Przekładaniec, special issue, „Word and Image in Translation" 2018, pp. 52–72
doi:10.4467/16891864ePC.18.011.9833
www.ejournals.eu/Przekladaniec

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RANDALL MUNROE'S *THING EXPLAINER*: THE TASKS IN TRANSLATION OF A BOOK WHICH EXPLAINS THE WORLD WITH IMAGES*

Abstract

This case study analyses the process of translation of a popular science (picture) book that originated from the Internet comic strip *xkcd.* It explores the obstacles resulting from the text-image interplay.

At the macroscale, while such institutions in Poland as the Book Institute or translator associations do develop standards and provide information on the book market and good (or actual) practices, they never explicitly mention comic books – the closest one can find is "illustrated books" or "others". Additionally, popular science literature – which some might say is uninteresting – is much less discussed than artistic translation (with due allowance for comic books and graphic novels) despite having a tradition of using words and images together. *Thing Explainer* does seem to use "other" translatory techniques: firstly, because the author decided to use only the one thousand most common English words (a semantic dominant to be retained in Polish); and secondly, because the illustrations – from diagrammatic to extremely detailed – are an indispensable, though variably integrated with the verbal, medium of knowledge transfer. This paper focuses on the second aspect. Specifically, it discusses: the rigorous requirements for text volume and location (exacerbated by the said 1000-word list); technical issues (including choosing typefaces, formatting text, modifying graphics, etc.); the overlapping responsibilities of the editors, the translator and the

* This article was originally published in Polish in *Przekładaniec* 2017, vol. 34, pp. 88–107. The English version was published with the financial support from the Polish Ministry of Science and Higher Education (DUN grant).

DTP artist; and the unusual text-image relations (e.g. the image helping a translator decode what he actually translates).

Keywords: comic book, picture book, popular science translation, intersemiotic translation, publishing practices

In this paper, I give an account of the translation process of the popular science picture book *Thing Explainer* (Munroe 2016). My goal is to present the problems which may occur while translating this kind of literature, resulting primarily from its graphic form.

The article will feature both the theory and practice of translation, the motifs of the relationship between text and image, publishing practices, and various technicalities. I will begin by introducing the book, along with its author, by connecting it to his previous works. Since – in comparison with artistic translation – there is little literature about the translation of popular science books, I will then briefly sketch the context of this type of translation, with reference to studies on translation, image, education, and comic books. Next, I will discuss the layers of text and typography and, subsequently, the technical and editorial twists and turns. I will continue by referring to studies on audiovisual translation, comic books, and linguistics, which present the relations between text and image. Afterwards, I will outline selected translation problems which arose as a result of these relations. Finally, I will describe issues related to the publishing process. References to particular pages in *Thing Explainer* will appear without the note "(Munroe 2016)"; page numbers are identical in the source and target texts.

The origins of the book

Thing Explainer is a spinoff of *xkcd*, a science-themed webcomic whose contents (and sense of humour) are often obscure for non-specialists. Particular episodes of *xkcd* are usually black-and-white strips with images resembling doodles from school notebooks (which they actually were in the first episodes: xkcd.com/6), typically in the form of a horizontal sequence of frames (however, they may also appear without frames: xkcd.com/1749, or in other configurations: xkcd.com/1352). The words uttered by the characters lack speech bubble framing, the text is linked with the characters only by means of a stroke, and the words look as if they were handwritten in block capitals, while the characters are usually faceless stick figures

(one of them represents the author himself, Fig. 1). The author often goes beyond these conventions, publishing: a) charts instead of stories (xkcd.com/1281), which on rare occasions are coloured (xkcd.com/1410); b) animated images (xkcd.com/1331/; xkcd.com/1264/); c) interactive stories (xkcd.com/1350/); d) a live sketchnoting documentary (Munroe 2014); or e) games (xkcd.com/1608/) – all of them in the same style. Finally, the author developed the Saturn V rocket scheme (xkcd.com/1133/), whose form resembles a blueprint, however one also made with irregular hand-drawn lines. It is accompanied by a description using, as the author says, "only the ten hundred words people use the most". Based on this, Randall Munroe constructed *Thing Explainer*. Therefore, the book is rather unique as far as the challenges faced by its translator are concerned: firstly, the consistent use of one thousand simple words should be regarded as Barańczak's (1990) semantic dominant, which must be retained in the Polish translation; secondly, the illustrations presented – sometimes schematic, sometimes extremely detailed – are the essential medium of knowledge transfer, albeit varying in their level of integration with the verbal layer.

The first feature is explained by the author in the introduction to the book: he says that as he was afraid of being judged by others, he used a difficult vocabulary – often unnecessarily – to be perceived as a more intelligent person. Hence, the use of simple and commonly understood words is supposed to break the barrier in understanding how things work, as well as the psycho-social barrier which paralyses communication. The author selected the thousand words by analysing frequency lists of various text corpora (including his own correspondence) and relying on his intuition. In order to create the Polish analogue, the translator made use of – apart from his own fallible intuition – the original text, Polish and English frequency lists, and the list created by the author. I will omit this subject below and continue to the second aspect.

