

Promoting interdisciplinarity in Greek-English lexicography

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Abstract

Modern bilingual lexicography lies at the crossroads between linguistic theory, translation, language technology (related to corpora, databases and delivery media), and user needs considerations. It is the interplay of these factors involved in the route from the raw language data to the finished dictionary that motivates this paper. Promising theoretical perspectives such as frame semantics, the cognitive theory of metaphor and metonymy, and the contextual theory of meaning are combined with corpus methodology in compiling a production-oriented Greek-English entry for the verb *περπατάω* ('walk').

Keywords: bilingual lexicography, corpora, co-occurrence patterns, frame semantics, metaphor

1 Introduction

This paper aims to make a contribution towards improving bilingual lexicography in Greece, and in particular Greek-English lexicography. It raises awareness of the need for empirically-grounded, theoretically-informed and user-friendly entries. A case study of a polysemous manner-of-motion verb of high frequency, namely *περπατάω* ('walk'), demonstrates the methodology proposed.

The paper first considers the treatment of the *περπατάω* entry in two well-known Greek-English dictionaries and justifies the need for improvement. Then, an alternative dictionary plan is outlined and is implemented in the reconstruction of the *περπατάω* entry. In other words, the paper demonstrates the stages of "analysis",

“transfer” and “synthesis” in compiling a new Greek-English entry. Throughout this process I highlight interdisciplinary links in bilingual lexicography.

2 Critical perspective

The aim of this section is to examine the *Oxford Greek-English Learner's Dictionary* (1988) and the *Collins Greek-English Dictionary* (2003) with regard to their *περπατάω* entry. Following Atkins & Rundell's (2008: 24-27) typological classification of dictionaries, we could describe both dictionaries as bilingual, unidirectional, print dictionaries of general language, which are meant for two language groups, i.e. native speakers of both Modern Greek and English.¹ Table 1 presents the *περπατάω* entries provided by the two dictionaries. A mere glance at the two entries reveals major differences in coverage and organization.

First of all, it is worth noting that the *Oxford* entry for *περπατάω* is recorded after the *περίπατος* entry, under the archaic form *περ[ι]πατώ*; the more common forms *περπατάω* and *περπατώ* have not been entered in the dictionary with a cross-reference to this entry. The overall first impression created by the *Oxford* entry is difficulty in navigation due to the flat, user-unfriendly presentation; users have to read the whole entry as text in order to locate the information they need within the black/ white tiny print. The entry is split in four sections. Each one of the first three sections lists a series of arbitrarily grouped target language (TL) context-specific manner-of-motion verbs; there are few disambiguation cues in the form of modifiers in the source language (SL) (e.g. «στα νύχια», «καμαρωτά», «βαριά και αποφασιστικά», «τρεκλίζοντας»). The last section of the entry uses a vague label «ιδιωματικές φράσεις» to bring together a metaphorical use of the headword (i.e. «για σχέδια»), a literal use (i.e. «για μωρό») and an informal transitive use (i.e. *το περπατώ*). We may also note a striking instance of unnatural SL phrasing, i.e. *περπάτησα τα παιδιά ως το*

¹ That means that if they are used by Greek-speaking users they should cater for their production needs in the English language (L1→L2), whereas if they are used by English-speaking users they should aid them in the comprehension of the Greek language (L2→L1) (Kromann et al. 1991: 2719-2723). This paper looks at the dictionaries from the viewpoint of Greek speakers of English (production-oriented function), because, as Atkins (1985: 15) argues, “when one language has world-wide currency and the other is geographically restricted [...] [the bilingual] dictionary is usually intended principally for the minority user”.

πάρκο, which seems to be forced by the typical transitive use of the direct equivalent *walk* (i.e. *I walked the children to the park*).

