

Building a Paralympic, Frame-based Dictionary – Towards an Inclusive Design for *Dicionário Paraolímpico* (Unisinos/Brazil)

Chishman R.¹, da Silva B.^{1,2}, Nardes dos Santos A.¹, Vianna A.L.T.¹, de Oliveira S.¹, Martins M.L.¹, de Schryver G-M.^{2,3}

¹ Applied Linguistics Graduation Program, Unisinos University, São Leopoldo, Brazil

² Department of Languages and Cultures, Ghent University, Ghent, Belgium

³ Department of African Languages, University of Pretoria, Pretoria, South Africa

rove@unisinos.br, bruna.dasilva@UGent.be, aline.nardes@gmail.com, alvianna@edu.unisinos.br, sandra_san05@hotmail.com, mikaelalm@edu.unisinos.br, gillesmaurice.deschryver@UGent.be

Abstract

This paper presents some theoretical and methodological issues emanating from the building of *Dicionário Paraolímpico* (Paralympic Dictionary), an online lexicographical resource that will describe the lexicon of Paralympic sports in Portuguese and English, structured according to the notion of semantic frame. It follows the lead of previous works published by the SemanTec research group (Unisinos/Brazil), such as *Dicionário Olímpico* (Olympic Dictionary, 2016). For the current project, some features from the previous works were kept, such as the basic microstructure of scenarios and the megastructure. There are, however, significant changes to be introduced in the Paralympic Dictionary. Some of them are the result of the Olympic Dictionary's revision, and address issues such as content multiplicity of the sport and scenario definitions, and the absence of relevant information in the microstructure of lexical units. In addition, some of the changes concern the features that distinguish the Paralympic Dictionary from the Olympic Dictionary, since Paralympic sports have specific frames. Another important issue to be addressed refers to the accessibility of the dictionary itself by people with disabilities. After discussing these issues, the paper concludes by outlining future plans, including further developments for the Paralympic Dictionary and its broader implications in the context of the SemanTec research group.

Keywords: Paralympic Dictionary; Frame Semantics; inclusive lexicography

1 Introduction

Language and culture always went hand in hand within the context of Frame Semantics. Since the first versions of this framework, Charles Fillmore (1976: 26) has stated that the meaning of a word can be described in terms of the activation of a frame, that is, “an associated cognitive schema current in the speech community, which this word activates”. Moreover, considering the role of dictionaries as cultural institutions that reflect social conceptualizations, the challenging task of compiling a domain-specific dictionary includes the in-depth exploration and description of the specific domain. This is one of the reasons Frame Semantics has contributed to practical lexicography, since a word or lexical unit that evokes a domain-specific context, in a frame-based dictionary, “will be linked with the cognitive structures (or ‘frames’), knowledge of which is presupposed for the concepts encoded by the words” (Fillmore & Atkins 1992: 75).

The results of previous studies conducted by the SemanTec (Semantics & Technology) research group have shown the effective convergence between Frame Semantics and lexicography for the purpose of describing the lexicon of sports (Chishman et al. 2015, 2017, 2019). More recently, the group has been working on the compilation of the *Dicionário Paraolímpico* (Paralympic Dictionary), a dictionary of the Paralympic sports that is currently under development. This project has brought new challenges not only related to the specific domain and the resulting particularity of its frames, but also concerning the design of a dictionary that, more than describing Paralympic sports, aims to be accessible to the ones who are part of such domain – e.g., Paralympic athletes, whose special needs have to be considered in order to propose an inclusive design for the dictionary. Considering such challenges, this paper presents some theoretical and methodological issues brought about by the building of the Paralympic Dictionary.

Our paper is structured as follows. Section 2 provides some background to the development of the *Dicionário Olímpico* (Olympic Dictionary), whose main structure will serve as a base for the compilation of the Paralympic Dictionary. Section 3 describes some of the challenges faced by the editors in the ongoing lexicographic description of the Paralympic sports, including domain-specific frames that have emerged from the corpus. Section 4 discusses some issues regarding the accessibility of the dictionary itself. Finally, Section 5 offers some conclusions and plans for future research and development of the Paralympic Dictionary.