Popular science: image and translation

Monika Linke-Ratuszny (2016: 231), reviewing the attitudes to translation of popular science texts – "whose role is nowadays increasing considerably" – writes in the introduction to her article that they are on the periphery of translation scholars' interests. Is this because they are not sufficiently artistically challenging, or because their theme range and reader groups are

so diverse? We do not know; however, it is clear that they are normally approached in the same manner as specialist texts and the significance of the use of specialist language is emphasised, whereas the role of illustrations is usually omitted, which contradicts the very idea behind *Thing Explainer*. Linke-Ratuszny (2016: 248) offers some hope for change in her conclusions, drawing attention to some unexplored areas: "Apart from traditional fields and forms of expression, new ones appear, reflecting the dynamics of the development of intercultural communication, including the popularisation of scientific achievements".

More is known about illustration in popular science, partly deriving from the long tradition of illustrating scientific works; we can refer to the example of one of the oldest diagrams in Euclid's *Elements* (Papyrus Oxyrhynchus 29, 3rd ct. BC). Images which transfer knowledge or facilitate learning can take on various forms: architectural plans, maps, diagrams, medical photography, charts, infographics, etc. Sunil Manghani (2013) provides numerous examples outlining the history of the cultural shift towards visual communication.

Janina Wiercińska (1986: 76–98) actually sees the origins of the development of illustrated children's books in their educational function, adding variety to learning. What is, in fact, the purpose of images when it comes to science popularisation? They help one understand the world, stimulate cognitive curiosity and creativity in problem solving. According to educational specialists, visual aids make books more appealing, facilitate the visualisation of the described phenomena or objects, help one remember and structure knowledge and understand the text (Levin 1981; Levin, Anglin, Carney 1987, in: Mayer, Gallini 1990). Mayer and Gallini claim that illustrations consisting of descriptions of parts of a system and stages of its operation support the creation of a mental model of the system in question, which, in turn, helps in remembering explanations and definitions as well as problem solving.

It is obviously necessary to maintain a balance between attractiveness and scientific accuracy. Comic textbooks, where both images and fictional narrative are the medium for the transfer of facts, increase the effectiveness of students' efforts in learning (Hosler, Boomer 2011). How does a comic book work in this case? Hosler (2012) says in an interview: "If you make an image part of the story, you have to move through the figure, through the content to get through the story (...) Scientists, animals, plants, even cells and molecules can become characters. This provides a human connection to

the material". A comic book, as a medium which explains scientific issues to laypeople, is supposed to engage them in the search for knowledge.

Mico Tatalovic (2009: 2), in his review of (popular) science comic books and research on this subject, has noticed that:

> The fact that there is a sequence of related images (frames) that make up a story distinguishes comics from simple illustrations which may invoke comic imagery but are at the end of the day a part of different media, be it a primarily text-based book, image-based poster, etc.

This is also valid for *Thing Explainer*: despite consisting of elements of the comic book graphic style, it does not have the distinguishing features (except for a few exceptions) of Will Eisner's (1994) sequential art. Even the chapters do not come in a strictly defined order – the particular boards can be treated as separate posters (the last one is indeed a poster attached to the book). The pages of *Thing Explainer* are, however, characterised by a greater mosaic intricacy than in picture books, which has been distinguished by Perry Nodelman (2012) as a feature of a comic.

Tatalovic (2009) refers to David Buckingham and Margaret Scanlon's (2003) example of the comparison of educational books on dinosaurs from 1978 and 1998, in which, with time "text has effectively become a commentary on the images, whereas in the older books the bulk of the text was independent of the image". Therefore, even if such books are outside of theoreticians' scope of interest, they demonstrate an increasing coupling between text and image – which, in this case, also results from the fact that both illustrations and texts are "the product of one thought", which is how Wiercińska (1986: 98) describes an original author's book. The main question that can be asked here is how this linkage between text and image influences the translator's work.

Text and captions

With such a strong sense-mediating connection between the image and the verbal message, for example in the case of audio description creation (Pérez-González 2014: 102–104; Remael, Vercauteren 2007), "the most difficult and time-consuming stage is making the decision of what to describe and how" (Jankowska 2014); the situation is similar in caption translation (so-called channel-based explicitation, Perego 2003). When it comes to the

book analysed here, before the selection stage, the translator must answer a basic question: where are the elements which I am supposed to translate? *Thing Explainer* contains standard components (cf. the background in Fig. 2) such as page titles (font size 24 pt.), introductory paragraphs (8 pt.), text box titles (10 pt.), paragraphs in text boxes (6 pt.); however, the book features another type of text as well – I will refer to it as comic handwritten text – uttered by the characters frolicking in the panels or appearing in various jocular comments (e.g. in the chart comparing a human being with an octopus); last but not least, there is graphic-incorporated text (e.g. on machines, such as the microwave oven). Why have I provided font sizes in the brackets? Because the texts within images are even smaller: captions on the cargo chests (Fig. 2) have the size of 2 pt., whereas the tiniest caption I have found is about 1 pt. (the word "air" taking less than 0.5 mm^2!). Due to that observation, it was necessary to look through the whole book carefully by means of an (electronic) magnifying glass. Text editor software did not help with that inconvenience either – the small print on graphic elements is neither marked nor editable. It was like looking for a needle – in a panel!

