal at infrequent intervals (Bloom & Shuell, 1981; Dempster, 1987). Each time learners rehearse a word, they should try to revive as many previously formed associations as possible, since an elaborative rehearsal technique has been proved to be much more effective than a maintenance rehearsal technique (Baddeley, 1990, p. 172).

Conclusion

The aim of this chapter was to give mnemonic techniques their proper place in vocabulary learning. To quote from the concluding paragraph of Cohen's review article (1987, p. 59): "At a time when training of learners in language-learning strategies is gaining momentum . . . , it may be particularly fitting to determine whether strategies for remembering words have a role within such training. Such memory techniques would not be intended to replace the other approaches to vocabulary learning, but rather complement them by providing a link for facilitating retrieval of a second-language word or its native-language meaning."

The keyword technique is not at variance with modern insights in the bilingual mental lexicon nor with the contextual method in language pedagogy. The keyword and other mnemonic techniques should not replace the more natural, contextual methods fostering incidental learning. Instead, mnemonics, fostering intentional learning, should be used for words that, for whatever reason, have not been successfully acquired. Although the applications of mnemonic techniques are limited, their effect has been sufficiently proven. To some extent they can transform the vocabulary learning task from uninspired drudgery into newfound delight.

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11 *L2 vocabulary acquisition through extensive reading*

James Coady

L1 vocabulary acquisition

The incidental vocabulary learning hypothesis (Nagy & Herman, 1985) is based on research into how children learn vocabulary in their native language. It proposes that the vast majority of vocabulary words are learned gradually through repeated exposures in various discourse contexts. Proponents of this view claim that learners typically need about ten to twelve exposures to a word over time in order to learn it well. They observe that native speakers can learn as many as fifteen words per day from the ages two to seven and therefore conclude that direct instruction of vocabulary cannot possibly account for the vast growth of students' knowledge of vocabulary. Consequently, Nagy and Herman (1987) argue that teachers should promote extensive reading because it can lead to greater vocabulary growth than any program of explicit instruction alone ever could.

L2 vocabulary acquisition

Following this same logic, it is argued that L2 learners who achieve advanced reading proficiency in a language will acquire most of their vocabulary knowledge through extensive reading rather than from instruction. For example, Krashen (1989), a leading proponent of extensive reading, argues that language learners acquire vocabulary and spelling most efficiently by receiving comprehensible input while reading. He claims that this results from the Input Hypothesis, i.e., successful language learning results from comprehensible input as the essential external ingredient coupled with a powerful internal language acquisition device. Krashen originally postulated the Input Hypothesis for oral language acquisition and in a recent study of oral vocabulary acquisition Ellis (1994) argues that it is "not comprehensible input but comprehended input that is important" (p. 481). Nevertheless, Krashen (1989) claims