OVERVIEW OF THE SOURCe PROJECT AS AN OPEN EDUCATIONAL RESOURCE

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Abstract

In this paper, we present an overview of the functionalities of the SOURCe Project, as it has evolved in a span of eight years after its creation in 2012. The SOURCe Project currently includes the search engine for the Searchable Online French-Greek Parallel Corpus for the University of Cyprus (SOURCe), the Pencil (an alignment tool), the Exercises, the Synonyms and the Library. The collection of corpora and tools are designed to be freely available as language processing resources for language and translation teachers and learners, but also for translators. Furthermore, we discuss how its applications can form an important part of effective learning resources. This paper focuses on the development and construction of the SOURCe Project, which is mainly based on a set of parallel corpora. The design, the content, and the availability of these corpora aim to serve the needs of teachers and students of French as a foreign language (other languages may be also added in the future) and also to facilitate future linguistic research. Our approach is a corpus linguistics one, undertaken from the perspective of language acquisition and translation studies.

1. Introduction

Since 2012, the SOURCe project (Searchable Online French-Greek Parallel Corpus for the University of Cyprus) has evolved from a corpus collection to a platform of multi-purpose linguistic tools. The current paper constitutes an extensive elaboration of our previous work (Kakoyianni-Doa, Antaris and Tziafa 2013, Kakoyianni-Doa, Tziafa and Naskos 2016) by incorporating a description of all the tools and the evolution of the project from its start in 2012. The project was developed in five parts and it currently includes the SOURCe search engine, the Pencil (an alignment tool), the Exercise, the Synonyms and the Library. It also includes statistics about the use of each and every tool incorporated. All the tools are designed to serve as freely available resources for language teaching and processing. The aim of this study is to

present a full overview of the project's features and discuss its future perspectives and applications, and how these can form a significant part of effective learning resources. On the basis of the development and construction of the SOURCe Project a set of parallel corpora were designed. This corpus collection, via its design, content, annotation, encoding and availability, aims to address the needs of foreign language teachers and students (the pair of languages currently used is French and Greek). The project also aims to enable and facilitate further linguistic research. It is a corpus linguistics approach, aiming to assist language acquisition and translation studies. As Kübler (2011: 66) notes, as far as translation teaching is concerned, insufficient attention is paid to training translation teachers and trainees to use corpora, despite the fact that corpora are considered to be absolutely necessary in the new educational and professional environment. Furthermore, the absence or limitations of both freely available and translational corpora, especially for low-resourced languages, have led us to propose the creation of this type of corpus for Modern Greek. Parallel corpora provide a bridge to higher resourced languages. In this case, Modern Greek (a less widely used and less taught language) is associated with French (a widely used nd higher resourced language). New and innovative tools were created and added to the Project, which can be also used for other low resourced languages, aligned either with French or other languages. The whole project could serve as a pilot study for less resourced languages.

2. Principles and Methodology

This study focuses on the corpus approach. Corpora are collections of texts in electronic format and language technology tools can be used for processing these electronic texts. Corpus linguistics nowadays can be fundamental in language studies and education, by offering an innovative way to study translation and language acquisition. The approach of corpus linguistics is more evidence-based, offering the opportunity to study the uses of language in different settings. As described by Rapti (2010: 29), there are many software applications for corpus texts analysis, but the most widely-used is the concordancer. Concordancers produce listings of lines plucked from the corpus texts, and each line contains the same occurrence of a word or a phrase, presented with the words surrounding it. The KWIC (Keyword in Context) format is the most common instance: the word or phrase is aligned in the

centre of the concordance lines, surrounded by context (a specific number of characters). This format facilitates the observation of collocations, idioms or expressions, and also grammar patterns and use. Nevertheless, concordance lines do not interpret the information presented, and, therefore, the observer (or the user) has to process the information, such as frequency and significance. Johns (1991) argues that

> the use of the concordancer can have a considerable influence on the process of language learning, stimulating enquiry and speculation on the part of the learner, and helping the learner also to develop the ability to see patterning in the target language and to form generalisations to account for that patterning. (Johns 1991: 3)

The Internet has brought many corpora and dedicated tools within reach of translation teachers and learners. However, a typical criticism is still that many of them require considerable investment in terms of training for learners (and teachers) to understand the rationale and use them efficiently. Braun (2007: 308) claims that "most corpora were created as tools for linguistic research and not with pedagogical goals in mind" and hence most teachers and learners have difficulties in handing corpora that require vertical reading and data interpretation.

Intending to relieve language and translation teachers from longstanding and complex preparation of corpora and exercises with authentic texts, we endorse, by means of the SOURCe Project, the construction of simple, online corpora. The advantages offered are basic text-searching and concordance-based exercises that can prove sufficient in designing relevant tasks for language and translation learners or independent researchers. Therefore, machine-based annotated, parsed or tagged corpora can be avoided, as their use would be more suitable for linguistic research, and less so for language acquisition.