<i>Oxford Greek-English Learner's Dictionary</i>	<i>Collins Greek-English Dictionary</i>
<p>περ(ι)πατ-ώ ντι [π] 1. walk, pace, tread, stride: έχω ~ήσει αυτή την περιοχή σε ακτίνα μιλίων, I've walked this district for miles around. περπάτησα τα παιδιά ως το πάρκο, I walked the children to the park. ~ώ σιγά για να μην ξυπνήσω κτ, tread lightly so as not to wake sb. βγήκε από το δωμάτιο ~ώντας με μεγάλα βήματα, he strode out of the room. 2. (χοροπηδώ) trip, prance, (στα νύχια) pussyfoot, tiptoe, (καμαρωτά) prance, strut, stalk, (κουμιστά και λυγιστά) swagger, prance: με πλησίασε ~ώντας ανάλαφρα, she came tripping/prancing up to me. βγήκε από το δωμάτιο ~ώντας στα νύχια/καμαρωτά/κουμιστή και λυγιστή, she tiptoed/strutted/pranced out of the room. 3. (χτυκώντας τα πόδια) stamp, (βαριά και αποφασιστικά) tramp, slog, (βαριά και αργά) stump, clump, stomp, (με δυσκολία και προσπάθεια) plod, trudge, (αργά και μονότονα) jog, (μέσα από νερό) wade, (σαν πάκια) waddle, (τρεκλίζοντας) lurch, stagger: ~ούσε και χτυπούσε τα πόδια για να τα ζεστάνει, he was stamping about trying to keep his feet warm. ~ούσε βαριά πάνω-κάτω στο δωμάτιο, he was stomping about in the room. ~ώ μέρα στο βαθύ χιόνι, trudge through the deep snow. ~ούσε βαριά, με κόπο σηκώνοντας το πόδι, he plodded along, hardly able to lift each foot. η χοντρή βγήκε από το μαγαζί ~ώντας σαν πάκια, the fat woman waddled out of the shop. 4. ιδiom. φρ.: (για σχέδια) ~ώ, get going, get off the ground, get under way: είχα πολλά σχέδια αλλά κανένα δεν περπάτησε, I had several plans but none got off the ground. (για μωρό) αρχίζω να ~ώ, find one's feet. το ~ώ, foot it, pad it: έχασα το πορτοφόλι μου κι αναγκάστηκα να το ~ήσω μέχρι το σπίτι, I lost my wallet and had to foot it/pad it home.</p>	<p>περπατώ P AM (α) (= βαδίζω) to walk (β) (= κάνω περίπατο) to stroll</p>

Table 1. Sample Greek-English dictionary entries

If we now turn our attention to the *Collins* entry, we are presented with a completely different picture, i.e. a transparent skeletal structure which indicates SL sense distinctions by means of specifiers in Greek (i.e. a synonym or a paraphrase in the SL, Atkins & Rundell 2008: 511), but offers no examples. In contrast to the multitude of context-dependent manner-of-motion verbs in the *Oxford* entry, the *Collins* entry offers only *walk* as a direct translation – implying that it is general enough to suit

most contexts (Atkins & Rundell 2008: 503). The only context-sensitive manner-of-motion verb added is *stroll*, which renders the more specialized use of “walking for pleasure and exercise”.

On the whole, the *Oxford* entry provides a wealth of information, especially in the form of translation options, but this is poorly organized. The *Collins* entry is better structured, but lacks illustrative examples. The major problems we can identify concern semantic and phraseological treatment, SL and TL naturalness (i.e. empirical grounding), and user-orientation.

3 Alternative dictionary plan

In an attempt to address these problems, we follow a systematic approach to bilingual lexicography. According to the relevant literature (Atkins 2002: 12; Atkins & Rundell 2008: 99-103; Corréard 2006: 789), the compilation route of a bilingual dictionary can be divided into three main stages: “analysis”, “transfer” and “synthesis”. In the first stage, a monolingual (unbiased) structured account of the SL is assembled through the tasks of searching corpora, identifying senses and recording lexicographically relevant information, such as collocation and grammatical structure. The second stage, the translation stage, involves populating the monolingual database with TL equivalents of the headword in its different contexts. Finally, in the synthesis stage the translated database is reorganized into bilingual dictionary entries appropriate for the typical user of the intended dictionary.

The importance of empirically grounding lexicography runs through this process. However, the use of corpora for lexicographic purposes is not straightforward. Issues of availability, representativeness, and dependency on software tools need to be considered. Since no large, general-purpose bilingual corpus is readily available in the language combination discussed, the present study performs a contrastive analysis of monolingual corpus data. The established national corpora of British English and Modern Greek constitute the primary sources of data, i.e. the British National Corpus (BNC) and the Hellenic National Corpus (HNC) respectively. In addition, I employ two Web-derived corpora as secondary sources of evidence, i.e. the British English Web Corpus (ukWaC) and the Greek Web as Corpus (GkWaC). The benefits gained from the combined use of corpora concern both content and

functionality. For example, the GkWaC not only is larger than the HNC, but is also accessed through a more advanced query system, the Sketch Engine. This state-of-the-art corpus query system allows for greater flexibility in searching, while its “lexical profiling” function facilitates the word sense disambiguation process (Atkins & Rundell 2008: 110; Kilgarriff et al. 2008: 297).

