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Specialist Texts' Readers—Super-Smart Society's Backbone

Introduction

The digital transformation has accelerated; the unfortunate cause of the acceleration is the pandemic which naturally pushes many people into navigating cyberspace as they have to study and work there. In aid of this, establishing a sound base of reading skills will contribute to the development of a super-smart or knowledge society, which can benefit from access to Open Science.

One of the major issues discussed in this paper is the significance of reading skills set in the context of reading popular versus specialist texts. The objective of the paper is to show how important it is not to assume that the reading skill remains stable after having been learned. One of the very dynamic components of the reading skill is word knowledge (of both its form and meaning). Consequently, to comprehend information that needs to be transformed into knowledge at later stages of education, students need to have a strong foundation of word knowledge, and a thorough understanding of what it involves.

As the present study strives to illustrate, defining and enumerating what word knowledge entails, constitutes a major problem, even for English philology students who are assumed to have mastered both their mother tongue (L1) and English (L2) to the extent that allows them to study English.

The significant struggle in enumerating the elements of a word knowledge might be facilitated by the underlying ontological mechanisms of Web 3.0, which are discussed in terms of mediating between academic (specialist) and pop-cultural (non-specialist) discourses. The programming languages underlying Semantic Web constitute its undeniable value as they help the reader refine the dense content of the specialist texts. Semantic Web offers openly accessible tools to determine inconsistencies of terminology to a wide audience of readers (specialists and non-specialist) who can use their appropriate skills, media, and activities to evoke their personal response to science (research findings generated by specialists) and complex realities they live in, which would otherwise be undecipherable due to their highly specialist lexis. In consequence, personalised queries, facilitated in Semantic Web, encourage the bottom-up, human language friendly exchange of information that is easily recognisable to non-specialists, and the present study illustrates that personalising responses to questions yields more detailed content.

Semantic Web as a Springboard for Super-Smart Society

It might be daunting to imagine that the reliability of the human-generated data is filtered and ranked by computer algorithms designed by a narrow circle of specialists, which might create an opportunity for bias and abuse. Still, a plain explanation of Semantic Web as describing all the knowledge that people could ever save in books and computers[1] provides a more encouraging picture. The important fact is that "it lets programmers connect facts and ideas that would otherwise be located in all sorts of different places,"[2] which is a practical application of the definition of science conceived as "a process of constructing predictive conceptual models [...], being representations of systems (of words, numbers, pictures, programs, actions, and concrete images) existing in ambient world."[3] Thus, a literate person in the 21st century has to be a skilful reader of all the above-listed systems.

[1] Jeffrey T. Pollock, *Semantic Web for Dummies* (Hoboken: Wiley, 2009), p. 386.

[2] Ibid.

[3] Steven, W. Gilbert, "Model Building and a Definition of Science," *Journal of Research in Science Teaching*, Vol. 28, No. 1 (1991), p. 73.

Semantic Web, using a collection of programming languages developed by computer scientists, deserves attention from the applied linguistics' point of view as its primary focus involves presenting knowledge in a more human-friendly way, successfully employing findings of applied language-oriented studies. Semantic Web is a web technology, which, thanks to its developments, serves both narrow circles of specialists and a greater (non-specialist) audience. Semantic Web technologies are successfully employed both in e.g., medical science and in popular culture science project Wikipedia, where it is applied to differentiate between the popular and specialist content. Semantic Web task force engines help to recognise features of the text (i.e. its quality and importance). The very entry 'Semantic Web' generates two options within one language: English and Simple English addressed to a non-specialist (see Fig. 1) who may create a general mental picture of the concept without being exposed to too specialist lexis that would inhibit and ultimately block comprehension.