Additionally, the user may select the appropriate and relevant texts, topics and material available via the project's interface. Our intention is to use corpus data in order to bring together texts and people whose opinions are separated by time and space; also, to familiarize language learners with different registers and genres (Biber 1993). The corpora provided could be used for comparative studies of different language models (at this stage of the project, French and Greek) and the exploration of discourse features by both instructors and learners. This creates the potential for adjustment to the learner's language ability, goals and interests. Authentic texts

provide learners with real-life examples and prepare them for situations of real-life language use; "if learners find such texts fascinating and a challenge to the imagination then what is relevant is not the texts' claim to be real samples of the language, but their claim to be more socially and culturally engaging" (McCarthy 2001: 138).

The SOURCe Project aspires not only to establish the use and construction of corpora for translation studies but also to contribute to the enhancement of Data-Driven Learning (DDL) in Greece. DDL has proved to be a trendsetting approach in language teaching and learning. Johns and King (1991: 3) define DDL as "the use in the classroom of computer-generated concordances to get students to explore the regularities of patterning in the target language, and the development of activities and exercises based on concordance output." DDL could also be applied in translator training. Data-driven corpus consultation contributes to raising translators' awareness of certain translation-related issues and to developing their searching and technical competence. According to Mishan (2004), "the key feature of the methodology is this 'aura' of research, and this research agenda is what gives the sense of authenticity". In addition, "the rapid spread of computers has been spurred on by intensive development in the field of computer technology and the advent of the internet. Computers have gradually become an indispensable means of language teaching and the sub-discipline of computer-assisted language learning (CALL) has emerged" (Chapelle 2001).

3. The SOURCe Corpus, its parallel search engine and concordancer

In 2012, the SOURCe Project began as a collection of parallel corpora, that is, a set of original and translated texts aligned at sentence level (Sinclair and Ball 1996), in French and Greek (Kakoyianni-Doa and Tziafa 2013). The project focused on corpora, since it has been proven that the use of corpora in foreign language learning can be extremely effective (Hadley 2002, Landure and Boulton 2010). What is more, as Kilgarriff (2009: 6) points out, parallel corpora are easier to be disguised as dictionaries and be brought for use in the classroom. As Frérot (2016: 37) suggests, "introducing corpora and concordancers in the classroom has been highly encouraged in order to raise student awareness of language differences, provide students with authentic linguistic material and enhance their translations by providing accurate and

idiomatic words and phrases unlikely to be found in more traditional resources" (e.g. Bernardini 2015, Bowker and Pearson 2002, Varantola 2003, Zanettin 2002).
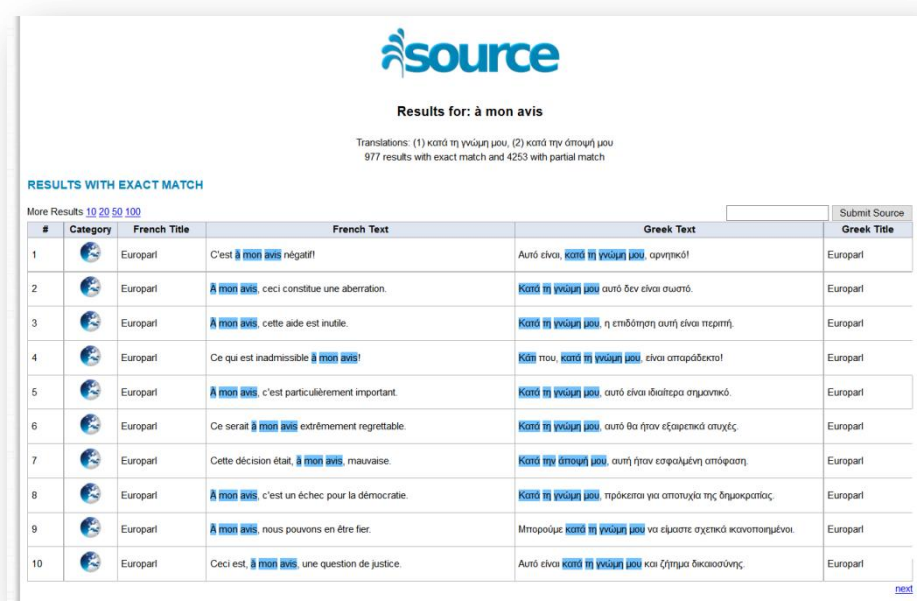
The SOURCe Corpus is designed with "a simple interface, through which the user may search existing corpora, upload texts, and see them online" (Kakoyianni, Tziafa and Naskos 2016) with the intention to introduce the use of corpus linguistics tools to both teachers and language learners and assist its users. The Project is Operation System (OS) independent, and all the applications are web based. Java EE (Enterprise Edition) was used in order to support background applications and Apache Solr for indexing, as well as maximum speed in loading its initial page. The infrastructure is based on cloud technology, and the applications occupy three virtual machines (3 tier architecture). The tools for the front-end use javascript libraries and HTML 5. The technologies used (HTML5, javascript, JSP) are compatible with all known browsers (latest versions), on PCs and smartphones.