To interpret corpus data we should rely on a sound theoretical basis suitable for representing semantic and phraseological networks in a principled manner. To this end, in the analysis stage, we employ frame semantics, the cognitive theory of metaphor and metonymy, and the contextual theory of meaning (see section 4.1). In the transfer stage, equivalence factors are considered while trying to insert translations into the database (see section 4.2). User needs are considered during the synthesis stage in designing dictionary features and transforming a translated database entry into a finished dictionary entry (see section 4.3).

4 Case study: *περπατάω*

The aim of this section is to show the three stages of the lexicographic process in the case study of *περπατάω*. To provide an overview of the contribution, Table 2 sketches out the corpus-derived word senses and usage patterns of the verb in comparison to the bilingual dictionaries examined before.

Lemma	Corpus-based findings: proposed LUs	Greek-English dictionaries	
		<i>Oxford</i>	<i>Collins</i>
<i>περπατάω</i>	move forward by putting one foot in front of the other and then repeating the action [Intransitive + manner complement], [Transitive]	± (overload of poorly discriminated, arbitrarily grouped context-specific equivalents)	± (no context-specific equivalents, no examples)
	walk without hurrying, for pleasure and exercise rather than practical reasons [often + <i>λίγο/ λιγάκι</i>]	–	± (no examples)
	easily traversed on foot or by car [passive voice: <i>περπατιέται</i>]	–	–
	advance, progress [+ process, issue, team]	+	–
	do something easily and with little effort [win/ achieve verb + <i>περπατώντας</i>]	–	–
	<i>περπατάω (πάνω) σε τεντωμένο σκοινί</i> [multi-word expression]	–	–

Table 2. Overview of corpus-based findings vs. existing bilingual dictionary entries

There are three signs in Table 2, i.e. [+], [–] and [±], which are to be read as “explicitly coded information”, “missing information” and “implicitly coded information” respectively. The first two signs are fairly straightforward, while the last one comes with a parenthetical explanation. On the whole, the Table highlights differences in coverage between the proposed database entry and existing dictionary entries.² The process of establishing the proposed SL lexical units (LUs), translating them in the TL and developing a bilingual dictionary entry is explained in the rest of this section.

4.1 Analysis

In the analysis stage, the basic unit of description is not the word, but rather the LU, which constitutes “the union of a lexical form and a single sense” (Cruse 1986: 77). The methodology used for establishing LUs combines corpus linguistic strategies with cognitive semantic theories (frame semantics and the cognitive theory of metaphor

² The passive participle *περπατημένος-η-ο* deserves a separate entry in a dictionary, since it functions as an adjective (e.g. *ο Αγγελάκης ήταν περπατημένος άνθρωπος*) or noun (e.g. *οι πιο περπατημένοι είπαν αμέσως ότι θα επικρατήσει η βούληση της Φίμπα*). Therefore, *περπατημένος-η-ο* is not included in the data under study.

and metonymy, in particular).³ In fact, we apply the integrated approach to word sense disambiguation outlined and exemplified in Dalpanagioti (2012: 237-238; 2013:10-14).

Following this approach, we first identify recurrent patterns of usage in HNC concordance lines and in the GkWaC Word Sketch for *περπατάω*. Then, we employ frame semantics (initiated by Fillmore 1982) and draw on its implementation in the Berkeley FrameNet project (Ruppenhofer et al. 2016) to decide whether a pattern qualifies for the status of a LU; separate senses generally correspond to different semantic frames and assign different frame elements (FEs) (Atkins 2008: 256-257; Atkins et al. 2003: 335-337). We also distinguish between LUs that evoke the same frame, when uses exhibit highly distinct co-occurrence patterns that affect aspects of meaning (denotation or implication) (Evans 2005: 41). Lastly, to lend further support to the corpus-based and frame-driven sense distinctions, we consider how they are motivated by cognitive mechanisms, such as metaphor and metonymy (Lakoff & Johnson 1980, 1999; Nikiforidou 1999; van der Meer 1999).