Let us have a look not only at the font size but also at the text density: *The US's laws of the land* (the US Constitution, p. 14) page contains 2205 words (11,617 characters), whereas the second page of the Saturn V rocket description includes 127 words (631 characters): in the second example, there is enough space to manipulate the text box size and location; on the other hand, in the first case, even though it is based on a two-column plain text (95 lines, 4397 characters in English to 89 lines, 4623 characters in Polish), it must be squeezed within a whole page, along with the notes on the margins. A similar limitation applies to the three-column introductions on each page, in which the increased number of lines would bring them too close – and in an aesthetically unpleasing way – to the illustrations and descriptions situated below. The issue of text length control at a microscale is essential in subtitle translation (approximately 35–40 characters in one line; cf. Belczyk 2007: 13); in this book's case, the mesoscale appears (the number of lines and columns). Whereas in subtitle translation, the translator may draw from the abundance of the Polish language, in *Thing Explainer*, the list of one thousand words is a limitation; luckily, the most frequent words are usually shorter (according to one of the variants of Zipf's law;[1]

[1] According to the most commonly cited formulation of Zipf's law, the rank of a word on a frequency list is inversely proportional to its frequency. However, Zipf also

Sigurd et al. 2004; Zipf 1935: 38). Additionally, in translations from English into Polish, the number of words normally decreases by 10–30% (Rybicki 2010; generally speaking, this value depends on a given pair of languages), which can prove disadvantageous for a translator accounted for the number of publishing sheets. It is not obvious, however, how this translates to the number of characters (in Polish fiction books, the ratio of the number of characters to words is around 6.5).[2] Taking into account the space limitations analysed here, the translator must be concise (my translation has 14.5% fewer words than the original, thanks to which the number of characters has been preserved with an accuracy of up to 0.1%; to give the absolute numbers: 50,206 words and 253,020 characters with spaces in English and 42,940 words and 253,228 characters in Polish, comprising pages from VIII to 57, not including the texts on graphic elements). What distinguishes the Polish *Thing Explainer* from belles-lettres is the character-word ratio of 5.9, which generally means much shorter words.

As Federico Zanettin (2016: 21–23) points out, contrary to what might be commonly thought, it is not only the linguistic layer that undergoes changes in translation: graphic elements can be transformed as well (which constitutes, however, an extra cost for the publisher). Fig. 3 and 4 present the modifications of typeface (which was not changed on the cover). They made the translation a little easier; before the change, a column of introduction would cover 42.3 characters, whereas after it was 46 characters (accuracy of +/–0.2), although they created another problem at the same time: the typeface and italics were not changed correctly everywhere, so it was necessary to verify the text again with that in mind (a question arises: whose task is that?). The choice of typeface (when it had already been established that the original one was not to be used) was in the translator's interest – without this, he would not have known how much space he had in the text boxes. The graphic designer created three typeface proposals (one of them on the translator's initiative), and the editorial team made a selection. The typeface in Fig. 4 was not discussed with the translator; I am not referring to other individual alterations. I believe that the final selection does not reflect the intended nature of the original lettering because: a) originally, fonts in

observed the inversely proportional relationship between the frequency of a linguistic unit and its length.

[2] Calculated on the translator's private and quite eclectic collection of 232 books, including 100 Polish novels from the turn of the 20th century, 28 translations of classic English novels, Stanisław Lem's works, and Polish translations of Philip K. Dick and Terry Pratchett.

headlines and introductions are rounded, creating the impression of a casual and friendly text, more so than in the Polish version; b) letters in the comic panels look like handwriting (Fig. 1), which corresponds with their role of humorous authorial commentary – after all, one of the stickmen represents the author himself (more about communication expressed through typeface in Kubaszczyk 2016: 98–99). In the Polish version (Fig. 4), the chosen typeface only resembles handwriting slightly, which is immediately noticeable (Zanettin 2016: 21 claims that in similar cases the author's fonts might be scanned and copied; typeface deficiencies in comic book translation are also discussed by Jüngst 2016: 183). Yet, as the managing editor rightly pointed out, the original spacing may cause difficulties with reading. This situation is similar to the one where the publisher determines the translation strategy (Majkiewicz 2010: 138). Although in a picture book the decision concerns the visual aspects and does not directly affect the translation strategy, it may affect its reception. This gives rise to another question: should the translator take part in such arrangements (I am referring both to the translator's impact on the decisions made by the publisher and to his or her increased workload) and supervise the visual integrity of the work?

Technicalities and the traps of lack of specification

It is worth mentioning that in the beginning it was not clear in what form the publisher wanted the translated text to be submitted – hence, what exactly the translation process should be like. Based on the received PDF file, the translator – who did not then own proprietary PDF editing software – prepared a sample in the open-source graphics editor GIMP: this painstaking enterprise would show that the text can fit in the defined space. The manual verification of the sizes of over a thousand text boxes and their numbering would be disproportionately time-consuming both for the translator and the editor (the whole text would have to be typed again). Therefore, the inexperienced translator asked the publisher for a DTP file with editable text boxes that would be used in the final typesetting and, after consultations with the confused editor, it was settled that he would receive InDesign files (nonetheless, texts such as in Fig. 4 or 6 had to be edited by the graphic designer on the basis of the translator's instructions). That required another contract with the publisher of the original version, produced additional costs, and ended up in a two-month delay. After the publication of the Polish translation, the

translator realised that all the necessary functionalities for editing PDF files are available in the Adobe Acrobat software. The translator's lack of experience, and the editor's lack of specific guidelines concerning the preparation of a picture book, brought on additional expenses for the publisher and delay for the translator.