The translation inputs included in the SOURCe Corpus are based on human translations and not on machine translation. The corpus is diachronic, since it includes texts covering a time-period of six centuries, from the fifteenth to the twenty-first century. These texts derive from different domain-specific registers. This enables students to make comparisons of words and phrases in both languages and in different contexts (e.g., literary, educational, scientific or political discourse, technical language, etc.). A unique feature, that differentiates the SOURCe Corpus from any other publicly available parallel corpora is that it is possible to choose a specific register when using the search engine, while most parallel corpora are not register diversified. Five different registers are included, so that researchers, teachers and students can make comparisons of the use of each word, phrase or expression in different contexts, as mentioned above. However, journalistic texts are not included, due to copyright issues.

Therefore, we included parts of commonly used parallel corpora from the Opus corpus but we also included literary works available by Project Gutenberg and others that we have scanned. In general, the corpus consists of a fiction and a non-fiction part, which is an important feature, since fiction is rarely represented in most corpora. The corpus consists of 760.000 aligned phrases. In comparison to other free searchable online corpora, the texts are available in toto. In other online corpora, there often parallel sentences or excerpts only, available for copy and paste, but they are shuffled and out of context. In these corpora, there is also a limited representation of

the Greek language and the size of corpus is usually unknown (e.g. in Linguee or in Glosbe). In SOURCe Corpus the texts were carefully selected, based on their suitability for use in the classroom, and according to the design principles of the corpus. Other corpora do not specify their design principles, nor mention their creators, and consist of texts automatically harvested from the web (via web crawlers) and from already available parallel corpora like the OPUS project (Tiedemann 2012). In SOURCe Corpus, research can be conducted per register or in specific texts, while in other online corpora research can be conducted solely on the whole corpus.

The interface of the search engine was re-designed in 2014. New options are now available: the user may choose between seeing the translated texts, as results of the corpus search, displayed as full sentences (see Image 1) or in their context, as key words in context (KWIC) (see Image 2). The results are highlighted in blue in both the source-text and the target-text.

Image 1: Results display in parallel columns, in full sentences

Image 2: Keyword in context (KWIC) display in parallel rows

The collection includes commonly used parallel corpora like EUROPARL (Koehn 2005), the JRC Acquis corpus (Steinberger *et al.* 2006) and other corpora from the Opus open parallel corpus (Tiedemann 2012). Literary works in the public domain, available from Project Gutenberg, were added, along with literary works that we have scanned, mainly derived from the Severeios Library at Nicosia. The texts selected from the Gutenberg Project were aligned at sentence level, and the same procedure was applied to the scanned and digitized texts (French and Greek texts with their corresponding translations, both the original and the translations in the public domain). Searching with the SOURCe search engine generates useful statistics, available at the relevant section (see Images 3 and 4).
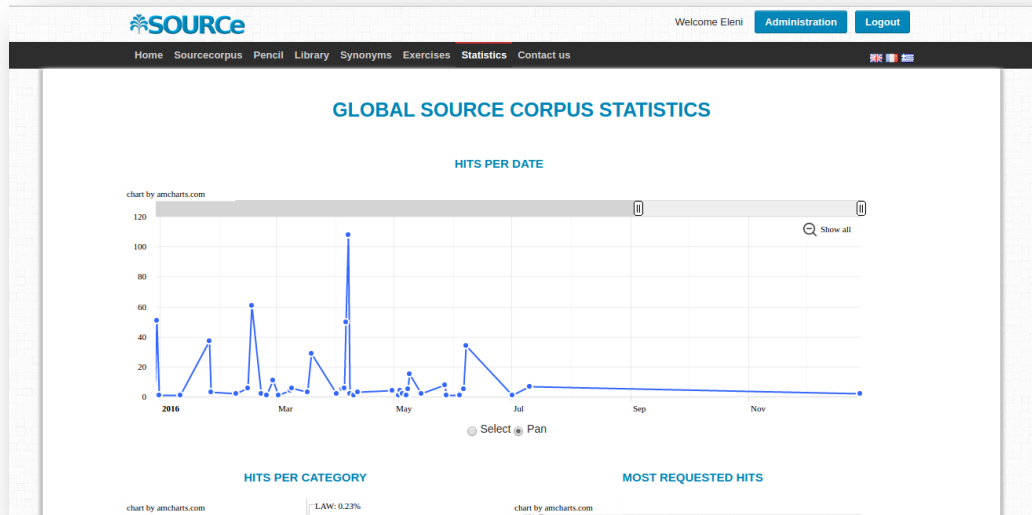
Image 3: SOURCe Corpus Statistics per date

Image 4: Source Corpus Statistics per category, most requested hits
and most requested titles