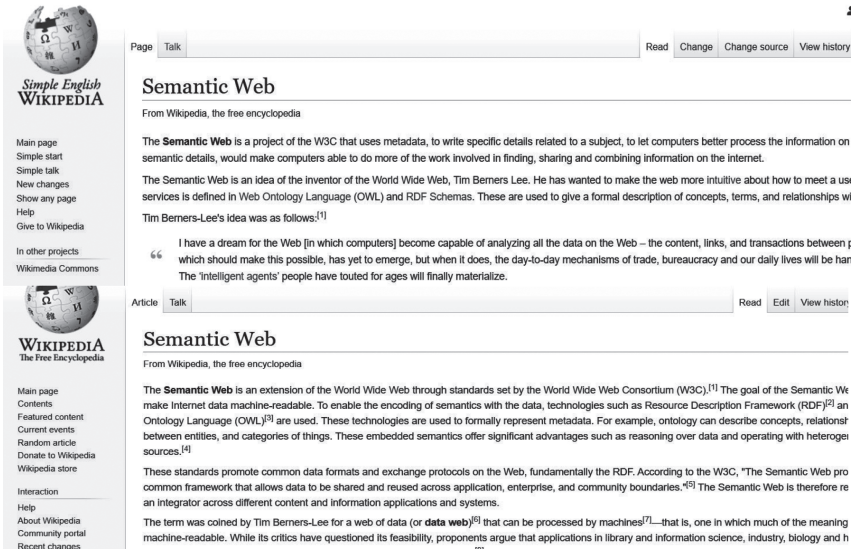

Fig. 1 Print screens of Simple English and English versions for the entry Semantic Web[4]

[4] "Semantic Web," Wikipedia, accessed 6 April, 2020, https://simple.wikipedia.org/wiki/Semantic_Web.

Berners-Lee, Hendler and Lasilla, who introduced the idea of interlinked data on the Web, indicate that "it will open up the knowledge and workings of humankind to meaningful analysis by software agents, providing a new class of tools by which we can live, work and learn together."[5] However, the most salient idea that they described is the one of human endeavour, which is

> caught in an eternal tension between the effectiveness of small groups acting independently and the need to mesh with the wider community. A small group can innovate rapidly and efficiently, but this produces a subculture whose concepts are not understood by others.[6]

An attempt to alleviate this tension is the practical application of the "super-smart society" ideas, a project launched in Japan by Technology and Innovation Cabinet Office, defining it as "a society where new values and services are continuously created in order to bring wealth to the people who make up society through initiatives that focus on actively using and applying cyberspace."[7] The idea originated from Society 4.0, which is referred to as information society (where the information networks realise increasing added value by connecting intangible assets). To have the full picture of the societal continuum, it is important for the discussion of popular discourse to mention Society 3.0, associated with the promotion of industrialisation through the Industrial Revolution and Society 2.0 and 1.0, the former establishing communities based on agricultural cultivation, and the latter—based on groups of people hunting and gathering in harmonious coexistence with nature.[8]

In the European context, the idea of Society 5.0 is referred to as Knowledge Society in which people "have the capabilities not just to acquire information but also to transform it into knowledge and understanding, which empowers them to enhance their livelihoods and contribute to the

[5] Tim Berners-Lee, Jim Hendler, and Ora Lasilla, "The Semantic Web: A New Form of Web Content that is Meaningful to Computers Will Unleash a Revolution of New Possibilities," *Scientific American*, Vol. 284, No. 5 (2001), pp. 34–43.

[6] Ibid. Original punctuation.

[7] Council for Science, Technology and Innovation Cabinet Office, Government of Japan, "Report on the 5th Science and Technology Basic Plan Council for Science," *Onuglobal*, p. 1, accessed 2 February, 2020, https://onu-global.files.wordpress.com/2018/05/japon_5basicplan_en.pdf.

[8] Bruno Salgues, *Society 5.0. Industry of the Future, Technologies, Methods and Tools* (Hoboken: John Wiley & Sons, 2018), p. 25.

social and economic development of their societies."[9] Unfortunately, this definition lacks the emphasis on the use and application of cyberspace in practical solutions. In that context, knowledge society seems definitely more sophisticated than super-smart one (which, at first sight, might be associated with a cartoon superhero); however, the notion of super-smart society is way more pragmatic, and more pop-culturally oriented. Popculturising serves here as a tool used by a small group of specialists who want to improve the communication with wider community of non-specialists. The attempt to negotiate the specialist meaning is undertaken in the above illustrated Wikipedia entry, where the content is explained both to a person with an assumed computer science background and a non-specialist (educated but not familiar with the field, as the Fig. 1 shows the description in Simple English version providing longer sentences which explain the specialist terms). The same mechanism applies to each and every circle of specialists who become so acquainted with their specialist vocabulary that they cannot comprehend that it is vague to a non-specialist. Thus, problems with comprehension of the same concepts emerge. Semantic Web helps to clarify concepts generated by small groups of specialists extracting meaning which may be shared with a wider audience, democratising and inviting the non-specialist to engage in the discussion. What is more, specialists of one field have problems with comprehending other specialists. Thus, what becomes useful is, for example, Semantic Scholar, AI-backed search engine for publications, which can negotiate the specialist meanings of given concepts for a wider (non-specialist) audience. Due to globalisation of research, apart from traditional methods of citation analysis, Semantic Scholar introduces semantic analysis, which complies with the quite consumptionist definition of science communication understood as "the use of appropriate skills, media, activities, and dialogue to produce one or more of the following personal responses to science—the AEIOU: Awareness, Enjoyment, Interest, Opinion-forming, and Understanding."[10] Enjoyment being the second element in the acronym is definitely not displaying the natural order in which it occurs as it may