The results of applying the analysis methodology to the verb under study are summarized in Table 3, which presents a coherent account of the LUs of *περπατάω* in 6 columns. For each LU the 1st column provides corpus-attested sentences which are considered typical illustrative examples of the particular LU. The 2nd column specifies the semantic frame evoked by the LU on the basis of the FrameNet descriptions.⁴ The 3rd one employs the conceptual metaphor theory to explain the non-arbitrary relationship between the semantic extensions of *περπατάω*. Notice, for example, that the last three LUs are motivated by different aspects of the EVENT STRUCTURE metaphor.⁵ The 4th column makes it clear that each LU exhibits distinct co-occurrence patterns, such as collocation, colligation, semantic preference and

³ The application of cognitive linguistics to lexicography leads to an interdisciplinary research field recently called “cognitive lexicography” (Ostermann 2015).

⁴ Descriptions of all FrameNet frames mentioned in Table 3 are available online at <https://framenet.icsi.berkeley.edu/fndrupal/frameIndex>. The only exception is the [Self_motion]_{figurative} frame (see LU4) which has been introduced and described in Dalpanagioti (2013: 17-19).

⁵ The generic-level metaphor EVENT STRUCTURE has various aspects of events as its target domain; the complete system of mappings is outlined by Lakoff (1993: 220-222), and includes STATES ARE LOCATIONS (i.e. bounded regions in space), CHANGES ARE MOVEMENTS, CAUSES ARE FORCES, ACTIONS ARE SELF-PROPELLED MOVEMENTS, PURPOSES ARE DESTINATIONS, DIFFICULTIES ARE IMPEDIMENTS TO MOTION, etc.

semantic prosody.⁶ The 5th column indicates whether LUs have marked usage; and the last one provides an informal description of the meaning of each LU.

Promoting a cognitive-based rather than a frequency-based approach to the ordering of LUs, the database entry proceeds from literal to extended, from general to specialized, and from single-word to multi-word LUs. In general, the combination of semantic and contextual criteria for determining LUs allows the database entry both to ensure the semantic integrity of the LUs and to provide different translations for highly contextualized uses.

4.2 Transfer

The rationale of the transfer stage is nicely captured in Atkins and Rundell (2008: 466). In brief, the objective is to find the safest context-free translation, i.e. a TL item that fits as many contexts as possible, and to indicate its boundaries by providing context-sensitive translations. The factors that play a role in evaluating SL-TL equivalence are semantic content, collocational context, vocabulary type, message and function. Corpora are used for finding and checking translations. As already mentioned, the present study makes use of two TL corpora, the BNC and the ukWaC, which are accessed through the Sketch Engine query system.

⁶ Viewing meaning as function in context, Sinclair (1998: 14-23) has proposed these four categories of co-selection as components of a lexical item; as he points out, “the word is not the best starting-point for a description of meaning, because meaning arises from words in particular combinations” (ibid.: 23). For a brief description and examples from Greek, see Δαλιανγκιώτη (2015: 5-7).

Corpus-attested examples	Frame	Motivation	Co-occurrence patterns	Usage	LU definition
<p>- Περπάτησαν το μισό τετράγωνο αμίλητοι.</p> <p>- Περπάτησε στις μύτες των ποδιών της, για να μην τον ξυπνήσει, και κατέβηκε τη σκάλα.</p> <p>- Οι πυροσβέστες περπατούσαν πάνω κάτω αμήχανοι.</p> <p>- Άρχισα να περπατώ στα τυφλά στον σκοτεινό διάδρομο.</p>	[Self_motion]	core meaning: the default manner of motion for humans (moderate pace, on foot)	syntactic patterns: - Transitive - Intransitive + manner complement	unmarked	1 move forward by putting one foot in front of the other and then repeating the action
<p>Πάμε να περπατήσουμε λιγάκι;</p>	[Self_motion]	literal extension	semantic prosody: it implies that the walk is not long or tiring	unmarked	2 walk without hurrying, for pleasure and exercise rather than practical reasons
<p>- Είναι τόσο μικρή η πόλη που περπατιέται πολύ εύκολα.</p> <p>- Ο Κηφισός και η Κατεχάκη 7:30-8:30 και 15:30-16:30 δεν περπατιούνται.</p>	[Traversing]	literal extension	colligation: passive (3rd person singular/plural) [path] collocate type: road, place	register: informal	3 easily traversed on foot or by car
<p>- Το σημερινό κυβερνητικό σχήμα δεν περπατάει και δεν αποδίδει.</p> <p>- Πρέπει να γίνουν οι αναγκαίες διορθώσεις, για να περπατήσει</p>	[Self_motion] _{figurative}	EVENT STRUCTURE metaphor: MAKING PROGRESS IS FORWARD MOVEMENT, LACK OF	[self_mover] collocate type: process, plan, issue, team, commercial product	register: informal	4 advance, progress