4. Supplementary tools and innovations added to SOURCe Project

The PENCIL tool (Pedagogy Enhancement through Corpora in Language learning, added in 2013, Kakoyianni-Doa, Antaris and Tziafa 2013) is a free, online, parallel corpus construction tool, a tool which enables translators, teachers and learners to upload and align their own texts, without needing any programming skills, giving

them the ability to create and customize web-based corpora. The interface of the Pencil tool is minimal and simple. The user may upload the French and the Greek texts separately (as .txt files), by clicking on just one upload button. The option to upload an already aligned text in excel form (.xls) also exists (see Image 5). The Pencil tool provides an easy 'drag and drop cells' feature in its interface (the ability to move around the cells using the mouse) that makes the whole procedure as easy as a game, a kind of puzzle. With Pencil tool we can conduct sentence alignment of texts and also easy correction and allocation of the sentences.
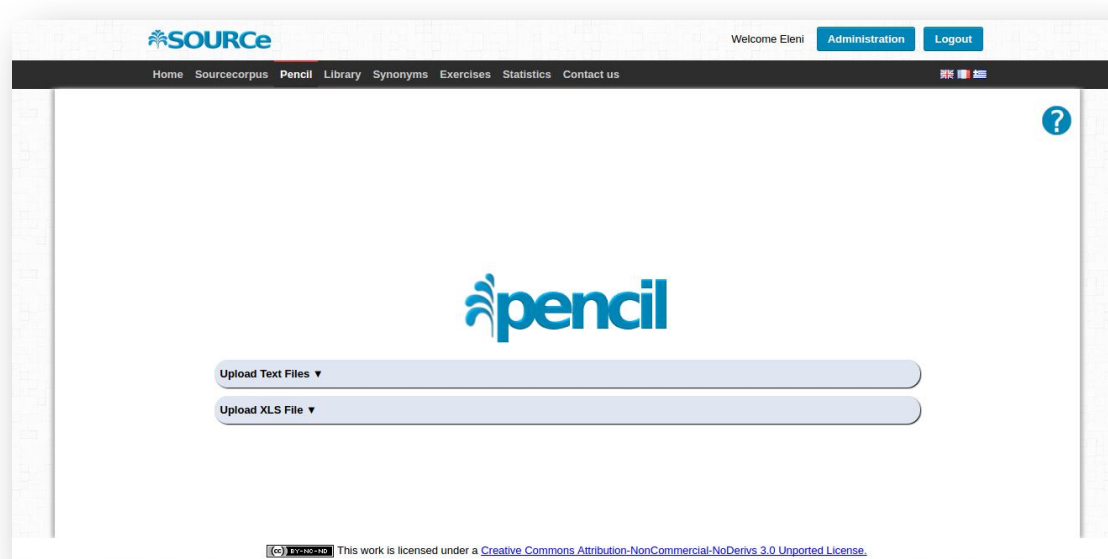
Image 5: The interface of the Pencil Tool

The Library utility was added to the SOURCe Project in 2014. In this section, the translator, teacher or the learner (after registration) can visit, browse, read or download texts included in the Source Project, individually in each language or as parallel texts (aligned at sentence level). In this part of the project the user may select the texts to be used in the classroom. The interface is simple and user-friendly, giving clickable access to the Source Project resources (see Image 6). The bookshelves form is familiar to translators, teachers and learners, and also to users of smartphones and tablets, where digital libraries are rapidly growing in popularity. By left clicking on a book, the text opens in a new window, as a default in a bilingual form, with aligned Greek and French sentences.

Image 6: The interface of the Library Tool

Each shelf holds five books, and the size of the shelf remains stable, for maximum visibility, even for monitors smaller than 12 inches. The library itself is expandable: every time new books are added b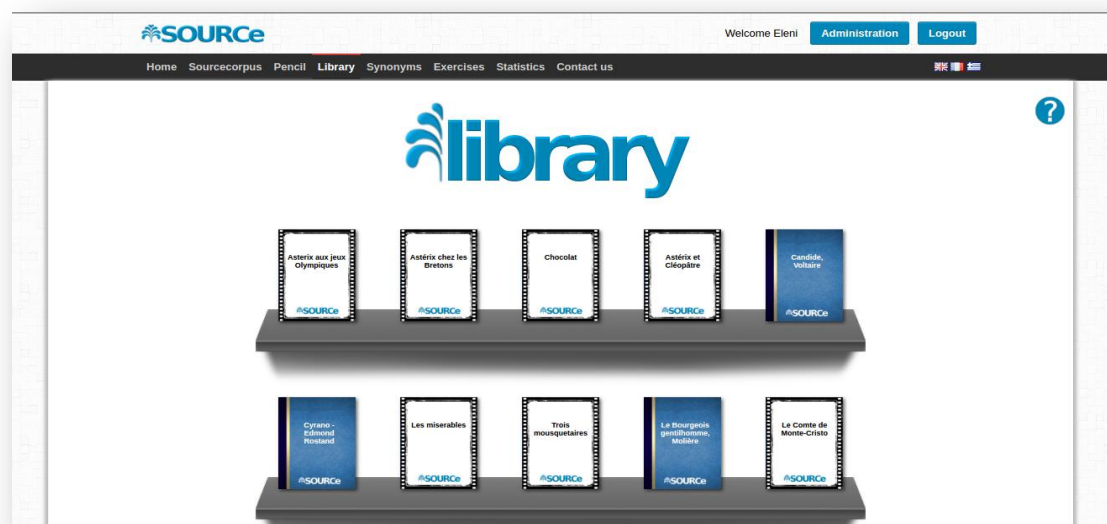y the administrator, new shelves are created automatically. The titles on the book covers change when the page's language changes (from French to Greek and vice-versa). Upon mouse-over, the book becomes larger to increase visibility of the title. Books are in alphabetical order, for easier searching.