2 Frame Semantics and its Lexicographic Application within the Context of the SemanTec Research Group

The SemanTec research group has specialized in compiling frame-based dictionaries of sports since the launching of the Field – Football Expressions Dictionary (<http://dicionariofield.com.br>), a trilingual resource (in English, Spanish, and Portuguese), and Olympic Dictionary (<http://www.dicionarioolimpico.com.br/>), a Portuguese-English dictionary of Olympic sports developed within the context of the 2016 Summer Olympic Games. For the current project, the Paralympic Dictionary, some features from the previous works were kept, such as the basic microstructure of scenarios used in Field; and the megastructure employed in the Olympic Dictionary. In this regard, since the Paralympic Games follow the general structure of the Olympic Games, which results in some convergences between the description of Olympic Dictionary’s and Paralympic Dictionary’s frames and lexical units, the main features of Olympic Dictionary are first presented.

2.1 Background to Olympic Dictionary’s Lexicographic Structure

The Olympic Dictionary is a lexicographic resource which describes the lexicon of the 40 Summer Olympic sports. On the Olympic Dictionary homepage (see Figure 1), each sport has a corresponding icon through which users can access the first level of information: the superframe. On this page (see Figure 2), there is a general written description of the sport (called supergloss), a conceptual map, the list of words and scenarios, a corresponding image, and a trivia section. The next level (see Figure 3) corresponds to the description of each frame – called ‘scenario’ in the dictionary. In addition to a description of the frame (i.e., a gloss), users have access to an image of the respective frame, a list of words corresponding to the frame-evokers, a conceptual map that illustrates frame relations with other scenarios and words, and a list of related scenarios. Finally, on the last level (see Figure 4), information concerning each lexical unit is provided: grammatical category, link to the corresponding frame, synonyms or variants, English translation equivalent, one example (in English), and a list of words that evoke the same frame.



Figure 1: Olympic Dictionary’s homepage.



Figure 2: Superframe/Sport level.

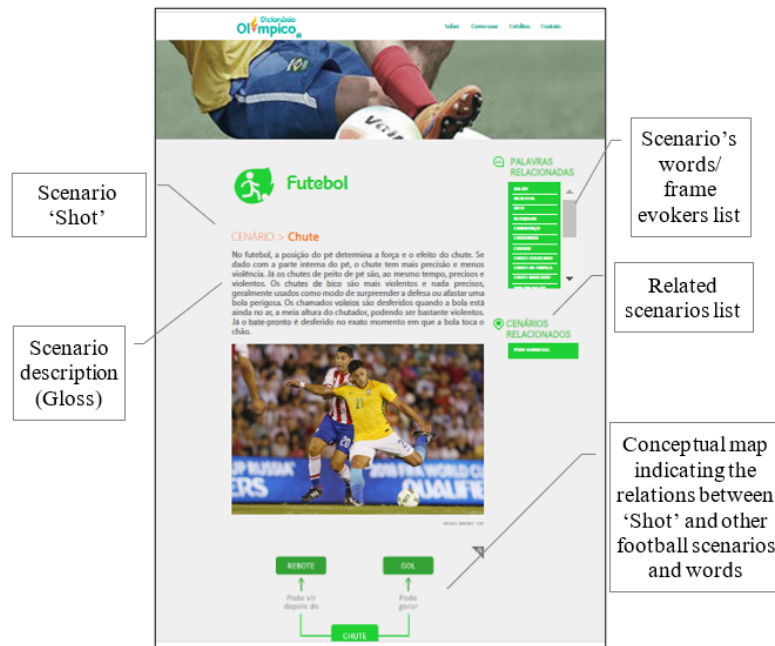


Figure 3: Frame/Scenario level.



Figure 4: Lexical unit/Word level.

2.2 Olympic Dictionary's Revision and its Impact on Paralympic Dictionary

Recently, a process of revising the Olympic Dictionary was initiated in order to reflect on the enhancement of the dictionary. This work has provided the initial basis for planning the Paralympic Dictionary, since it can be considered an extension of the Olympic Dictionary. Therefore, we shall now address the main issues identified during this review, in order to determine the starting point for the development of the Paralympic Dictionary. Among these issues are: (i) aspects related to the elements of sports description and (ii) aspects related to the tool's design.