[9] "Keystones to Foster Inclusive Knowledge Societies: Access to Information and Knowledge, Freedom of Expression, Privacy and Ethics on a Global Internet," *UNESCO*, p. 14, accessed 25 February, 2020, https://unesdoc.unesco.org/ark:/48223/pf0000232563.

[10] T. W. Burns, John O'Connor and S. M. Stocklmayer, "Science Communication: A Contemporary Definition," *Public Understanding of Science*, Vol. 12, No. 2 (2003), p. 183.

only come when the other four are met. The feeling of enjoyment emerges with the moment of being introduced to the narrow circle of specialists, achieving a certain level of initiation. For that purpose, Semantic Scholar applies machine learning, natural language processing and machine vision to extract relevant figures and entities from papers, which serves well the ideas of "Open Science" defined as "transparent and accessible knowledge that is shared and developed through collaborative networks."[11] Semantic Scholar automatically extracts "abstracts, tables, figures, and citations; understanding a paper's impact with statistics that highlight the volume and intent of the paper's citations, illuminating the influence of the research [...] helping to reproduce the results of a paper and put it in context."[12]

The project was initially only devoted to computer sciences (2015, 3 million papers), then expanded to neuroscience (2016, 10 million papers) and biomedicine (2017, 36 million papers; 2018, 42 million papers). After 2019 (178 million papers), it expanded to more types of scientific content, and finally in 2020 (180 million papers) to all scientific domains. Within the narrow circle of specialists (90% of all the scientists that ever lived are alive today[13] and they account for 0.1% of the global population[14]), the Semantic Web mechanisms utilised in Semantic Scholar allow for popculturising or democratising of specialist ideas: ideas which are published worldwide at a rate of 1 million each year,[15] so it is practically impossible for researchers to keep up with reading them, not to mention analysing and interpreting.

Skilled Readers

To become a skilled reader, one has to automatise an interplay of lower- and higher-level processes within working memory, inhibit irrelevant

[11] R. Vicente-Saez and C. Martinez-Fuentes, "Open Science Now: A Systematic Literature Review for an Integrated Definition," *Journal of Business Research*, Vol. 88 (2018), pp. 428–436, accessed 15 March, 2020, https://doi.org/10.1016/j.jbusres.2017.12.043.

[12] "About Us," *Semantic Scholar*, accessed 20 December, 2019, https://pages.semanticscholar.org/about-us.

[13] Eric Gastfriend, "90% of All the Scientists that Ever Lived Are Alive Today," *Future of Life*, accessed 15 March, 2020, https://futureoflife.org/2015/11/05/90-of-all-the-scientists-that-ever-lived-are-alive-today/?cn-reloaded=1.

[14] "UNESCO Science Report: Towards 2030," *UNESCO*, p. 33, accessed 15 March, 2020, https://unesdoc.unesco.org/ark:/48223/pf0000235406.

[15] Andy Extance, "How AI Technology Can Tame the Scientific Literature," *Nature*, Vol. 561 (2018), pp. 273–274.

information and access information in long-term memory.[16] Assessing information in long term-memory requires lexical access, which according to Grabe, can be seen as one subset of the word knowledge and long-term memory.[17] Word knowledge, which is shared and understood by the majority of population, could be referred to as "popularly recognised," which in linguistic terms describes the word frequency. The higher the frequency of the lexical item, the greater the chances if its recognition by a wider (non-specialist) audience. Schwanenfugel and Knapp, as well as Willingham, indicate that rapid and automatic word recognition (or lexical access—the calling up of the meaning of a word as it is recognised) is required for fluent reading. The skilful orchestration of the underlying components at the early stages of reading acquisition grants the success of comprehension and interpretation at the later stages of education.[18] That is why learning to read starts with very frequent lexical items. In like manner, learning to master a given subject starts with a general introduction explaining the underlying terms.