The Synonyms tool (see Image 7), a tool added to the Project in 2015, allows one to automatically search for synonymous words or phrases based on their identical or similar translation, as found in corpora. The synonyms are generated automatically, based on NLP procedures. It is an original and innovative tool, used for the first time as a corpus linguistics tool. The results provided can be easily edited by the administrators (see Image 8). Synonyms is a quick way to expand one's vocabulary. In academic writing, but also in translation, it is essential to have new topics and research clearly presented. The Synonyms tool does not only provide simple lists of synonyms in both languages (French and Greek), but also the ability to look up each one of the proposed synonyms in the corpus with a simple click on the image of a magnifying glass on the right side of the synonym. This helps the user to refer back to the corpora and find out their different uses and collocations, thus gaining a better understanding of their function in a sentence.
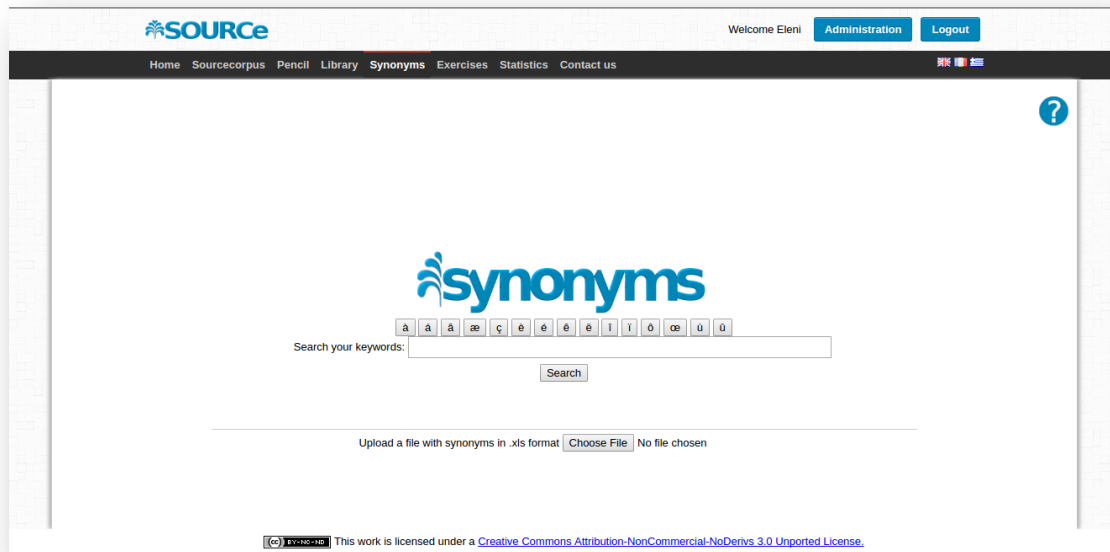
Image 7: The Synonyms Search Engine
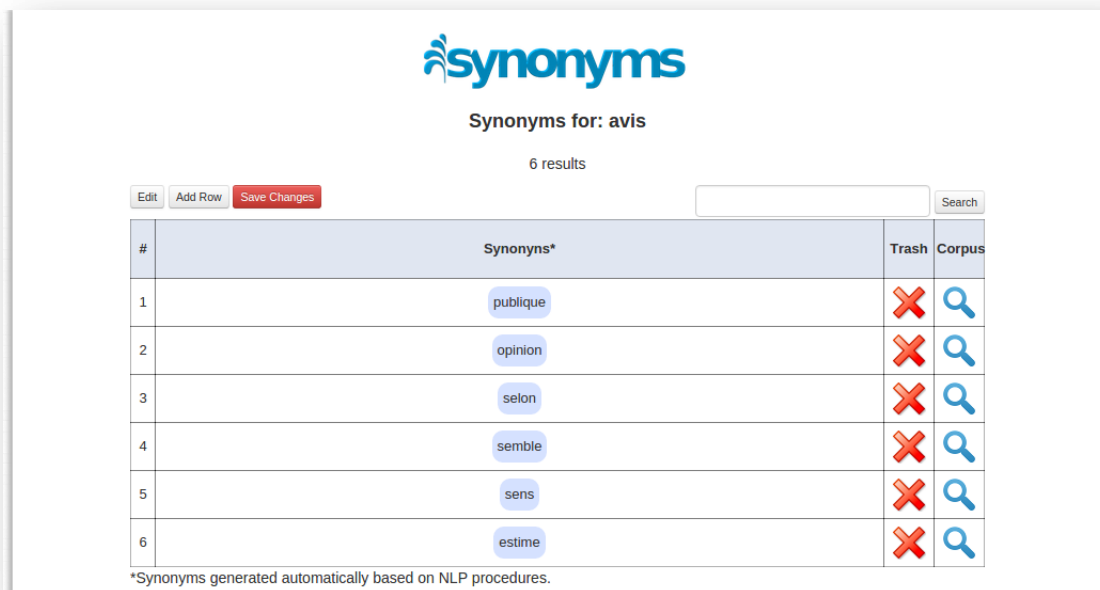
Image 8: Editing the results provided by the Synonyms tool