With regard to the set of elements in Portuguese which fulfil the function of describing sports, the need to include examples and word definitions was identified. Such inclusions concern the purpose for which the dictionary is used (cf. Atkins & Rundell 2008: 25) and would lead to a different lexicographic design of the dictionary at the word level. Currently, it cannot be said that the microstructure of the word provides the necessary elements for decoding (since the absence of word definitions compromises the understanding of the meaning) nor for encoding (since, to be able to use the word, the user would additionally need to have access to examples). In the planning of the Paralympic Dictionary, the inclusion of these elements is now foreseen. Regarding the elements in English available only in the microstructure of the word (translation equivalents and examples), some inconsistencies stand out. Firstly, it must be stated that, in a frame-based dictionary, words and scenarios share a similar status of meaning description, for it is from their combination that the definition is established

(double-decker definitions). Therefore, there is an interdependent relationship between these elements (cf. Fillmore 2003). A different treatment for words, in the sense of presenting or omitting elements, is not justified or seems inconsistent with the proposal for a frame-based dictionary. If the words are matched with translation equivalents, the scenarios (and, consequently, the sports) should as well. Secondly, the role that the elements in English play in the dictionary is not well defined when analysing such elements in isolation from the elements in Portuguese, since the equivalents and examples are not sufficient for the user to be able to understand or use the word in English. Finally, there is also an inconsistency related to the definition of the target audience. Currently, the dictionary can be classified as a unidirectional (Atkins & Rundell 2008: 24) or monodirectional (Welker 2008: 23) bilingual, since the access to the tool's content is only possible from Portuguese and, therefore, the dictionary only suits the Portuguese speaking/learning public. One way to address all of these inconsistencies would be to develop a bidirectional bilingual lexicographic structure for the dictionary. The planning of the Paralympic Dictionary already foresees this structure.

With regard to the elements of sports description in the Olympic Dictionary, the revision demonstrated that these elements assumed very different identities in terms of form and content throughout the dictionary. In other words, elements such as scenario description and sport description did not follow general guidelines that determined, for example, criteria for the selection/composition of the content (information type, level of detail, etc.) and criteria for content presentation (description size, paragraph size, use of links and bold type, etc.). The diversity displayed by these elements resulted from the methodology adopted in the dictionary's development: each editor was responsible for the study of a set of sports (randomly distributed) and, as a result, they were given autonomy to make decisions regarding the description of the sports under their responsibility. However, it can be said that, in the midst of this heterogeneity of content and form, there are similarities which did not result from the adopted methodology, but from the similarities among sports. For the Paralympic Dictionary, therefore, this is the starting point: the similarity among sports is the base of the work methodology, less centred on the individual autonomy of the editors, but mainly focused on the standardization of the dictionary elements and, consequently, on the definition of an identity for the tool. So far, it can be said that this methodology has already demonstrated success in enabling the standardization of the dictionary for it has proved itself efficient for scenario descriptions, especially those which exist in all sports, such as 'equipment', 'competition venue', 'competition officials' and 'athletes'. The experiment with the scenarios determines the success of the methodology because the scenarios fulfil a central function in defining the other elements, such as conceptual maps, word definitions, and the proposition and naming of the scenarios.

With regard to the tool's design, Olympic Dictionary's revision was based on the dictionary's use experiences by the members of the research group and also based on discussions with the programming specialist responsible for developing the Paralympic Dictionary's interface. On this basis, it was possible to identify a list of obstacles that hinder the tool's usability. To exemplify, it is possible to mention issues related to (i) the layout of the homepage, (ii) the search box, (iii) the use of hyperlinks, (iv) map reading, and (v) the development of an interface for smartphones. Below, we describe each of these issues, exhibiting how we intend to address them in the Paralympic Dictionary.

- i. The layout of the homepage is programmed to show only one third of the sport icons for each click on "Load more". Loading can be automatic, requiring only the use of mouse scroll.
- ii. The search box allows the user to search for sports, scenarios or words. Regarding visual aspects, the search box displays white letters on a transparent white background which makes it difficult to read the instruction ('Type a word or scenario or sport') and view the information typed by the user. The search option can appear through the image of a magnifying glass positioned at the top right of the page, as in most sites, and can expand with a click. When presenting the results of a search, the words are accompanied by the initials of the level they represent – P for word (*palavra*), C for scenario (*cenário*) and M for sport (*modalidade*). It is questionable, however, if the user is able to decode this information. The complete word can replace the use of initials.
- iii. The use of links has been little explored. Throughout the descriptions of scenarios and sports there is no use of links, which does not encourage navigation through the site. Links can be incorporated into the descriptions of sports, scenarios and words, in order to facilitate access to related information. Concerning maps, there is no indication of links' presence, which does not allow the user to realize they even exist. Here too, the use of links plays an important role in encouraging navigation throughout the dictionary.
- iv. The option to zoom in was used as a means to enhance the visualization of the information displayed on the conceptual maps. However, such a strategy has not proven itself to be so effective for the purpose, since, by enlarging some specific aspect, users can lose the overview of the whole, which is necessary for comprehension. On maps with a greater flow of information, this problem is even more evident. The alternative for a better visualization of the maps is to elaborate navigable/adaptable maps, built from and centred around the user's interaction.
- v. The Olympic Dictionary does not have a version developed specifically for smartphones. As a result, viewing content from these mobile devices presents several problems. Addressing this issue involves developing an interface based on the characteristics and experiences resulting from smartphone-use experience.