Undeniably, it is skilful reading which lays foundations for language, literacy, and knowledge in general. However, reading is one of the most taken-for-granted cognitive activities of a human being. The low-level processes once acquired (no matter how painfully and tediously), sometimes quite ill-automated, stay with the reader for their lifetime. If it is incorrectly automated, reading a text may not necessarily mean that comprehension and interpretation occur. What gains in importance nowadays is the fact that a "'traditionally' literate person is not necessarily fully equipped to solve a life or work problem"[19] as "digitalization has also made literacy more complex due to the diverse media of composition and communication, once limited largely to paper."[20] Now, to participate fully in society, being traditionally literate is not enough. In our era, a truly literate

[16] H. Lee Swanson, Crystal B. Howard and Leilani Sáez, "Do Different Components of Working Memory Underlie Different Subgroups of Reading Disabilities?," *Journal of Learning Disabilities*, Vol. 39 (2008), pp. 252–269.

[17] William Grabe, *Reading a Second Language: Moving from Theory to Practice* (New York: Cambridge University Press, 2020), p. 27.

[18] Paula J. Schwanenflugel and Nancy Knapp, eds., *The Psychology of Reading: Theory and Applications* (New York: Guilford Press, 2016); Daniel T. Willingham, *The Reading Mind: A Cognitive Approach to Understanding How the Mind Reads* (San Francisco, CA: Jossey-Bass, 2017).

[19] "International Literacy Day 2019: Revisiting Literacy and Multilingualism, Background Paper," *UNESCO*, accessed 20 March, 2020, p. 1, https://unesdoc.unesco.org/ark:/48223/pf0000370416.

[20] Ibid., p. 7.

person has to actively use and apply cyberspace to acquire information, and also to transform it into knowledge and understanding. The change towards such an approach has already taken place in Japan, being at the forefront of technological developments and adjusting the education system at all levels to prepare students for the dramatic technological changes.

Interestingly, the Japanese Ministry of Education, Culture, Sports, Science and Technology is one body without unnecessary division which might cause communication and administrative problems. Yoshimasa Hayashi, who used to be Japanese Minister of Education, Culture, Sports, Science and Technology, explains that, in 21st-century education, "the emphasis must be on human skills such as communication, leadership and endurance, as well as curiosity, comprehension and reading skills,"[21] emphasising that, without reading skills, learning will not be effective because the definitions underlying the concepts will not be understood. Both in super-smart society and the European Knowledge Society, the classic division into soft and hard sciences is no longer feasible as technology has permeated all spheres of society. Hayashi claims that "if you are studying physics as a major, you should also study humanities so that when you are faced with a philosophical or ethical issue in your future career [...], you can combine your scientific knowledge with ethics."[22]

Wor(l)d Knowledge: Reading Recycled

Within a very narrow circle of specialists like, for example, the ones specialising in reading comprehension research, it is difficult to reach a consensus on an unequivocal definition of the reading process. However, the point of departure for an underlying reading comprehension model is the fact that comprehension is embodied[23] and that humans are not wired to read.[24] This myriad of problems leads to a further, complex set of problems with reading comprehension. To read skilfully, humans have to remember that they are equipped, and at the same time restrained, by biological wiring, which is both enabling comprehension and limiting it.

[21] "How Japan is Preparing its Students for Society 5.0," *Foreign Policy*, accessed 05 January, 2020, https://foreignpolicy.com/sponsored/how-japan-is-preparing-its-students-for-society-5-0/.

[22] Ibid.

[23] Rolf Zwaan, "The Immersed Experiencer: Toward an Embodied Theory of Language Comprehension," *Psychology of Learning and Motivation*, Vol. 44 (2003), pp. 35–62.

[24] Stanislas Dehaene, *Reading in the Brain: The New Science of How We Read* (New York: Penguin, 2009).

Thus, the cognitive resources needed for reading comprehension have to be saved for carefully selected content.