The matter had further consequences, as it turned out that the original PDF file was different from the InDesign files. The former: a) lacked the 1000-word list (and the afterword which explained how it had been created); the translator, who had not seen the paper version, could not know that the blank pages were going to be filled and developed his translation strategy without that crucial piece of information; b) lacked the cover and dust jacket, which contained a blurb and the author's bio as well as an additional board, similar to other book pages; c) some pages had more pictures. How would the translation look if the translator had not asked for additional files? Do standard translation licences for publishers include electronic files? Do editors verify the compatibility of those files with the published original?

The work on the electronic source had other related drawbacks. The translator encountered white captions on white background, arrows leading from nowhere (see Fig. 3), elements which were present in the original PDF file, but not in the DTP file (e.g. on the *Sky toucher* poster, the second floor on the right is empty – in another version, there was a shop with miniature skyscrapers). All the final decisions are certainly the editor's responsibility, who is in possession of an original printed copy of the book. Another aspect that should be mentioned are the (editable) arrows linking text boxes with relevant elements of an illustration – when the translation changes the length and position of text lines, they must be moved. The translator sometimes did it, just by the way, but the graphic designer apparently did not modify the arrows; as such, imperfections were noted by the proofreader and the translator. Evidently, the graphic designer was in need of clearer instructions as well.

It must be emphasised that text itself can be shaped – it can become an image or a shadow of an image. In the case of *Thing Explainer*, text often surrounded nearby elements. It did not pose a problem when it was situated on the right of an illustration, because the text boxes were given a proper shape and the left-aligned text adjusted itself easily. However, it was necessary to retain a similar line length by choosing appropriately long or short words and changing their order. Such layout is visible on p. 49,

around the sun, which takes up more than half of the page. The translator was then responsible for typesetting in a manner similar to subtitle editing, although the text layout has only an aesthetic value here (the speed of reading is not relevant in this case). Text makeup on the left of an illustration was more difficult (see Fig. 3) and, if done in a sloppy way, it would result in a more glaring defect. In the case of centred text, like the one located inside the circles representing planets (p. 38), the problem was the permissible line length (<22 characters in English, <25 characters in Polish). A similar situation occurred during the translation of the periodic table: each of its 118 cells contains text and/or image describing a given element; still, the description could be lengthened to seven lines (for ca. 4 cm^2, there were 4–87 characters in English and 2–114 in Polish). The captions of the knobs and buttons on the cockpit (p. 31) or intertwined pipes under a car bonnet (p. 11–12) were more demanding because phrases of various length and size needed to be squeezed in a diversely distributed graphic component. One could ask here: if the translation does not fit any imaginable arrangement, does it mean we are dealing with untranslatability? Theoretically, the answer is positive depending on the definition of this concept – the preservation of text layout may be considered as an essential element of equivalence. In practice, claiming untranslatability depends of the scope of duties assigned to the translator by the publisher: in this type of cooperation, other configurations may be practicable (e.g. the translator provides only the translated text, whereas the editor in collaboration with a DTP artist takes care of text makeup), but this would require a study of editorial practices. Space limitation *per se* is, at the same time, the most frequent influence that image has on text in the analysed book. Other relationships are discussed below.

The relationships between text and image

These relationships, commonly present in *Thing Explainer*, should be placed on the map of recognised theories. The categorisations presented from the perspective of the theory of comic books (McCloud 1993; mainly the 'intersecting' and 'interdependent' types of relationships) and audio-visual translation (Tomaszkiewicz 2006; mainly the relationships of 'complementarity' and 'interpretation') compared by Karolina Krajewska and Ewa Lipińska (2014) are sufficiently general and substantial. Other works worth noting

are those whose starting point is semiotics and media linguistics (e.g. Stöckl 2004; Antos, Opiłowski 2015; mainly "elaboration" and "extension"). This type of complementation, when "the words tell us what the pictures do not show, and the pictures show us what the words do not tell" (Nodelman 1988: 222, in: Cackowska 2009), brings the best and the most interesting results and, as is emphasised by Cackowska (2009), has educational potential. Such interplay of the unspoken with the unshown is analysed by Anita Wincencjusz-Patyna (2013), who explicitly – albeit briefly – mentions, interestingly enough, popular science literature. She refers to the illustration type division proposed by Seweryna Wysłouch (1994: Ch. VI), which, however, is concerned mostly with literary works, and assumes the primacy of text over image. Similarly, Wiercińska, despite writing that in picture books, "the very existence of the text is determined by the image and the other way round" (1986: 76), when speaking about the loss of an illustration's meaning in the absence of text (1986: 37, 45), does not overtly mention the reverse situation.

How does image influence text in this particular book? Generally speaking, by determining the graphic form of the whole work; from the abovementioned typefaces, to the thematic arrangement (the one-, two-, or three-page panels constitute a graphically and thematically enclosed whole). For this reason, there is no space for footnotes – which could be a plan B, in the face of the text's excessive density – since they would not be in line with the author's intention to make the text as simple as possible (the only footnote in the book accompanies the list of 1000 words) or compatible with the form of a "lexicon" (adding explanations to explanations could be excessive and, what is more, it would disturb the aesthetic coherence – even though this strategy is actually used in comic books) or would not contribute to a good user experience (as in UX design of human-computer interface).