The Exercises, a tool added to the Project in 2016 (Kakoyianni-Doa, Tziafa and Naskos 2016), offers the same experience as the Hot Potatoes software, but online; its main feature is that teachers have the option to generate both online activities and/or print out paper-based worksheets. The texts may include all the different registers and topics of the project. The exercise types include multiple choice, word, phrase or

sentence matching, filling in the gaps with missing words/phrases, text reconstruction, listening, etc. In the main interface (see Image 9) the user can find a list of pre-existing, ready-made exercises. For the user with teacher or administrator rights, there are buttons allowing the creation of new exercises. When the user is a student, there are buttons to filter the listed exercises in the table according to the exercise type. The users can edit the French or Greek part or both, which provides scalable difficulty levels.
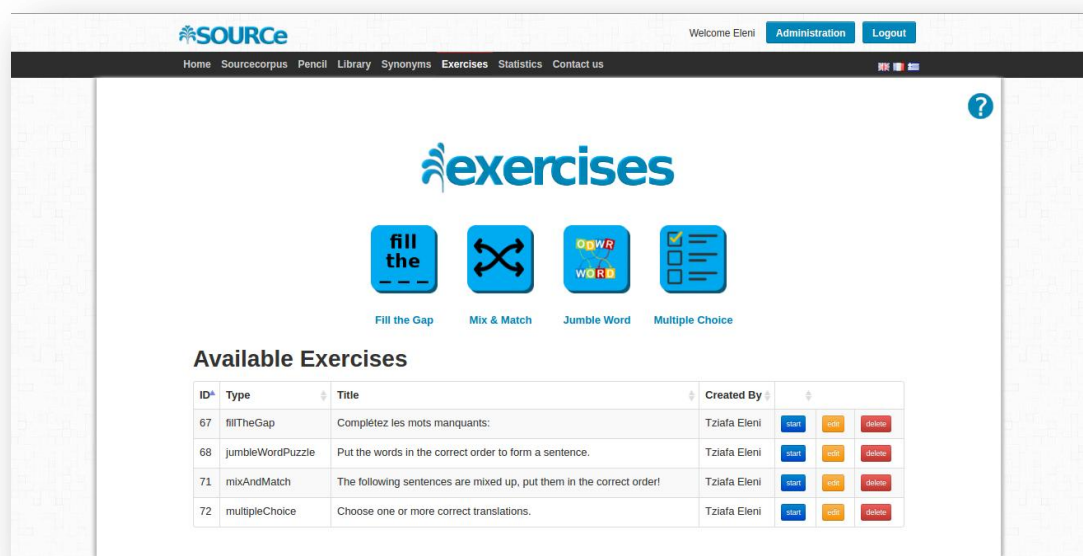
Image 9: Interface of the Exercises Tool

All exercises lead to a common interface (see Image 10), providing the title of the exercise (in French and Greek), and a short description. A handy feature is the automated text selection: the user has the option to have texts retrieved from the parallel corpora collection with the click of a button. There are two options for the exercises: they can be solved either online or printed and distributed in the classroom.

Image 10: Creating an Exercise via the form

To create a gap the user has to select a word and click on the gap button (see Image 11). A dialogue opens and prompts the user to provide a hint about the hidden word and alternative words that will be considered correct. Saving the gap produces a highlighted word and disables the editing capability of the cell that contains the gap.