As the assumptions of smart society programme hold, more attention should be paid to the lower-level processes which would allow for proceduralisation of higher-level linguistic processes not only in the case of primary but also secondary and tertiary learners. For the sake of developing reading skills, it is important to check if the optimal automatisation level has been achieved so that the word knowledge could integrate with the created mental models of a text at any level of education As DeKeyser emphasises, students must achieve a certain level of declarative knowledge to initiate the sequence of proceduralisation and automatisation.[25] Anderson, Fincham, and Douglass show that it is the combination of abstract rules and concrete examples that is necessary to help learners past the declarative threshold into proceduralisation.[26] In the case of reading, proceduralisation is understood as lexical access, which assumes the activation of basic linguistic word recognition component abilities: phonological awareness, orthographic knowledge, letter-sound correspondences, and meaning activation.[27] Grabe enumerates nine basic components of word knowledge: orthography, morphology, parts of speech, pronunciation, meanings (referential range, variant meanings, homophones), collocations, meaning associations (topical links, synonyms, antonyms, hyponyms), specific uses (technical, common) and register (power, politeness, disciplinary domain, formality, slang, dialect form), which are needed to achieve the optimal level of declarative knowledge in the process of reading.[28]

The Current Study

Study Purpose and Research Questions

The following study was carried out to illustrate if students of a given domain (in the context of the present study these are English philology students), represent the required level of declarative knowledge allowing

[25] Robert DeKeyser, *Practice in a Second Language Perspectives from Applied Linguistics and Cognitive Psychology* (Cambridge: Cambridge University Press, 2007), p. 100.

[26] John R. Anderson, Jon M. Fincham and Scott A. Douglass, "The Role of Examples and Rules in the Acquisition of a Cognitive Skill," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, Vol. 23 (1997), pp. 932–945.

[27] Grabe, *Reading a Second Language*, p. 58.

[28] Ibid., p. 67.

them to both interpret appropriately the given instruction and to generate relevant content that was measured against the above-mentioned components of word knowledge.[29] The following research questions were addressed in order to measure students' level of declarative knowledge and the facilitative effect of Semantic Web programming systems on negotiating for meaning in reading specialist texts.

RQ1: How many elements of the word knowledge are English philology students able to enumerate?

RQ2: Did the personalisation of their answers contribute to generation of more elements of word knowledge?

RQ3: How can the programming languages of the Semantic Web be useful in reading professional texts?

Participants and Study Context

The sample consisted of one hundred subjects, aged 20–23, who were advanced students of English Philology at the Institute of Linguistics, University of Silesia, in their second year (second term) of on-site/on-line course of *Academic writing*. As far as students' learning history is concerned, the majority of the subjects (39) had a long learning history covering the period of 10–15 years. The remaining subjects were placed in two extremes labelled as "less than 10" and "more than 15 years," represented by 25 and 36 students, respectively.

Research Instruments, Materials and Procedure

The multi-method data collection procedures were applied in three sessions. First, all students were asked to write a 200-word-long composition on the following topic: "What does it mean to you to know a word?" for the allotted 60-minute period, having had no prior knowledge concerning the assigned task.

Then, their fellow students were to read these compositions and determine if the content generated was personalised (Session 2). The distinguishing factors for them were: the extent to which they personalised their answers; the use of the first person personal and possessive pronouns; references to both the instruction and quotation by means of prefabricated patterns (e.g., *As far as my association with the following quotation is con-*

[29] Ibid.

cerned; When it comes to the first association that comes to my head) and repetition of either the instruction or quotation. On the basis of the obtained feedback, two groups were distinguished: the one who complied with the instruction (52 students) and the one who failed to provide personalised content (48 students). After having received the evaluations, the compositions were typed and, in a different feedback session, it was determined how many of the components of word knowledge students included in their compositions (Session 3).

Data Presentation and Analysis

The data collected from compositions in Session 2 of the study revealed that 48 students did not comply with the instruction. They wrote compositions which were 200 word-long but the content was not personalised, as instructed. They encountered major problems in both personalising their utterance and defining word knowledge, as the following excerpts demonstrate:

> Knowing a word means to have an ability to use it without hesitation. Most words used in everyday conversations are easy for people to express. These types of words are so ingrained in one's memory that there is no need to overthink them;
>
> There is no one clear answer to that question;
>
> It is very hard to provide a proper definition on what it means to actually know a word. You can know only one meaning of a given word and it still would mean you know the word but not entirely;
>
> Defining what it means to know a word is certainly not an easy task;
>
> However, knowing a word is often more complicated than it might appear.