The structural issues also include sequentiality, which is the default feature of comic books according to McCloud. In spite of the presence of comic book elements in the graphic style of the book, this feature seldom occurs and, hence, it does not restrict the translator. To give an example: on p. 21, where the main illustrations are just simple single shots and the movement is suggested through arrows, there is a humorous addition (Fig. 4) alluding to orogeny. Normally, however, there is no fixed order in which the texts around diagrams should be read. There are only two cases requiring sequential descriptions: stages of atomic bomb ignition (p. 24) and opening a lock with a picklock (p. 17, Fig. 5). In the first case, the nine

vertically-situated pictures pushed to the side of the page are accompanied by nine paragraphs (each containing 60–120 characters in 4–7 lines; the limitation of space might have resulted from the fact that the whole sequence had to fit in among other illustrations and descriptions, so laying it out was more difficult for the author). In the other case, the translator had to make sure that subsequent paragraphs closed in a particular column, related to the image shown in parallel. In both cases, there was enough space for the task to be realised without much difficulty.

Speaking of the comic book style, I would like to mention the typical comic-book onomatopoeias and explanations appearing in *Thing Explainer* (DING!, CLICK, WHAM, SPLOOSH, PTOO, SLURP, WHEEE!, BYE!), typefaced as in Fig. 4, usually linked with a line bubble with an object. As they did not require interference in the lettering, they had little impact on the translator's work, but they were all translated (regardless of their semantic transparency to Polish speakers; various strategies in such cases are discussed by Garcés, Carmen 2008).

Probably the most interesting relationship between text and image was the following: the illustration (a very detailed one usually) helped the translator find out what he was actually translating. This was important due to the limitations resulting from the list of acceptable words: in *Thing Explainer*, things are not normally called what they are actually called. As a consequence of the simplification of vocabulary, the denotation of a particular collocation, including proper names, ceased to be legible. Any deliberations on the translation of proper names (Król-Gierat 2014) were of no use there, because before the interlingual translation took place at all, the author had already carried out a special kind of intralingual translation. I am calling it "special", since Roman Jakobson's division (1959) does not differentiate the type where translation is done to a subset of the same language (cf. in mathematics: injection and surjection). Proper names were coded to carry their literal meaning in their new forms. The translator had to decode, translate, and encode them or – as meaningful ones – only translate them.

This is best illustrated by Mars rovers (p. 39), which can be deciphered either by solving a pun (for instance, the *good chances car* is Opportunity), or by searching online (Wikipedia contributors 2017) for a rover in the given shape. To merely google terminology (Dziewańska 2008) is useless in light of the abovementioned coding. A similar situation occurred in the case of translating the names of constellations on the sky map (for example, the

cutting stick stopper is the Shield) – when the translator did not manage to solve the riddle, wandering around the Polish-language star charts helped him find the constellation in the right shape. The shapes also enabled the translator to verify the correctness of the original, as one of the constellations had a wrong caption there.

To sum it up, I will present the three (subjectively) most interesting translation challenges. In the server rack (Fig. 6), everyone will recognise the IBM brand, even though in English the abbreviation is explained as "interesting business machines", which is partly invented. The translator should also be able to decipher the coded name of a brand in the centre, "trees between hills". The illustration helps a lot, as it renders the characteristic design of DELL computers. However, while English readers know the meaning of the word "dell", for Poles, a "valley with trees" or even a "hole in the mountains with trees" (attention to the list of 1000 words!) is absurd; thus the word "DÓŁŁ" (Polish for "hole" with an additional letter: the actual spelling is "dół"), resembling the original is supposed to help in solving the riddle (the possible functions of incorrect spelling are highlighted by Kubaszczyk 2016: 75–79). The DTP artist did not understand this figure and removed the second Ł, considering it a typo – the change was undone at the stage of the translator's proofreading. This is an example of a mistake resulting from the teamwork nature of the development of such texts, pointed out by Jankowski (2014). Fig. 7, on the other hand, demonstrates the extreme limitation of space available for the translated text. Here again, the graphic designer did not interpret the translator's intention correctly and instead of situating the translation in the place of the original, he corrected it (restoring all the vowels in the word "powietrze", i.e., air), placed it nearby, and added arrows, thereby choosing the safer – and yet graphically non-equivalent – solution.

The final example is related to a combination of various types of limitations: p. 50 presents measures showing the length, temperature, speed, and weight of various objects. Next to the weight scale (Fig. 8), there is a description of the bookworm dog Wishbone, a protagonist of a series popular in the US. The description is connected by an arrow with a commentary saying that (in the original) "that show is the only reason I know anything about well-known books" and with a drawing of a family sitting in front of a TV set, from which they can hear barking. Furthermore, in other points of the scale, there are descriptions of four other famous dogs. How then to cope with five different limitations

simultaneously: a) contextual (other dogs); b) cultural (a TV series which is not as familiar to the Polish audience); c) the graphic context (the family and the TV), d) space (three lines, <50 characters each); e) the weight of the object (sic!)? It is really hard to find such multi-faceted problems in non-picturebooks.

Summary

As I have demonstrated, in a popular science book, image and text can be indispensable companions and they can be interwoven as tightly as in a comic book or a picture book. In *Thing Explainer*, this relationship is primarily manifested through space limitations, similar to those present in audio visual translation, but in many scales and variants. The majority of problems, nevertheless, were caused by the partial teamwork and "the necessity of designing a book as a whole" (Wiercińska 1986). They evoke numerous questions related to editorial and publishing practices. How to establish the scope of the translator's duties (just an advisor or a person formulating strategies?) and the graphic designer's or the DTP artist's tasks in terms of graphic coherence (typefaces, text make up, modifications of graphic elements, etc.)? How to plan the translation process (electronic file types available for individual members of the team)? And finally, how to settle the price of translation if the technical limitations increase the workload but decrease the target text length?