3 Specific Challenges with the Paralympic Dictionary

In the present section, the specific aspects of the Paralympic context that brought, and still bring, implications for the design of the Paralympic Dictionary will be addressed. These specificities are mainly related to the nature of Paralympic sports, the description of which involves adopting a perspective to address ‘disability’. The decision to develop the Paralympic Dictionary was taken after the launch of the Olympic Dictionary, and was driven by the fact that the research group already had a frame-based sports description methodology and a semi-ready interface that could be modified depending on the number and types of Paralympic sports. However, a first exploration of the Paralympic domain demonstrated substantial differences with direct implications for the planning of the tool. If, in the Olympic context, the development work was limited to the study and description of sports, in the Paralympic context, it was observed that these activities also involve an understanding of ‘disability’. The consequences of this finding for the planning and development of the Paralympic Dictionary will be discussed below.

3.1 Disability Implications for the Dictionary Planning

From the study of the Paralympic context, it was observed that there is an overlap between the notions of ‘athlete’ and ‘person with disability’. As a result, differently from what happened in the development of the Olympic Dictionary, there was a need to explore, in addition to the sport, the context of disability with the aim to verify how notions from broader contexts are mapped onto the Paralympic context.

As part of the research group’s effort to understand the Paralympic universe, de Oliveira (2019) carried out a study on the conceptualization of ‘Paralympic athlete’, drawing on the theoretical framework of Frame Semantics. In this study, the different perspectives from which the notion of ‘person with disability’ can be understood were discussed, taking into account internal and external issues to the Paralympic context, in order to identify the elements that constitute the concept of ‘Paralympic athlete’. The investigation revealed that the ‘person with disability’ frame can be understood from four different perspectives: the charitable; the medical; the social; and the rights-based one.¹ From the charitable perspective, the person with disability is seen as pitiable and a victim of their own disability; from the medical perspective, disability is seen as an organic problem and, therefore, the person with disability needs to be cured; from the social perspective, the person with disability is seen as dependent on or hostage to the social environment, which tends to promote exclusion, inaccessibility and prejudice; finally, from the rights-based perspective, people with disabilities are understood from their rights to equal opportunities and social participation with a focus on their empowerment and responsibility (de Oliveira 2019: 46-49). The perspectives identified by de Oliveira (2019) are related to the historical evolution of the discussion about disability and have different statuses with regard to their legitimacy within the community of people with disabilities, whose purpose it is to disseminate an image with no prejudices in relation to people with disabilities.

Regarding the notion of ‘Paralympic athlete’, the study revealed that there is a frame that unites elements from the broader notion of ‘athlete’ to elements from one perspective of ‘person with disability’. On the one hand, the Paralympic athlete frame is based on features, such as ‘athlete’s principles’ (equality, inspiration, courage, determination, fair play) and ‘athlete’s attitudes’ (balanced training, sporting excellence, adequate nutrition), resulting from a general conception of ‘athlete’. On the other hand, the same frame is also based on features that are presented in the form of commitments or responsibilities, such as ‘changing perceptions’, ‘redefining limits of what is possible’, ‘stimulating the world’, ‘contributing to a more inclusive society’, which are related to the condition of an athlete with disability (IPC 2015). Furthermore, the image of the Paralympic athlete is based on the concept of the Paralympic sport as a high-performance sport.

Another important aspect of the discussion about the ‘Paralympic athlete’ approach addressed by de Oliveira (2019) concerns the relationship between the lexicon and the different conceptualizations of ‘person/athlete with disability’. According to de Oliveira, the community of people with disabilities favours the use of certain words or terms that contribute to the recognition and appreciation of a person with disability and rejects others that would contribute to minimize an athlete’s abilities (poor, crippled, sick – charitable or medical perspective) or to overestimate their actions and achievements (superhero, example of overcoming). In both situations, there would be an attempt (even if unconscious) to remove the person with disability from their ‘person’ condition and to emphasize the disability.² In this regard, language policies play a crucial role, since, by offering guidelines for the use of appropriate words to refer to people with disabilities, they contribute to disseminating an image of people with disabilities that is consistent with that advocated by the community of people with disabilities.