The responses show that there is no framework they base their word knowledge on as they have not mastered the required combination of abstract rules and concrete examples which would help them past the declarative threshold into proceduralisation. However, it is difficult to explain such results in terms of cause and effect as it was not determined if it is the lack of abstract rules or concrete examples that hindered students' personalisation of answers. Thus, the underlying programming mechanisms of Semantic Web which filter, rank, and provide a template for the integration of the word meaning into the reader's mental lexicon are

by no means useful for specialists, non-specialists and emerging specialists who are represented by the present study group.

The feedback collected during the third session revealed that out of nine components of word knowledge,[30] the group of 52 students who complied with the instruction could list 5.02 components on average, while the group who did not comply with the instruction (48) could enumerate only 2.91. Generally, the results demonstrate that the average word knowledge is well below the expected level as it holds only 4.01 for both groups. As it is shown in Figure 2, the most important component for both groups was the meaning, and this is the only component which is of the same importance in each of the groups under investigation. Meaning is the point of reference for all the other components listed by both groups of students.

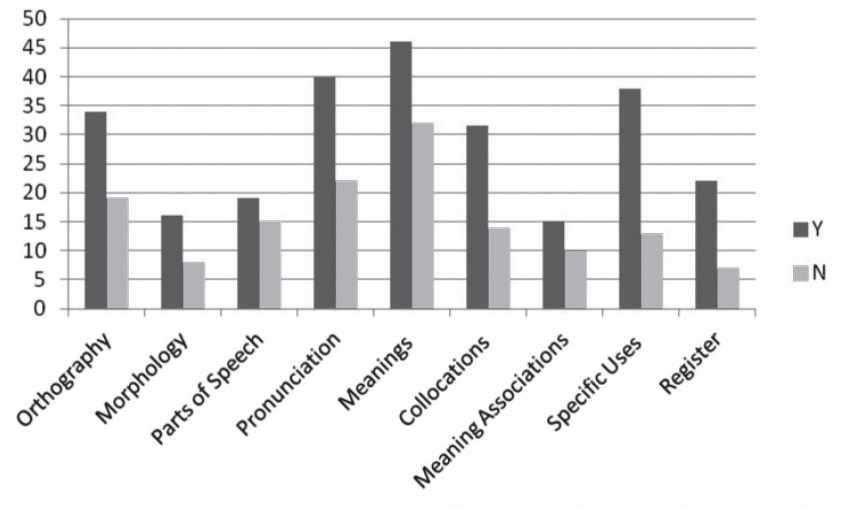

Fig. 2 Word knowledge components enumerated by students who complied with the instruction (Y) and those who did not (N). Created by the author.

From the results, it is clear that pronunciation is the second important component, which indicates the fact that the value of mastering of spoken language prevails in both these groups. The differences begin with the specific uses of the word and orthography as in the first, successful group,

[30] Ibid., p. 267.

technical or common uses of a word play an important role in the knowledge of a word, while in the group who did not comply with the instruction, orthography is the second in importance. The results highlight that the greatest difference between the two groups appeared in their ability to indicate specific uses of a word as an important word knowledge element. The ability to shift between the popular and specialist uses of language the first group students demonstrate creates the sound basis for successful communication between the small (specialist) and large (non-specialist) groups of society in general. As meaning, which is of prior importance to both groups of subjects, entails the comprehension of and the ability to use the underlying language structures appropriately, it remains unclear why neither of the groups indicated knowledge of parts of speech as important.

Both groups of students managed to indicate the complexity of word knowledge. The statement samples of those students who compiled with the instruction include the following:

> Opinions on such topic may differ but they will be true since it is difficult to create a proper definition to both 'know' and 'word';
>
> The meanings of words might be changing as I write this text;
>
> Even though studying for tests may go well, grades might be as high as possible, the real understanding of a word just learnt is not that easy;
>
> Studying vocabulary is essential, but for me, it is usually more complicated than I could have ever imagined. It often requires consulting different sources to understand a word beyond superficial equivalents).

As we can see, even among the students of the same language oriented faculty, who complied with the instruction, the answers concerning word knowledge are not univocal. This may raise concerns about their reading skills which can be addressed by their use of the ontological mechanisms of the Semantic Web. The framework suggested by Grabe[31] could help with keeping both specialist and non-specialist readers updated with changing meanings—providing a template for explicit word knowledge. Additionally, the existing definition detection systems, e.g., HEDDex, might be improved in terms of variability of expression assuming the taxonomies of word knowledge form the context of foreign language learning and teaching.