Some organisations – such as the Polish Book Institute or translators' associations – provide information about the publishing market, develop standards (Paszkiet 2011; Fordoński 2012; Dobrołęcki, Tenderenda-Ożóg 2016), and write about good (and actual) practices of publishers and translators (Polish Literary Translators Association 2017). However, they do not refer to them in the context of comic books, speaking at best about "illustrated books" or "others". Likewise, we do not know if and where comic books and picture books are hidden in the readership report prepared by the National Library of Poland (Koryś 2017). Standards of work on such texts should be established by editorial teams.

Translated from Polish by Martyna Szczepaniak-Woźnikowska

Bibliography

Antos G., Opiłowski R. 2015. "W drodze do lingwistyki obrazu. Kierunki rozwoju nowej subdyscypliny lingwistycznej z perspektywy polsko-niemieckiej", *Tekst i Dyskurs – Text und Diskurs* 8, pp. 11–36.

Barańczak S. 1990. "Mały, lecz maksymalistyczny manifest translatologiczny", *Teksty Drugie* 3, pp. 7–66.

Belczyk A. 2007. *Tłumaczenie filmów*, Wilkowice: Dla szkoły.

Buckingham D., Scanlon M. 2003. *Education, Entertainment and Learning in the Home,* Buckingham: Open University Press.

Cackowska M. 2009. "Czym jest książka obrazkowa? O pojmowaniu książki obrazkowej w Polsce, part 2, *Ryms* 6, pp. 14–16, http://ryms.pl/artykul_szczegoly/12/czym- -jest-ksiazka-obrazkowa-o-pojmowaniu-ksiazki-obrazkowej-dla-dzieci-w-polsce- -czesc-i-ii-i-iii.html [access: 10 July 2017].

Dobrołęcki P., Tenderenda-Ożóg E. 2016. *Rynek książki w Polsce 2015*, Warszawa: Biblioteka Analiz.

Dziewańska K. 2008. "Rodzina Google w służbie tłumacza. Wyszukiwanie terminologii z pomocą Internetu", *Rocznik Przekładoznwaczy* 3/4, pp. 51–65.

Wikipedia contributors. 2017. "List of Missions to Mars", in: *Wikipedia, The Free Encyclopedia*, https://en.wikipedia.org/w/index.php?title=List_of_missions_to_Mars&oldid=774772293 [access: 12 April 2017].

Eisner W. 1994. *Comics & Sequential Art: Principles & Practice of the World's Most Popular Art Form!,* New York: W.W. Norton & Company.

Fordoński K. 2012. "Rynek przekładu literackiego w Polsce po roku 2000", in: M. Ganczar, P Wilczek (eds.), *Rola tłumacza i przekładu w epoce wielokulturowości i globalizacji,* Katowice: Wydawnictwo Naukowe „Śląsk", pp. 83–105.

Garces V, Carmen M. 2008. "Onomatopoeia and Unarticulated Language in the Translation of Comic Books. The Case of Comics in Spanish", in: F. Zanettin (ed.), *Comics in Translation,* London–New York: Routledge, pp. 237–250.

Hosler J. 2012, interview in: J.J. Meier, "Science Graphic Novels for Academic Libraries Collections and Collaborations", *College & Research Libraries News* 73, pp. 662–665.

Hosler J., Boomer K.B. 2011. "Are Comic Books an Effective Way to Engage Nonmajors in Learning and Appreciating Science?", *CBE – Life Sciences Education* 10, pp. 309–317.

Jakobson R. 1959. "On Linguistic Aspects of Translation", in: A. Fang, R.A. Brower, *On Translation*, Boston: Harvard University Press, pp. 232–239.

Jankowska A. 2014. "Tłumaczenie jako alternatywna metoda tworzenia audiodeskrypcji", *Przekładaniec* 28, pp. 23–38.

Jankowski J. 2014. "O przekładzie komiksu, czyli uwagi teoretyczno-praktyczne o tłumaczeniu graficznym", *Między Oryginałem a Przekładem* 25, pp. 67–85.

Jüngst H.E. 2016. "Translating Educational Comics", in: F. Zanettin (ed.), *Comics in Translation,* London–New York: Routledge.

Koryś I., Kopeć J., Zasacka Z., Chymkowski R. 2017. *Stan czytelnictwa w Polsce w 2016 roku*, Warszawa: Biblioteka Narodowa.

Krajewska K., Lipińska E. 2014. "Przekład komiksów – przekład audiowizualny?", in: *Wkład w przekład 2 Materiały pokonferencyjne 8. Studenckich Warsztatów Tłumaczeniowych „Zapętleni w przekładzie"* 2013, Kraków: Korporacja Ha!art, pp. 207–215.

Król-Gierat W. 2014. "*Bella signora dai capelli turchini* czy może o kruczoczarnych włosach – przekład nazw własnych w polskiej wersji dubbingowej Pinocchia Roberta Benigniego", *Między Oryginałem a Przekładem* 23, pp. 125–141.