η εκπαιδευτική μεταρρύθμιση.		PROGRESS IS LACK OF MOVEMENT	semantic prosody: negative		
Η ομάδα μας έφτασε στον τελικό περπατώντας.	[Finish_competition]	EVENT STRUCTURE metaphor: MANNER OF ACTION IS MANNER OF MOTION (effortless)	colligation: present active participle [competitor] collocate type: human (winner) semantic preference for verbs meaning “win/ achieve”	register: informal domain: Sports	5 do something easily and with little effort
Σε τεντωμένο σχοινί περπατούν επιχειρήσεις και νοικοκυριά, προκειμένου να αντιμετωπίσουν τη βραχυπρόθεσμη έλλειψη ρευστότητας.	[Run_risk]	EVENT STRUCTURE metaphor, based on the image of an acrobat: MANNER OF ACTION IS MANNER OF MOTION (delicate and risky)	MWE: περπατάω (πάνω) σε τεντωμένο σχοινί Variation in the MWE form: •verb: περπατάω, βαδίζω, ακροβατώ, ισορροπώ •PP: (πάνω) σε/ σε ένα/ στο + τεντωμένο σχοινί/ σχοινί •order: verb + PP <u>or</u> PP + verb (for emphatic/ aesthetic effect)	no marked usage, apart from emphatic effect	6 be in a difficult situation in which a very small mistake could be detrimental

Table 3. Analysis: word senses and usage patterns of περπατάω

In assessing the appropriateness of translations, we consider not only whether the contextual patterns retrieved are typical of the TL, but also how they relate to SL LUs in terms of FEs and conceptual motivation. Corpus data and linguistic theory may thus broaden the horizons of the translation task; yet, the importance of native speaker intuition (traditionally the main translation resource) should not be underestimated or flatly ignored. In the present study, a native speaker of English checked whether L2 sentences sound natural and proposed revisions.⁷ Following Atkins (2002: 4-5), the data finally recorded includes “typical”, “problematic” and “idiomatic” examples; in particular, (a) typical examples illustrate cases of straightforward translation and serve a reassuring function, (b) problematic examples point out potential translation pitfalls by illustrating contexts in which the SL item has a specific TL equivalent, and (c) idiomatic examples concern SL multi-word expressions (MWEs) which are not amenable to a word-to-word translation into the TL.

By way of illustration, Table 4 summarizes the results of the transfer process for the basic LU of *περπατάω*. A direct, context-free equivalent and a series of context-sensitive translations are provided, together with corpus-based example sentences and their translations. Notes are made on matches and mismatches between the SL and the TL, and a translation strategy is explicitly stated, i.e. reorganizing FEs on the basis of the typical English pattern “manner-of-motion verb + path satellites”, and adding manner information, which is inferred from the Greek text.

LU 1	
meaning	move forward by putting one foot in front of the other and then repeating the action
transl. equivalents	<i>walk, pace, tiptoe, stagger, stumble, stomp, march, prance, strut, toddle, crawl</i>
collocate type: human	<i>walk</i> [context-free/ direct translation]
example	Πονάω πολύ, σε σημείο που δεν μπορώ να περπατήσω .
translation	I am in so much pain that I cannot walk .
example	Περπάτησαν στην όχθη του ποταμού.
translation	They walked along the riverside.
example	Στόχος αγνώστων νεαρών έγινε κι ένας αστυνομικός που περπατούσε για να πάει στην υπηρεσία του.
translation	A policeman who walked to work became a target for attack by unidentified young men.
example	Περπατώντας διήγυσαν απόσταση πεντακοσίων μέτρων μέχρι το Αρχαιολογικό Μουσείο της πόλης.