Image 11: Fill the Gap exercise creation

In "Jumble words" (see Image 12), they user may change word orders in a sentence by clicking on the "Jumble French/Greek" button. A dialogue is shown where the user can change the order of the words manually or by clicking on the "Jumble Words" button, which automatically and randomly changes the order of the words. A reset option is offered to reset the words to the original order. The jumbled sentence is saved in the background and can be accessed by pressing the same "Jumble French/Greek" button. The user can click on the "Display Solution" button to display the correct answers (see Image 13) or on the "Check Result" button to check the given answers and obtain a score (see Image 14).
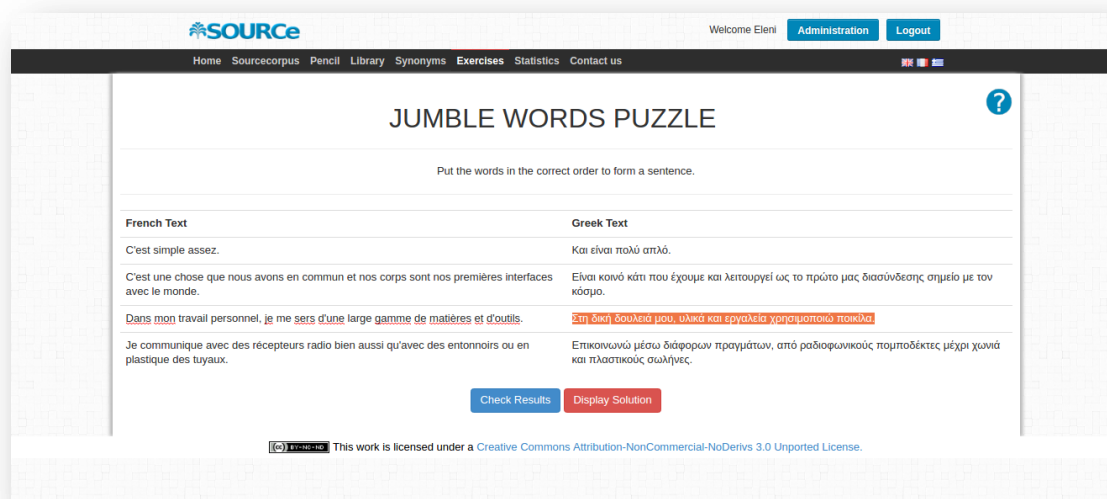
Image 12: Jumble words exercise
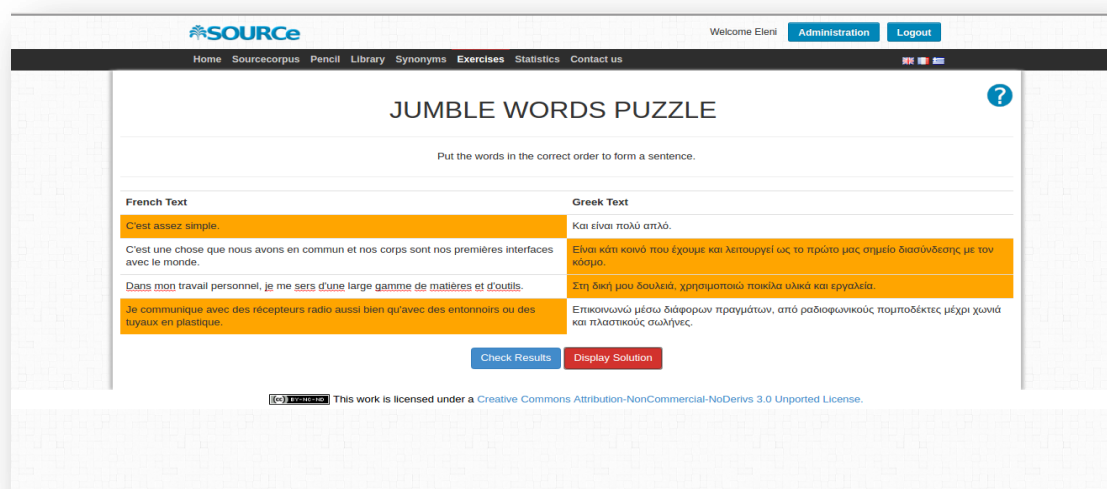
Image 13: Correct answers in a Jumble words exercise
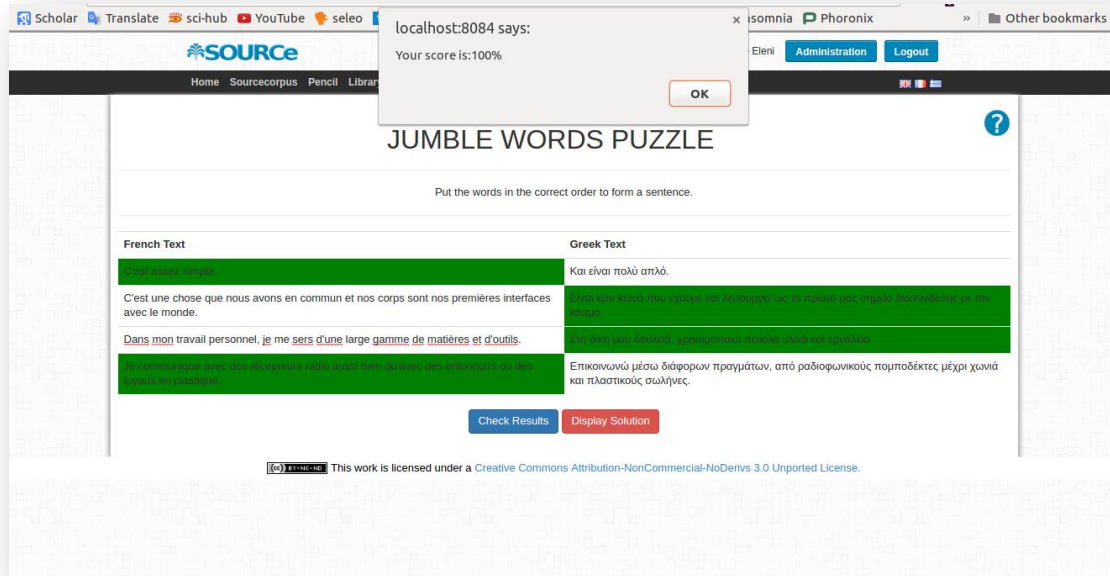
Image 14: Check results and obtain a score in a Jumble words exercise