Kubaszczyk J. 2016. *Faktura oryginału i przekładu. O przekładzie tekstów literackich,* Warszawa: Wydawnictwo Naukowe PWN.

Levin J.R. 1981. "On the Functions of Pictures in Prose", in: FJ. Pirozzolo, M.C. Wittrock (eds.), *Neuropsychological and Cognitive Processes in Reading*, San Diego, CA: Academic Press, pp. 203–228.

Levin J.R., Anglin G.J., Carney R.N. 1987. "On Empirically Validating Functions of Pictures in Prose", in: D.M. Willows, H.A. Houghton (eds.), *The Psychology of Illustration: Vol. 1. Basic Research,* New York: Springer-Verlag, pp. 51–85.

Linke-Ratuszny M. 2016. "Kompetencja tłumaczeniowa w przekładzie tekstów specjalistycznych – analiza wybranych problemów na przykładzie tekstów popularnonaukowych", *Rocznik Przekładoznwaczy* 11, pp. 231–250.

Majkiewicz A. 2010. "Strategia tłumacza między 'polityką' wydawcy a pracą redaktora", *Między Oryginałem a Przekładem* 16, pp. 131–151.

Manghani S. 2013. *Image Studies: Theory and Practice,* London–New York: Routledge.

Mayer R.E., Gallini J.K. 1990. "When Is an Illustration Worth Ten Thousand Words?", *Journal of Educational Psychology* 82, pp. 715–726.

McCloud S. 1993. *Understanding Comics*, New York: Harper Perennial.

Munroe R. 2014. "Landing" (comic#1446), https://www.explainxkcd.com/wiki/index.php/1446:_Landing [access: 29 April 2017].

——— 2015. "I'm Going on a Book Trip!", xkcd blag, https://blog.xkcd.com/2015/09/22/im-going-on-a-book-trip/ [accessed: 29 April 2017].

——— 2016. *Tłumacz rzeczy*, trans. J.K. Ochab, Warszawa: Czarna Owca.

Nodelman P. 1988. *Words about Pictures: The Narrative Art of Children's Book.* Athens, Georgia: The University of Georgia Press.

2012. "Picture Book Guy Looks at Comics: Structural Differences in Two Kinds of Visual Narrative", *Children's Literature Association Quarterly* 37, pp. 436–444.

Paszkiet S. 2011. *Raport o sytuacji tłumaczy literackich w Polsce*, Warszawa: Instytut Książki.

Perego E. 2003. "Evidence of Explicitation In Subtitling: Towards A Categorisation", *Across Languages and Cultures* 4, pp. 63–88.

Perez-Gonzalez L. 2014. *Audiovisual Translation: Theories, Methods and Issues,* London–New York: Routledge,

Remael A., Vercauteren G. 2007. "Audio Describing the Exposition Phase of Films. Teaching Students What to Choose", *TRANS. Revista de Traductologia* 11, pp. 73–93.

Rybicki J. 2010. "Original, Translation, Inflation: Are All Translations Longer Than Their Originals?", *Digital Humanities 2010: Conference Abstracts*, pp. 363–364, poster presented at DH2010, London, 7–10 July 2010.

Sigurd, B., Eeg-Olofsson, M., Van Weijer, J. 2004. "Word Length, Sentence Length and Frequency-Zipf Revisited", *Studia Linguistica*, 58, pp. 37–52.

Stowarzyszenie Tłumaczy Literatury. 2017. *Dobre praktyki*, http://stl.org.pl/ baza-wiedzy/ dobre-praktyki/ [access: 14 April 2017].

Sytuacja tłumacza [online]. http://stl.org.pl/baza-wiedzy/sytuacja-tlumacza/ [access: 14 April 2017].

Stöckl H. 2004. "Typographie: Gewand und Körper des Textes – Linguistische Überlegungen zu typographischer Gestaltung", *Zeitschrift für Angewandte Linguistik* 41, pp. 5–48.

Tatalovic M. 2009. "Science Comics as Tools for Science Education and Communication: A Brief, Exploratory Study", *Journal of Science Communication* 8, A02.

Tomaszkiewicz T. 2006. *Przekład audiowizualny*, Warszawa: Wydawnictwo Naukowe PWN.

Wiercińska J. 1986. *Sztuka i książka,* Warszawa: Państwowe Wydawnictwo Naukowe.

Wincencjusz-Patyna A. 2013. "Między słowem a obrazem – kiedy rysunek staje się ilustracją", *DYSKURS: Pismo Naukowo-Artystyczne ASP we Wrocławiu* 16, pp. 236–248.

Wysłouch S. 1994. *Literatura a sztuki wizualne*, Warszawa: Państwowe Wydawnictwo Naukowe.

Zanettin F. 2016. "Comics in Translation: An Overview", in: F. Zanettin (ed.), *Comics in Translation,* London–New York: Routledge.

Zipf, G.K. 1935. *The Psycho-biology of Language.* Cambridge MA: MIT Press.