⁷ I am grateful to Dr Maggie Charles (Tutor in English for Academic Studies at Oxford University Language Centre) who checked and revised the sentences produced in English.

translation	They walked a distance of 500 meters to the Archaeological Museum of the city.
example	Περπάτησαν το μισό τετράγωνο αμίλητοι.
translation	They walked half the block in silence.
example	Προσβλήθηκε από πολιομυελίτιδα και έκτοτε περπατάει με τη βοήθεια μιας μαγκούρας.
translation	He was infected with poliomyelitis and since then he walks with a [cane/ stick]. ⁸
example	Τα παιδιά περπατούν ξυπόλυτα στη λάσπη.
translation	The children walk barefoot in the mud.
collocate type: human	[context-sensitive translations]
example	Οι πυροσβέστες περπατούσαν πάνω κάτω αμήχανοι.
translation	The firefighters were [ricing/ walking] up and down nervously.
example	Περπάτησε στις μύτες των ποδιών της, για να μην τον ξυπνήσει, και κατέβηκε τη σκάλα.
translation	She tiptoed down the stairs in order not to wake him up.
example	Περπατούσε σχεδόν τρικλίζοντας.
translation	He was nearly staggering .
example	Άρχισα να περπατώ στα τυφλά στον σκοτεινό διάδρομο.
translation	I began stumbling along the dark corridor.
example	Περπατάει αργά, με δυσκολία, θαρρείς σε κάθε βήμα θα σωριαστεί.
translation	He is staggering as if he would slump to the ground at every step he takes.
example	Περπατούσε προς το μέρος μου με αργά αποφασιστικά βήματα, λες και ήταν έτοιμη να μ' αρπάξει.
translation	She [stomped/ marched] towards me as if she was about to attack me.
example	Περπατούσε με το κεφάλι ψηλά και τα πλούσια γκρίζα μαλλιά του ριγμένα πίσω.
translation	He was [prancing/ strutting] around with his head up and his rich grey hair back.
example	Προσπαθεί να βοηθήσει το νεογέννητο εγγόνι του να περπατήσει .
translation	He tries to help his newborn grandchild [toddle/ crawl] around.
collocate type: animal	<i>walk</i>
example	Ο σκύλος περπατάει κούτσα κούτσα στα τρία πόδια.
translation	The dog is walking with a limp, hobbling on three legs.
collocate type: insect	<i>crawl</i>
example	Στην κουζίνα περπατάνε κατσαρίδες.
translation	Cockroaches are crawling all over the kitchen.
notes on degree of correspondence	- Semantic correspondence between <i>περπατάω</i> (LU1) and <i>walk</i> (LU1) in their intransitive and transitive uses; simple manner-of-motion verbs describing the primary means of locomotion for humans.

⁸ Brackets and slashes indicate alternative options.

	- Structural difference between manner languages (English) and path languages (Modern Greek): Greek phrases which consist of the default/ simple manner-of-motion verb <i>περπατάω</i> and a manner modification are more naturally translated with English verbs which incorporate complex/ more specific manner of motion in a compact way (e.g. <i>tiptoe, stagger, stumble, stomp, march, prance, strut, toddle</i>). Most often these specific manner-of-motion verbs are further modified by direction/ path satellites.
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Table 4. Transfer: a single-word LU of *περπατάω*

Similarly, Table 5 demonstrates the translation stage of a multi-word LU, i.e. *περπατάω σε τεντωμένο σκοινί*. On the one hand, there is almost word-for-word and functional correspondence with a *walk* MWE (i.e. *walk a tightrope*); the same source image and metaphorical mapping underlie both of them. On the other hand, *be on a knife-edge* and *be in doubt* are instances of non-frame-preserving translation; the former evokes the [Run_risk] frame through a different source image, while the latter is a literal paraphrase of the metaphor.