¹ According to the International Classification of Impairments, Disabilities, and Handicaps (ICIDH), the medical and social models are a synthesis of the various models proposed to describe ‘disability’, describing it from the biological, individual, and social perspectives (ICIDH: 18).

² Although some authors defend the replacement of ‘disabled’ by ‘person with disability’ (e.g. Sasaki 2005), it is important to highlight that both the World Health Organization and documents such as the ICIDH (cf. note 1) do not take a rigid position in relation to these terms, considering that when it comes to the dimension of the individual, there is no consensus (ICIDH: 188).

The investigation that started with the work of de Oliveira (2019) and that continues to be carried out by the research group has enabled reflections on the identity of the Paralympic athlete and has guided decisions about how the dictionary will represent it. In practical terms, this discussion affects the definition of the structure of the Paralympic Dictionary in many ways. First, it points to the importance of the lexical choices that will be made in the different elements of the dictionary to refer to the Paralympic athlete. Such choices should reflect the commitment to valuing people with disabilities and building an inclusive society, and the task of discouraging discriminatory practices.³ Second, it is foreseen to include a tab that has the function of describing the notion of Paralympic athlete that prevails in the Paralympic context, following a format similar to the description of sports (scenarios and words). A third point refers to the authority argument. Considering that disability is an unknown reality among the members of the research group, the discussion served as an alert for the need of the participation of people capable of guiding the group on making knowledgeable and informed decisions (cf. Bergenholtz & Kaufmann 1997: 93). The development of the Olympic Dictionary benefited from the contribution of external collaborators (athletes, coaches, teachers, etc.) whose function it was to review and validate the contents to be published. In the Paralympic Dictionary, in addition to the contributions related to the elaboration of sports content, there is a need to have collaborators who can play a broader role and who help to outline the identity of the dictionary as a whole with regard to the promotion of inclusion and dissemination of the Paralympic athlete's image. Finally, the discussion about disability also influences the definition of the target audience of the dictionary, since by assuming the commitment to disseminate a view of the athlete with disability legitimized by the community of people with disabilities, it was also assuming, indirectly, the commitment to promote digital accessibility in the context of the Paralympic Dictionary. In this sense, the discussion on defining the target audience takes place at a broader level, in order to ensure that people with disabilities have access to the dictionary.

Therefore, it can be said that the investigation – in progress – of the disability context has given rise to indispensable reflections for the planning of the Paralympic Dictionary, the most relevant being the finding that the use of certain terms implies the adoption of a specific perspective on 'Paralympic athlete' and 'disability'.⁴ The social commitment to disseminate the vision of a Paralympic athlete as a high performance athlete is thus a central premise for the development of the Paralympic Dictionary. In general, it is intended to be in line with what the Paralympic athlete and the official bodies/institutions want to emphasize in relation to the performance and achievements of the athlete in sport and also in relation to the identity of people with disabilities.

3.2 Disability Implications for the Dictionary Development

In this section we discuss the study of the Paralympic sports and the repercussions of the disability in the proposal and elaboration of the elements of sports description. Based on the experience of working with Olympic sports, the exploration of Paralympic sports has revealed, so far, among the transversal (or ontological⁵) frames, the existence of a new frame and the need for restructuring one of the frames already identified in the development of the Olympic Dictionary. Two of the central characteristics of Paralympic sports refer to eligibility – deficiencies allowed for the practice of a particular sport, and functional classification – a system that aims to minimize the impact of impairments on athletes' performance and ensures fair competition.

As a result, in the context of the Paralympic Dictionary, the 'functional classification' frame was identified, designed to account for information regarding the types of impairments that are accepted in the practice of a particular sport (eligibility) and the ways of classifying these impairments (functional classification/functional classes). In this regard, in para powerlifting, for example, physical impairments in the legs and hips are eligible, and the sport has one functional class; for athletics, physical, intellectual or visual impairments are eligible, and these are grouped into 32 functional classes. The 'functional classification' frame, therefore, covers information of this nature. The fact that the more specific information about the disability would appear, above all, in the 'functional classification' frame, raised a discussion about the place of the disability in the dictionary. With regard to the description of sports, it was observed that disability could be used as a starting point. However, such an approach seems to give more emphasis to the impairment than to the high-performance feature. As a result, a proposal is being evaluated that treats disability as one of the elements of Paralympic sport and not

³ It is important to highlight that, in the case of the Paralympic Dictionary, these decisions will not be aimed at meeting individual preferences, but at representing the choices of, above all, athletes and other people with disabilities involved in Paralympic sports. For this reason, the dialogue with them will be central to guaranteeing representativeness.