In a Mix and Match exercise (see Image 15), the user can edit the automatically selected text or upload his/her own. An option is offered at the bottom of the page to specify the shuffling of the sentences. The available options are 1) Randomize all, 2) Randomize French or Randomize Greek (separately) to shuffle the relevant sentences.
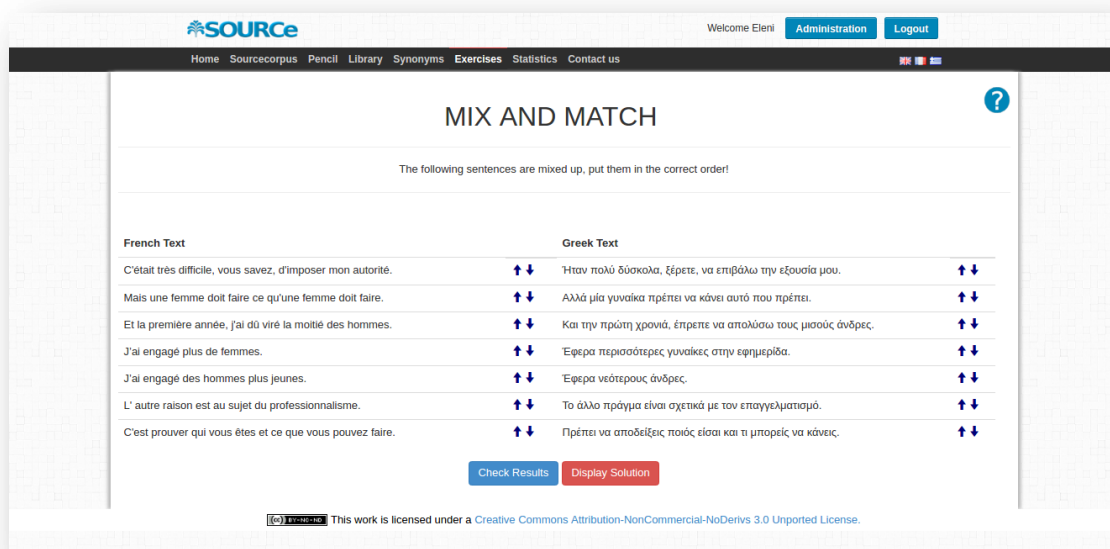
Image 15: A Mix & Match exercise

An audio file can be added to all types of exercises, in order to produce more relevant tasks, such as a listening exercise. The user has the option to select an audio file (MP3, OGG or WAV) and can also set the number of the permitted replays (the teacher may set 0 for unlimited replays).

5. Future perspectives

This paper presents an overview of a corpus based on a less diffused and less resourced language, such as Greek, which was developed during the past eight years. It is accompanied by simple instructions for several educational tools, corpus-based learning activities and interactive exercises as well as audiovisual material. It is designed to give users the freedom to use it, share it or modify it for their own needs, but, above all, to enable them to study languages and translation. Its innovative features, combined with a new perspective of accessing translation and educational data, provide a new tool for promoting data-driven education and translation research.

Despite the obvious potential uses in language acquisition of NLP tools and resources, it is a well-known problem that they do not find their way into the language learning classroom. In order to overcome this obstacle, the main objective of the SOURCE project is to provide ready-made corpora and corpus-based exercises to language teachers and learners alike. Many exercise generators are indeed available, nonetheless they apply mostly in high-resourced languages, such as English, or in monolingual texts, most of which are not freely available. Therefore, the objective of this project is to enhance the use of corpora in the classroom, but also to create and make available valuable resources, especially for less resourced languages (Greek among them). Resources and content need to be more relevant, interactive and easy to use.

The next step in this research is the construction of the TARGET Project (as described in Tziafa *et al.* 2018), an electronic corpus of translation discourse, consisting of both translated texts, parallel texts with their originals, and texts on translation. The project aims at providing a set of corpora as a linguistic and pedagogical resource for translation studies and translator training, covering all aspects of translation discourse: texts translated into Greek, parallel texts with their originals in a variety of source European languages (English, French, German, Italian, Spanish, Portuguese, and so on), as well as theoretical texts on translation and all

kinds of paratext. A broad range of studies can be pursued in the area of translation, in order to address a variety of issues pertaining to theory, description, and the practice of translation (Laviosa 2010: 83). The TARGET Project may also give insight into how we relate to other societies and cultures through literature, by providing a better understanding of our language and its history and by contributing to enhancing cultural preservation and enrichment.

Corpora in translation studies can lead to important insights in comparative studies by investigating differences between originals and translations, providing valuable insight into the history of translation and literature, as well as investigating changes occurring over the course of time in stylistics and semantics.

If the TARGET Project is to be maintained and expanded on a long-term basis, openness and dynamic operation would be its two key features. We ultimately aspire, with the help of a community of contributors, to achieve a sizable collection of re-usable empirical data for language and translation research within the framework of Data Driven Learning which will enrich the experience of all its users – teachers, translators and students.

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