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**María José Domínguez Vázquez, Mónica Mirazo Balsa and Carlos Valcárcel Riveiro (Eds.).** *Studies on Multilingual Lexicography*. Lexicographica. Series Maior 157. 2019, vi + 240 pp. ISBN 978-3-11-060467-2, ISSN 0175-9264. Berlin/Boston: Walter de Gruyter. Price: €99.95.

The current globalization and advancement of Information Communication Technology (ICT) have led to more frequent cultural and personal exchanges across the globe than ever before. Therefore, the issue of multilingualism has become prominent. Ruiz de Zarobe and Ruiz de Zarobe (2015) argue that multilingualism is becoming one of the core issues of current communities. Cenoz (2013) points out that "multilingualism nowadays is a very common phenomenon all over the world, ... it's an every reality in cities today". Responding to these new "social situations", this book, *Studies on Multilingual Lexicography*, brings together a series of articles on the development of multilingual e-dictionaries and terminological works influenced by digital technology progress in the era of the Internet. Under the guideline that "the role of the dictionary must necessarily be related to social development and changes" (p. 1) and the core principle offered and exemplified by the volume "that a dictionary should be compiled to satisfy the real needs that the real people experience in real life situations" (p. 30), the primary goal of this volume is to explore ways to meet the needs of new types of dictionary users both from theoretical and practical perspectives. Until now, few works in the field of lexicography have been attempted on multilingual lexicography in the digital age, except volumes edited by Teubert (2007) and Boas (2009). However, Teubert focuses on how to compile multilingual parallel corpora, while Boas concentrates on how to develop multilingual FrameNets-based lexicographical databases. Therefore this is a timely and valuable work for those who want to understand the latest developments in multilingual dictionaries in the digital age.

Beginning with an introduction by the editors, the volume consists of two sections: the first three chapters form section I which focuses on the theoretical perspective of multilingual lexicography concerning the influence of information technology and the emergence of new types of dictionary users; the rest of the chapters comprise section II which centres on practical aspects and is exemplified by current available multilingual electronic dictionaries including various projects and tools.

Fuertes-Olivera and Bergenholtz in chapter 1 offer a new definition of multilingual lexicography in the era of the Internet and illustrate the definition with their accounting dictionaries (p. 27 and p. 28). They argue that the new concept of multilingual lexicography should be based on a "holistic approach", in which three core lexicographical elements (users, lexicographical data and access routes) need to be interconnected. An in-depth review of traditional online multilingual dictionaries (*InterActive Terminology for Europe*, *Logos Dictionary*, and *Diccionari de la Llengua Catalana Multilingüe*) indicates that the traditional concept of multilingual lexicography is erroneous. Problems such as

the lack of conceptualization before compiling, limited data types, and a failure to take a "holistic approach" into consideration are underlined. Reflecting on a business model of publishing houses in the Internet era, the core and specifics of lexicography, they propose a new definition of multilingual lexicography and illustrate it in great length by their accounting dictionaries. Through the new definition, they suggest the thought-provoking concept of a "dynamic dictionary", in which multilingual lexicography should be a flexible and integrated information tool. The online dictionary should be sold as "an on-going service, not as a finished product" (p. 20).

In the following chapter, Gouws deals with the challenges posed for lexicography by the information age in the light of dictionary planning and compiling, and the user's referential skills. With a brief review of "watershed moments" in the English lexicographical history, he emphasizes the importance of the user-directed aim. He further points out the urgency of formulating lexicographical theory in the Internet era and suggests that a sound theory should negotiate the societal dictionary culture, users' needs and users' referential skills. He also highlights the close relationship between lexicography and society and proposes the concept of an "emerging e-society". Then, taking the lexicographical landscape in South Africa as an example, he elaborates on how to establish a comprehensive dictionary culture and how to respond to dictionary users' needs. Additionally, he suggests that the mobile phone could be an ideal lexicographical medium for young learners and illustrates this with a pilot project (MobiLex). Overall, what Gouws emphasizes in this chapter is the situating of the planning and compiling of a dictionary in a larger social context by bringing the new generation of dictionary users into the foreground.

Tarp's chapter entitled "A Dangerous Cocktail: Databases, Information Techniques and Lack of Vision", discusses the challenges to lexicography posed by the current Information Communication Technologies (ICTs) and explains why the combination of new technology and lack of vision could be "a dangerous cocktail". He points out that current lexicography is full of paradoxes and argues that it is lexicographers' lack of vision and reluctance to enhance the opportunities afforded by technology that led to a series of problems. He further explains the disagreement on the disciplinary status and the existence of a possible theory within the circle of lexicography which resulted in the current paradoxes. To address these problems, he explicates how to conduct a dictionary project step by step based on his function theory under the auspices of current available technology. As a strong advocate of lexicographical theory, Tarp offers insightful ideas on how dictionary functions are closely connected with external lexicographical factors such as social situations. Although it is still a controversial issue whether lexicography needs or has a theory, it would be more than welcome if further elaboration on the integration and compatibility can be made between lexicographical theory and theories from other fields such as linguistics and terminology.