⁴ Regarding the perspectives from which 'disability' can be seen, one can mention the example of the term 'impairment', widely used in Paralympics' official documents, which represents a medical perspective to categorize disabilities and athletes from an organic point of view. Paralympic Dictionary is intended to address social aspects of disability in addition to the organic ones, and as such it is likely that this will result in the use of different terms according to what one wishes to highlight. In general, with regard to individuals, the term 'person with a disability' will be preferred. To refer to body parts or body functions, the terms 'disability' and 'impairment' will be used, as defined by the ICDH (cf. note 1): disability (umbrella term for impairments, p. 158) and impairment (loss or abnormality of a body part (i.e. structure) or body function, p. 165). Observe that in Portuguese, except in very specific cases, both 'disability' and 'impairment' can be translated as '*deficiência*' (disability).

⁵ Frames that refer to knowledge about objects, participants and other static entities (cf. de Souza 2015). Such frames are recurrent in many if not all sports.

as the lens through which Paralympic athletes and sports are seen. In this decision-making process, the participation of collaborators will play a fundamental role in giving legitimacy to the dictionary proposal.

Another particular aspect of the Paralympic Dictionary concerns the restructuring of the ‘technical team’ frame, identified in the development of the Olympic Dictionary and which, there, comprised information related to the members of the teams/delegations, such as coaches, technicians, assistants, masseurs, etc., that is, professionals who, indirectly (through technical-tactical guidance and medical-therapeutic care), assist athletes during competitions. Although it maintains its original coverage derived from the methodology used in the Olympic Dictionary, in the Paralympic Dictionary, this frame also covers other participants. Indeed, the study of Paralympic sports revealed that there are professionals who perform the function of assisting athletes, but in a more direct way, within the actions/situations that constitute the competitions. In track cycling, for example, in the BC3 class (athletes with visual impairment), cyclists compete together with a sighted rider, who occupies the front seat of the bicycle (tandem) and makes tactical decisions. Another example is bocce ball, a sport in which athletes from classes BC1⁶ and BC3⁷ and some from BC4⁸ can be supported by an assistant. In the BC3 class, for example, the assistant’s function is to receive instructions from the athlete, adjust the height and position of the ramp and put the ball in position for the athlete to push. Bearing in mind that these professionals are not considered athletes, in the Paralympic Dictionary, the descriptions related to their functions would be part of the ‘technical team’ frame. Again, it is important to note that such decisions will be validated by a general specialist and sports experts. Such adjustments (inclusion and reformulation of frames) reflect the current stage of the Paralympic Dictionary development and do not end the discussion on the elaboration of the dictionary elements.

4 Digital Accessibility and Inclusion: From Olympic Dictionary to Paralympic Dictionary

During the early stages of the Paralympic Dictionary’s development process, it was noted that in addition to the content issues already mentioned, technical adjustments aimed at promoting digital accessibility and inclusion would also be necessary.

Bearing in mind that the Paralympic Dictionary’s interface was designed based on Olympic Dictionary’s interface, it was concluded that it would be pertinent and productive to evaluate Olympic Dictionary in terms of accessibility, both for the Olympic Dictionary’s second edition and for the Paralympic Dictionary itself. These are the reasons behind the addition of a new layer to the revision of the Olympic Dictionary, in order to assess this aspect. As a brief case study, we now present an initial digital accessibility analysis aimed at assessing how Olympic Dictionary meets the needs of the blind and visually impaired.

To perform the analysis exercise, we used the NVDA⁹ (NonVisual Desktop Access) screen reading software. NVDA is a free assistive technology, available only for Windows systems, developed to help blind people and people with vision impairment in using the computer. It is worth noting that there are two possibilities for reading the screen with such software: the user can use the mouse cursor, or the TAB key on the keyboard. By using a mouse, the user manages access to information by hovering the cursor over the content of the website pages. Regarding the textual content of the Olympic Dictionary, this reading worked satisfactorily – all strictly textual content was identified by the software;¹⁰ with regard to the order in which the information is read, it is the user who chooses the content to be read and it is up to them to pass the cursor over the text in order to guarantee the full reading of the contents.¹¹ When using a keyboard, the user manages access to information via the TAB key – whenever the user presses this key, the reading of a hyperlink displayed on the page begins. In this reading, all the text elements that do not have a hyperlink attached are not readable by the software. With regard to the order in which the information is read, the reading of the conceptual maps via keyboard access does not present the contents in a logical sequence; the display order of the information is defined from the position which the textual elements occupy on the page, starting from top to bottom and from left to right. In both forms of access (mouse and keyboard), the software did not read the sports icons, images and the textual content without hyperlinking presented by the conceptual maps, since the Olympic Dictionary does not provide a textual description for these items. Thus, it can be said that the main result obtained from the experiment with the NVDA software was the absence of a textual description for the Olympic Dictionary icons, images and maps.