Fig. 1. Source: Munroe (2015)

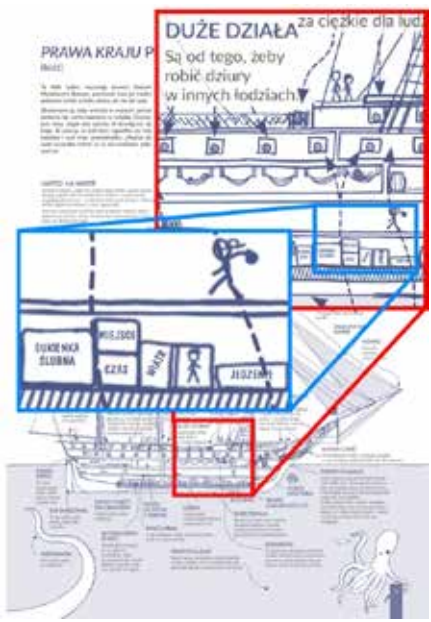

Fig. 2. A sample board with two close-ups of text (red: 4x, blue: 2.5x)

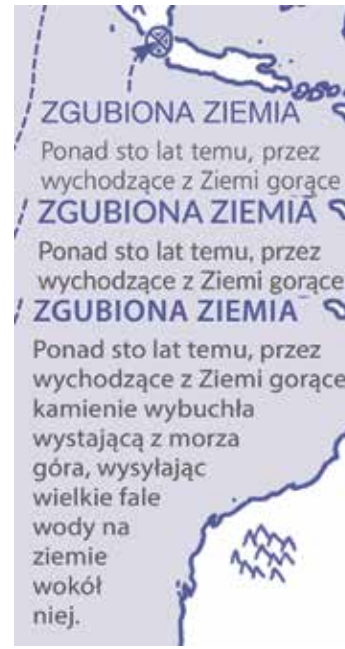

Fig. 3. Comparison of typefaces (from the top): Switzer Rounded [headlines] and Humanist 777 light [descriptions] (translator's choice), Lato (editor's choice), Myriad Pro (another choice of the editor). Original typeface: Gotham Rounded/Book

Fig. 4. An example of a sequential panel. In the Polish version – typeface from the Dom Casual family. In the original – handwriting

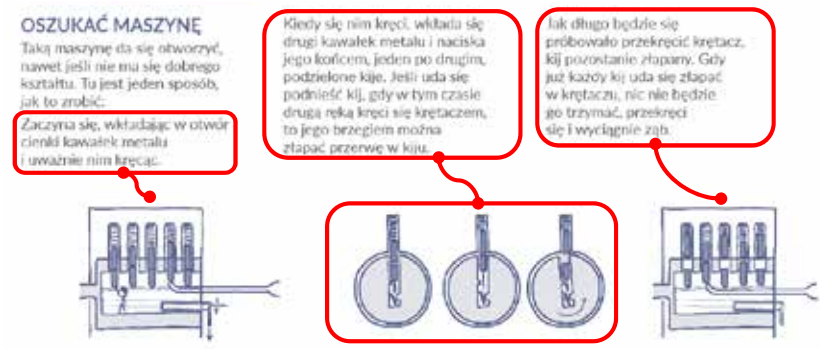

Fig. 5. The three-stage co-ordering of explanations and illustrations has been marked with red frames for the purpose of this text.

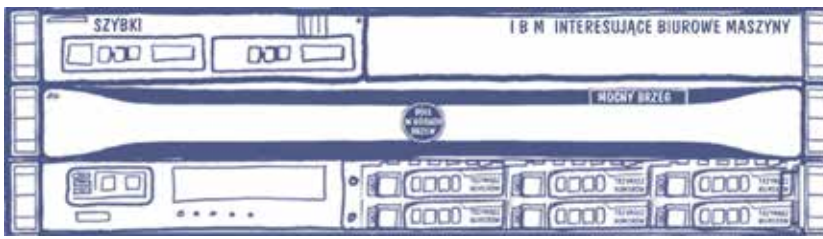

Fig. 6. The characteristic computer casing makes it easier to guess its brand. The word *szybki* (“fast”) is 4 pt. font

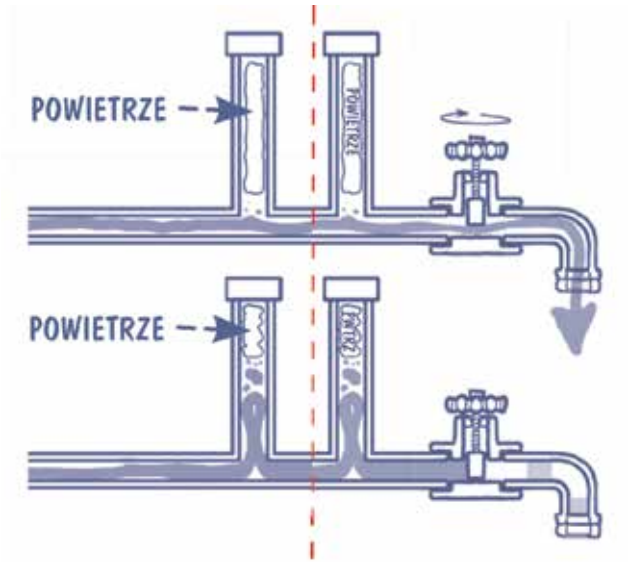

Fig. 7. An example of extreme space limitations: in the version of translation which was misunderstood by the graphic designer (on the left) and in the translator's version (on the right). In the original version, both air bubbles contained the word "air"

Fig. 8. A fragment of the ruler showing weights of various objects. The 8 kg object in the English version was Wishbone the dog. The translation refers to a video camera (as in the title of a popular Polish nature documentary "With a camera among animals")