LU 6	
MWE	<i>περπατάω (πάνω) σε τεντωμένο σκοινί</i>
meaning	be in a difficult situation in which a very small mistake could be detrimental
transl. equivalent	<i>walk a tightrope, be on a knife edge, be in doubt</i>
example	Σε τεντωμένο σκοινί περπατούν επιχειρήσεις και νοικοκυριά, προκειμένου να αντιμετωπίσουν τη βραχυπρόθεσμη έλλειψη ρευστότητας.
translation	Companies and households are walking a tightrope in their attempt to deal with the short-term lack of liquidity./ Companies and households are walking a tightrope between inflation and recession.
example	Το ματς κρίθηκε από νωρίς και δεν περπάτησε ποτέ σε τεντωμένο σκοινί .
translation	The game had been decided from the start and was never [on a knife edge/ in doubt].
notes on degree of correspondence	- Direct correspondence between the MWEs <i>περπατάω (πάνω) σε τεντωμένο σκοινί</i> and <i>walk a tightrope</i> ; the same source image and metaphorical mapping (i.e. [Self_motion] frame → [Run_risk] frame) underlie both of them. - Frame shifts: <i>be on a knife-edge</i> evokes the [Run_risk] frame through a different source image ([Locative_relation]), while <i>be in doubt</i> renders the meaning literally through the [Certainty] frame.

Table 5. Transfer: A multi-word LU of *περπατάω*

4.3 Synthesis

Moving to the synthesis stage, the aim is to compile a bilingual entry that caters for the encoding needs of Greek-speaking users of English. A production-oriented dictionary addresses SL-speaking users who need to express themselves in or translate into the TL. Such a dictionary should help users make appropriate lexical choices and incorporate L2 items into context. In this respect, Chon (2009: 26) points out that the encoding user of a bilingual dictionary “needs to be given guidance on choosing between different equivalents, such as description of fine differences in meaning, information on collocation, and on how connotations for the same word may differ based on the writers’ L1”. To this end, I propose new features, which can facilitate findability and usability, and apply them in reconstructing the *περπατάω* entry.

The new entry is presented in Figure 1 and its design characteristics include the following:

- ✓ entry format facilitating findability: table, functional use of colour
- ✓ systematic word sense disambiguation (via specifiers, collocators, labels and tiered structure)⁹
- ✓ examples + translation (showing TL use in context, thus facilitating usability)
- ✓ explicit treatment of MWEs (in subentries)
- ✓ subject-oriented usage note (showing translation patterns).¹⁰

⁹ For example, in Figure 1 «βαδίζω» and «κάνω περίπατο» are specifiers, while «μωρό» and «έντομο» are collocators (for an explanation of the terms, see Atkins & Rundell 2008: 511-512). There is an instance of a grammar label in Figure 1, i.e. ΠΑΘ. (παθητική φωνή), indicating passive colligation; however, labels are sparsely used in the proposed entry, because they are a “blunt instrument” and mean more to the lexicographer than they do to the user (ibid.: 496, 498). Lastly, hierarchical tiered structure indicated by numbers and letters is used to reflect variations in semantic distance between the various uses of the SL headword.

¹⁰ The usage note in Figure 1 is “subject-oriented” (Atkins & Rundell 2008: 233); it does not concern only *περπατάω*, but rather all motion verbs. As Atkins & Rundell (2008: 504-505) point out, consistent dictionary entries can be compiled on the basis of productive equivalence patterns like the one described in the usage note.