⁶ Athletes in the BC1 sports class have severe activity limitations that affect their legs, arms and torso due to coordination deficiencies and generally rely on a motorized wheelchair (Tokyo 2020).

⁷ Athletes competing in the BC3 sport class have significantly limited functions in their arms and legs, and little or no torso control due to brain or non-brain origins (Tokyo 2020).

⁸ The BC4 sports class comprises athletes with disabilities without a cerebral origin. Possible health conditions include progressive weakness and loss of muscle mass (muscular dystrophy), spinal cord injuries or amputations that affect the four limbs (Tokyo 2020).

⁹ Software available at: <https://www.nvaccess.org/>.

¹⁰ The textual content presented in the conceptual maps, however, is not readable by the software since it was added to the dictionary interface as an image.

¹¹ Whenever the formatting changes (bold, italics, ...), the reading done by the software is stopped and the user needs to position the cursor over the word to restart the reading.

From an initial bibliographic exploration on digital accessibility approaches for visual elements, a survey of possible actions was taken in the context of the Olympic and Paralympic dictionaries. Below, we list some of these actions, indicating the target audiences.

- i. Considering blind people, it is important to add the description of the images on the site and develop conceptual maps readable by assistive technologies;
- ii. For people with mild or moderate vision impairment, it is important to enable the options ‘high contrast’ and ‘increase/decrease the font size’, as well as to provide a textual structure with shorter paragraphs to facilitate the reading made by assistive technology;
- iii. For colour-blind people and people with mild or moderate vision impairment, it is important to rethink the colour scheme of the page;
- iv. For people with mild, moderate, and severe vision impairment and blindness, it is important to make different media available for textual illustration, such as audio (and video).
- v. It is worth mentioning that the actions listed here are the result of an initial exercise to evaluate digital accessibility in the Olympic Dictionary; complementary analysis could confirm the problems identified, as well as indicate the need for additional adjustments, aiming to serve other audiences with disabilities not covered so far (such as those for deaf people).

5 Conclusion

The main focus of this study was to address the challenges which emerge when dealing with the Paralympic context in lexicography and how these challenges impact the development of the Paralympic Dictionary. By doing so this exercise made us to reflect upon, to some extent, the role of dictionaries as cultural institutions and the challenges which often appear when compiling domain-specific dictionaries, in our case those based on the theory of Frame Semantics (Fillmore 1982, 1985).

The reflections brought about by the ongoing development of the Paralympic Dictionary have a significant influence on the work being carried out by the SemanTec research group, not only in the sense of contemplating the specifics of the new tool, but also to open the way for deeper reflections on a metalexicographical level with regard to “completed” projects as well as future ones. On the one hand, the revision of the Olympic Dictionary has guided practical decisions regarding the activity of describing sports, such as the writing of encyclopaedic definitions, and even the frame recognition/identification methodology itself; on the other hand, the demands related to disabilities and digital accessibility raised questions about the user profile, which have direct implications for the design of the new tool. Together, these findings and their implications represent an important milestone in the group’s work as they force the group to re-evaluate decisions taken under different circumstances and to update the positions adopted by the group in a manner that is more consistent with the realities described.

Regarding the limitations of this study, it should be noted that the considerations on digital accessibility presented here still represent a very early stage of the investigation: in addition to deepening the study of the different types of disabilities and the needs related to them, it will also be necessary to verify how and to what extent the dictionary will be able to meet the different demands of people with disabilities. In this sense, it will be of great importance to be aware of the different assistive technologies available and how well they meet the needs of their users. In addition, this work also reinforces the centrality and urgency of establishing a dialogue with entities and organizations that represent athletes with disabilities, as well as the athletes themselves, so that the dictionary can also be an empowerment tool for all these people.