Batiukova and De Miguel in chapter 4 present the theoretical project *Multilingual Electronic Dictionary of Motion Verbs* (DICEMTO) and outline its theoretical foundations. The study is motivated by the proliferation of senses of motion verbs in traditional dictionaries, which the authors think is undesirable both in theory and practice. Using the theory of the Generative Lexicon (GL), they believe that a set of lexical-semantic features (Argument Structure, Thematic Structure, Event Structure and Qualia Structure) and a generative mechanism can determine a word's context and its meaning extension. Therefore they argue that a GL-based definition model is not only an important solution for the traditional dictionary definition, but that it can also extend the meaning to real-world knowledge. They use the Spanish "andar" as a meta-entry to instantiate how to improve or optimize the lexicographical meaning representation. They further demonstrate how the design of a dictionary can "reconcile theoretical exhaustiveness and user-friendliness" by presenting two modules (Minimal definition and Lexical entry) to meet users' different needs. Without doubt, the chapter offers an innovative way for dictionary definitions, which will enhance the understanding of the syntactic features of polysemous words for those dictionary users who have a linguistic background. To exploit its full potential, the need to increase its accessibility for those without a linguistic background may still warrant further investigation.

Calvi and López's chapter present two lexicographical works *Linguaturismo* and *Dictionary of Food and Nutrition* (DFN) and demonstrate how the text genre-based approach can be applied to improve the compilation of electronic terminological works in the age of the Internet. As ICT renders both opportunities and challenges for the publishing house, lexicographer and terminologist, the authors stress the importance of collaboration among them. In the case of *Linguaturismo*, they convincingly show the feasibility and advantage of the genre-based approach with the help of a corpus in compiling a bilingual terminology glossary both in theory and practice. The successful use of a genre-based approach in *Linguaturismo* theoretically paved the way for the development of the multilingual DFN. Although particular problems such as lack of equivalence, difficulty in demarcation, and diatopic variation in certain domains may appear in compiling practice, the authors have proved that these can be solved by lexicographical-based approaches. Overall, the authors propose the adoption of the text genre-based approach with the help of a corpus and the integration of a lexicographical and terminological approach could be the solution for user-oriented lexicography. Moreover, the authors suggest this promising methodological approach can in future be further applied to discursive practices of specialists in other fields. In addition, they note the contribution of ICT-enabled multilingual lexicography in the era of the Internet.

To better address translator's needs, Pastor and Durán-Muñoz present *Inteliterm* in the following chapter, which aims at enhancing translation results and minimizing translators' efforts when searching for terminology. Under De Schryver's proposal (2009) and Nielsen's principles of LSP lexicography (2018: 71),

they point out that, although preliminary improvement has been made, the current intelligent dictionaries neglect specific user groups and register-specific language use. To fill the gap, they stress the need to develop an agile and integrated tool which can address professional translators' needs in specialized communication. Thus they propose that the design of *Inteliterm* should have a modular and open structure that promotes users' performance through better access and improved results in translation. Three different modules (term search, a corpus management tool and a terminology management tool) are described to show how effectively and dynamically user-friendliness and customization can be achieved. Furthermore, to prove the functionalities, the authors offer user evaluation and feedback by an empirical experiment. They also note further improvements according to the feedback, and new possibilities worth exploring.

Vázquez and Riveiro introduce the fundamental aspects of PORTLEX, a noun phrase multilingual online dictionary, which is built on valency grammar. One defining feature the authors highlight is that PORTLEX is the result of collaborative work, not only by a team of specialists, professionals and students, but also a semi-collaborative dictionary in which users can add content under supervision of the editing team. The authors also explain why it is collaborative in the light of different stages of development for a time span of 10 years. Moreover, great innovation is made by exploring how to represent noun valency in multilingual lexicography. They further exemplify the new concept of multilingual lexicography by other features such as cross-lingual and collaborative ongoing updating. Additionally, they offer inspiring discussions on how to satisfy different users' needs by developing a custom-made database and by designing adaptive search methods and visualization.

In chapter 6, the authors Durán-Muñoz and Pastor again discuss translators' needs, but this chapter highlights the advantages of the combination of corpora and e-resources by delving into the translators' needs in different translation phases, and offers a thorough overview of current corpus-based multilingual e-resources for translators. Under the proposal of "access to database through targeted search" (Fuertes-Olivera and Nielsen 2012), they examine translators' different needs in three different stages of translation and elucidate how the use of corpora can be important tools for translators for their source and pragmatic information affordances. However, surveys they cite show that few professional translators use corpus tools. To raise translators' awareness of using corpora, a broad overview of the different types of corpus management tools with in-depth analysis is presented, including free web-researchable online corpora, corpus-based web crawlers, web-based translation memories, and e-dictionaries with access to corpora. Moreover, the authors stress the importance of corpora training for translators, and the need to develop corpora of specialized domains to satisfy translators' specialized needs.