περπατάω/ περπατώ	
1	βαδίζω βλ. ΣΧΟΛΙΟ: ρήματα κίνησης
α) γενικά	walk - Περπάτησαν το μισό τετράγωνο αμίλητοι.: They walked half the block in silence.
β) με συγκεκριμένο τρόπο	(μωρό) toddle , (έντομο) crawl , (στις μύτες) tiptoe , (παραπατώντας) stagger/ stumble , (αποφασιστικά) stomp/ march , (καμαρωτά) prance/ strut - Προσπαθεί να βοηθήσει το νεογέννητο εγγόνι του να περπατήσει .: He tries to help his newborn grandchild toddle around. - Στην κουζίνα περπατάνε κατσαρίδες.: Cockroaches are crawling all over the kitchen. - Περπάτησε στις μύτες των ποδιών της, για να μην τον ξυπνήσει, και κατέβηκε τη σκάλα.: She tiptoed down the stairs in order not to wake him up. - Περπατούσε στα τυφλά στον σκοτεινό διάδρομο.: He was [staggering/ stumbling] along the dark corridor. - Περπατούσε προς το μέρος μου με αργά αποφασιστικά βήματα, λες και ήταν έτοιμη να μ' αρπάξει.: She [stomped/ marched] towards me as if she was about to attack me. - Περπατούσε με το κεφάλι ψηλά και τα πλούσια γκριζα μαλλιά του ριγμένα πίσω.: He was [prancing/ strutting] around with his head up and his rich grey hair back.
γ) ΠΑΘ. περπατιέμαι: περιοχή, δρόμος	easy to walk, not congested - Είναι τόσο μικρή η πόλη που περπατιέται πολύ εύκολα.: The town is so small that it is easy to get around just by walking . - Ο Κηφισός και η Κατεγάκη 7:30-8:30 και 15:30-16:30 δεν περπατιούνται .: Kifisos and Katehaki avenues are congested during rush hours.
2	κάνω περίπατο go for a walk, stroll - Πάμε να περπατήσουμε λιγάκι.: Shall we [stroll/ go for a walk]? - Η ομάδα μας έφτασε στον τελικό περπατώντας .: Our team strolled to the final.
3	σημειώνω πρόοδο: σχέδιο, ομάδα get off the ground, move forward - Πρέπει να γίνουν οι αναγκαίες διορθώσεις, για να περπατήσει η εκπαιδευτική μεταρρύθμιση.: The educational reform will get off the ground if improvements are made. - Το σημερινό κυβερνητικό σχήμα δεν περπατάει και δεν αποδίδει .: The government in its present form cannot move forward or function effectively.
4	ΦΡ. περπατάω σε τεντωμένο σκοινί walk a tightrope, be on a knife edge - Το ματς κρίθηκε από νωρίς και δεν περπάτησε ποτέ σε τεντωμένο σκοινί .: The game had been decided from the start and was never on a knife edge .
<p>ΣΧΟΛΙΟ: ρήματα κίνησης Στα Αγγλικά υπάρχει μεγαλύτερη ποικιλία σε ρήματα τρόπου κίνησης σε σχέση με τα Ελληνικά, όπου ο τρόπος κίνησης δηλώνεται κατά προτίμηση επιρρηματικά.</p> <p>ΕΛΛΗΝΙΚΑ: ρήμα κατεύθυνσης (π.χ. μπαίνω, ανεβαίνω, απομακρύνομαι, γυρίζω, διασχίζω) + επιρρηματικός προσδιορισμός του τρόπου (π.χ. πετώντας, τρέχοντας, παραπατώντας, στις μύτες των ποδιών)</p> <p>ΑΙΤΛΙΚΑ: ρήμα τρόπου κίνησης (π.χ. tiptoe, stagger, stumble, dash, fly, crawl, creep) + μόρια κατεύθυνσης (π.χ. in, out, up, down, from, to, back, around, over)</p>	

Figure 1. Synthesis: A new Greek-English entry for περπατάω

In turning the database entry into a dictionary entry, decisions on entry structure are predicated on the TL (Atkins & Rundell 2008: 500). Therefore, for example, LU1 of the database entry is split in two sub-divisions (i.e. 1α and 1β) presenting contextual variations, whereas LU2 and LU5 are condensed into one sense division (i.e. 2) to avoid repetition of the same translation equivalent (i.e. *stroll*). Lastly, it is worth noting that the electronic medium opens up exciting opportunities for providing

access to the diverse information types required in encoding. Yet, since the present study initially examined only printed entries, we have focused on how a printed entry can provide encoding users with a detailed and systematic treatment of multiple senses and usage patterns.

5 Concluding remarks

The present study has shown that providing equivalents is not the only or absolute concern in bilingual lexicography. What is most necessary is to construct a semantic network in target language context for the dictionary user. To this end, we need to develop interdisciplinary links between linguistic theory, corpus research, translation, language technology, and the user perspective in bilingual lexicography. A multi-disciplinary theoretical basis contributes to systematizing the compilation process from the raw language data to the dictionary product.

This paper has pointed out some major problems in Greek-English dictionaries (section 2) and addressed them by describing an alternative dictionary plan (section 3), which is implemented in the case study of *περπατάω* (section 4). I have outlined and illustrated the methodological decisions taken, so that they can be further implemented in compiling bilingual dictionaries or reconsidered in future studies. Lastly, the lexicographic process described has considerable implications for training lexicographers.

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