[31] William Grabe, *Reading a Second Language*, p. 67

Conclusions

Within the second quarter of 2020, we silently witnessed a quiet but dynamic and gigantic leap into digital literacy, which is the large-scale reading revolution resembling the one accompanying the Industrial Revolution. The underlying programming mechanisms of Semantic Web filter, rank, and provide a template for integration of the word meaning into the reader's mental lexicon. It can look for similarities within different academic disciplines as well as registers, extracting the collective meaning underlying commonly shared concepts which happen to be worded in a different way—the digital Babel tower, which is woven into an interconnected communication web untangling the information clutter. Wikipedia, being the most popular source of information, applies solutions provided by Semantic Web, which are useful because the same concepts in different sciences are referred to by different words, but the ideas underlying them are the same. It should then be accepted that Wikipedia becomes the modern form of a forum for people to build their collective understanding and construction of concepts becoming the Largest-Ever Digital Humanities Project.[32] As the study illustrated, it can never be assumed that word knowledge, central to reading comprehension, is stable; on the contrary, it is a dynamic concept which needs updating, and there has to be a template for checking that there is a collective comprehension of the basic concepts underlying interaction with a text. Now, a non-specialist may have access to most of the data and articles in the open science. Thanks to the Simple English version, the readers can familiarise themselves with the underlying general idea of the text, initiating a scaffold for comprehension processes. Unfortunately, the simple language version is offered only in English language version, the simple language versions in other languages are not available.

Broadly translated, the study findings indicate that there is no incentive for researchers to provide or review input in Wikipedia which constitutes a mediating platform between popular (non-specialist) and specialist content. If scientists (specialists) are to communicate ideas from their subculture, there has to be a framework supporting their efforts not only in

[32] Pepe Flores, "Is Wikipedia the Largest-Ever Digital Humanities Project? Exploring an Emerging Relationship," *Diff*, accessed 6 February, 2020, https://blog.wikimedia.org/2016/08/17/wikipedia-largest-digital-humanities-project/.

the form of a rigid point system rewarding those publishing in distinguished journals but also rewarding those who share and adjust the knowledge and practical implications of research on the common levels, allowing a wider audience to benefit from the discussions in specialist fields. In science communication, we have to think globally and act locally so that the communities we live in benefit from the discussions we hold. Once locked in the rigorous trap of the point system, it is difficult to find resources for publicising and popularising the data collected in research. Importantly, writing for popular press or writing in mother tongue is not encouraged by the academic systems, which in no way stimulate scientists to contribute to anything but highly rated journals. Writing for popular press in mother tongue would be an inclusive step in disseminating specialist knowledge and involving a wider (non-specialist) audience in academic discussions. It could be an engaging way to encourage non-specialist audience to read texts following the AEIOU principles (raising awareness, enjoyment, interest, opinion-forming, and understanding).

Future research could examine the effects of popularisation of scientific knowledge, and investigate the ways the issues scientists communicate to the non-specialist audience using different media to indicate what further inclusive steps might be taken to create super-smart (knowledge) society.

Agnieszka Ślęzak-Świat

Specialist Texts' Readers—Super-Smart Society's Backbone

The objective of the paper is to show how important it is not to assume that the reading skill remains stable after being learned. Hayashi (2017) emphasises that "if you don't have the reading skills and if you learn history, physics or chemistry, you won't understand the definitions," which is why developing and monitoring reading skills well into 6th and 7th grades are required in a super-smart society. Pointedly, reading skills must be regularly practised and recycled to keep abreast with the influx of information a reader needs to process. One of the components of the reading skill is word knowledge (both form and meaning). As the present study strives to illustrate, defining and enumerating what it involves constitutes a major problem, even for English philology students. Therefore, programming languages

of Web 3.0 are discussed in terms of mediating between academic (specialist) and pop-cultural (non-specialist) discourses, helping the reader to refine the content of the text they are exposed to. As the research shows, the algorithmic element of Semantic Web is helpful in taming the density of specialist texts, and it may ultimately serve a human to connect the dots of data and facts to create a base for knowledge as it offers openly accessible tools to determine inconsistencies of terminology to a wide audience of both specialist and non-specialist readers who can use appropriate skills, media and activities to evoke their personal response to science (research findings) which would otherwise be undecipherable due to its highly specialist lexis.

Keywords: literacy, reading skills, Semantic Web, word knowledge, super-smart society
Słowa klucze: piśmienność, umiejętność czytania, Internet semantyczny, znajomość słowa, super inteligentne społeczeństwo