In the next chapter, Guinovart and Portela outline the development of a WordNet-based multilingual lexical ontology project for Galician-Galnet and

describe its applications in the fields of terminology acquisition and ontology learning. As Natural Language Processing plays an increasingly important role in this information age, revolutionary changes have taken place in the compiling and using of lexicography and terminology. The need for exploring the computational representation of lexical information that can be automatically processed by computer has become a pressing issue. The authors believe that the construction of a lexical ontology can be a practical and suitable solution for this problem, even for the development of a multilingual database like the Multilingual Central Repository (MCR). Through the project Galnet, the authors not only introduce the development and functions of a WordNet-based lexical ontology, but also demonstrate how the significant result and valuable information can be generated by Termonet in terminology learning under the guidance of a communicative theory of terminology. Moreover, in ontology learning, they prove how a new semantic categorization (epinonym) can be obtained automatically to explore the terminological implications between synsets, and how to build a web application to verify the Galician variants in specialized corpora by extracting all the variants of a category from other ontologies.

In the next chapter, Martínez and Varela present the steps taken to design and compile a multilingual terminological dictionary of language teaching and learning for a Spanish readership. They justify how the need for contextualized information from a local perspective becomes the actual starting-point of dictionary compilation. They also demonstrate how to make smart decisions before and during compiling from the angles of scope and content, contextualized information, targeted users, and the source used. Moreover, they explain how the content should be structured and presented in a user-friendly way. As the current edition is just a print one, they note the need to develop an online version in future. Thought-provoking ideas are offered for compiling a user-oriented terminological dictionary. However, the authors do not mention whether corpus tools or techniques are used. The compiling process would be more streamlined if corpus tools or techniques are employed in the data-selecting.

The last chapter by Taborek illustrates the conception and compilation of a multilingual LSP dictionary with the dictionary of football language *Wörterbuch der Fußballsprache* (WFS) as an example. He explains how the specific types of extra-lexicographical situation and the growing appeal for a multilingual dictionary of football, resulted in the motivation for compiling the multilingual football dictionary. He further showcases how to present the frame structure (front matter, main part and back matter), the macrostructure (lemma selection, base form and multi-word units), and the microstructure. In particular, he touches upon a number of thorny issues in the design of the microstructure. Questions such as how to present multi-word units, how to deal with ambiguity, and how to present grammatical properties in the example sentences are explained in detail. Readers may benefit a lot on how to compile a print multilingual dictionary. However, some readers may still wonder how to adapt

these techniques to the developing of a digital one. Therefore, it would be of more interest to readers if suggestions for developing of a similar online dictionary in the age of the Internet could be provided.

Overall, this book brings together a number of insightful researches on the multilingual electronic dictionary in this increasingly digital and multilingual world. Previously, few studies have touched on these particular topics. Teubert's volume (2007), adopting the bottom-up approach, looks into the compilation of corpus-based multilingual resources, whereas the volume edited by Boas (2009) describes the methods and applications of how to use frame semantics in multilingual lexicography. However, the studies in these collections specifically concentrate on computational lexicography with a strong focus on the construction of a multilingual FrameNet. With technological strides made in recent years, dictionary-making faces new challenges both theoretical and practical. Taking into consideration all these changes, this book offers illuminating ideas on how to address the current challenges both from a theoretical and practical perspective, giving examples of various dictionary projects and tools. However, users' experience is rarely mentioned in most contributions in this collection. As Hartmann (2001) underlines that dictionary use is one of the key perspectives in lexicography, the majority of researchers in this book do design their dictionaries with user situations and targeted users in mind, but few studies validate their claim with experimental data or answer the question to what extent users' needs and expectations are satisfied, except that conducted by Pastor and Durán-Muñoz. Of course, to some extent, the absence of verification of users' experience is understandable as tools in some of these digital multilingual projects are still in their testing phase.

To sum up, even if this volume still needs improvement with regard to the user's experience, it has already updated and contributed much to our understanding of multilingual lexicography in the digital age. The following points are worth special mentioning. Firstly, the new definition that dictionaries should be flexible and integrated information tools that are no longer to be sold as finished products but as ongoing services would turn the traditional static view of dictionary-making into a dynamic continuous process. This definition could better reflect the current dictionary-making reality in the increasingly digital age. Secondly, the view proposed by this book that lexicographical tools should deal not only with words, but also with terms, facts, and things could integrate the research on lexicography and terminology, also expanding the research scope of lexicography in the Internet age. Thirdly, with the ongoing digital revolution of lexicography in the emerging e-societies, the book highlights that the needs and reference skills of a new generation of users are worth special exploration. Lastly, the various types of multilingual tools and projects which are based on various linguistic theories and target different users can be presented as good examples to follow both for interested dictionary researchers and dictionary-makers.

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