6 References

- Atkins, B.T.S. & Rundell, M. (2008). *The Oxford Guide to Practical Lexicography*. New York, NY: Oxford University Press.
- Bergenholtz, H. & Kaufmann, U. (1997). Terminography and lexicography. A critical survey of dictionaries from a single specialised field. *Hermes, Journal of Linguistics*, 18, pp. 91-125.
- Chishman, R. (2014). *Field – Dicionário de Expressões do Futebol. 2.ed.* [Field – Football Expressions Dictionary. 2nd ed.]. São Leopoldo: Unisinos. Available from <http://dicionariofield.com.br/>.
- Chishman, R. et al. (2015). The relevance of the Sketch Engine software to build Field – Football Expressions Dictionary. *Revista de Estudos da Linguagem*, 23, pp. 769-796.
- Chishman, R. et al. (2016). *Dicionário Olímpico* [Olympic Dictionary]. São Leopoldo: Unisinos. Available from <http://www.dicionarioolimpico.com.br/>.
- Chishman, R. et al. (2017) Dicionário Olímpico: a semântica de frames encontra a lexicografia eletrônica. In M.J.B. Finatto et al. (eds) *Linguística de Corpus: Perspectivas*. Porto Alegre: Instituto de Letras, UFRGS, pp. 265-298.
- Chishman, R. et al. (2019). Challenges and difficulties in the development of *Dicionário Olímpico* (2016). In I. Kosem et al. (eds) *Electronic Lexicography in the 21st Century (eLex 2019): Smart lexicography. Conference proceedings. Sintra, Portugal, 1-3 October 2019*. Brno: Lexical Computing, pp. 622-641.

- de Oliveira, S. (2019). *O atleta com deficiência no contexto paraolímpico: uma análise dos frames que entram no jogo* (MA dissertation). São Leopoldo: Unisinos. Available from <http://www.repositorio.jesuita.org.br/handle/UNISINOS/7799>.
- de Souza, D.S. (2015). *Jogada de letra: um estudo sobre colocações à luz da Semântica de Frames* (MA dissertation). São Leopoldo: Unisinos. Available from <http://www.repositorio.jesuita.org.br/handle/UNISINOS/3924>.
- Fillmore, C.J. (1976). Frame semantics and the nature of language. *Proceedings of the Conference on the Origin and Development of Language and Speech, New York, 1976*. New York, NY: New York Academy of Sciences, pp. 20-32.
- Fillmore, C.J. (1982). Frame Semantics. In The Linguistic Society of Korea (ed.), *Linguistics in the Morning Calm*. Seoul: Hanshin Publishing Co., pp. 111-137.
- Fillmore, C.J. (1985). Frames and the semantics of understanding. *Quaderni di Semantica*, 6(2), pp. 222-225.
- Fillmore, C.J. (2003). Double-decker definitions: The role of frames in meaning explanations. *Sign Language Studies*, 3(3), pp. 263-295.
- Fillmore, C.J. & Atkins, B.T.S. (1992). Toward a frame-based lexicon: The semantics of RISK and its neighbors. In A. Lehrer & E. Kittay (eds) *Frames, Fields and Contrasts: New Essays in Semantic and Lexical Organization*. Hillsdale, NJ: Erlbaum, pp. 75-102.
- IPC – International Paralympic Committee. (2015). *Strategic Plan 2015 to 2018*. Available from https://www.paralympic.org/sites/default/files/document/150619133600866_2015_06+IPC+Strategic+Plan+2015-2018_Digital.pdf.
- NVDA. (2021). *NonVisual Desktop Access Screen Reader* (Screen Reader used by blind and vision impaired people to use the computer). Available from <https://www.nvaccess.org/>.
- Sasaki, R.K. (2005). Atualizações semânticas na inclusão de pessoas: Deficiência mental ou intelectual? Doença ou transtorno mental? *Revista Nacional de Reabilitação*, 9(43), pp. 9-10.
- Tokyo – The Tokyo Organising Committee of the Olympic and Paralympic Games. (2020). *Paralympic Games Classification*. Available from <https://olympics.com/tokyo-2020/en/paralympics/games/classification/>.
- Welker, H.A. (2008). Lexicografia Pedagógica: Definições, história, peculiaridades. In C. Xatara, C. Bevilacqua & P. Humblé (eds) *Lexicografia Pedagógica: Pesquisas e Perspectivas*. Florianópolis: Núcleo de Tradução, Universidade Federal de Santa Catarina, pp. 9-45.

Acknowledgements

This study was financed by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) – Finance Code 001; the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq); and the Fundação de Amparo à Pesquisa do Estado do Rio Grande do Sul (FAPERGS).