

# TRANSLATION DIARIES OF AN ILLUSTRATED TECHNICAL TEXT

## Translation students' conceptions of word–image interaction

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This study set out to characterize the qualitatively different ways in which a group of master's level translation students conceptualized the interaction of verbal and visual information during the translation of an illustrated technical text. The research approach chosen for this purpose was phenomenography, which aims to identify the differences in the ways people conceptualize various phenomena. The data of the study consisted of translation diaries written by the students.

The study identified two qualitatively distinct main categories of conceptualizing the interaction of verbal and visual information: either conceptualizing the combination of modes as an entity to be perceived as a whole, or conceptualizing the modes as competing sources of information. It was concluded that the students conceptualized the images as an important part of the source text, capable of amplifying, specifying and even annulling verbal information.

**Keywords.** Multimodality, Technical texts, Illustrated texts, Translation students, Translation diaries, Phenomenography.

Translating today often involves engaging with multimodal material (Hirvonen and Tiittula, 2010, p. 1). A multimodal source text conveys meaning through the interaction of modes—written language, spoken language, images, etc. (e.g., Gibbons, 2012, p. 8). The subjects of the present article—illustrated technical source texts—create their message in the interaction of words and images, here



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referred to as the *verbal source text* and the *visual source text*. The definition of an illustrated technical text adopted in the article builds on Byrne's 2012 (pp. 26–28) description of technical texts, which includes all task-oriented documents that seek to help a particular audience understand how to do something or how something works. By an *illustrated technical text*, the article hence refers to an informative, instructive text that explains how something works by both verbal and visual means. Illustrated technical texts could well be the most common type of illustrated texts being translated today; technical texts constitute a significant share of all translated material (Kingscott, 2002, p. 247, Byrne, 2012, p. 6) and, as remarked by Byrne (2012, p. 26, 54) and Tercedor et al. (2009, p. 143), different types of images are an integral feature of technical documents. Yet, research into the translation of illustrated technical texts so far has been rather scarce, focusing mainly on providing criteria for choosing appropriate images in technical and scientific texts (Tercedor-Sánchez and Abadía-Molina, 2005) and technically-oriented terminological databases (Prieto Velasco, 2009, 2012).

Verbal information in a multimodal text is always interpreted in relation to all modes present (Jewitt, 2009, p. 2), whether consciously or unconsciously. This article sets out to examine how verbal information is interpreted in relation to visual information when translating an illustrated technical text. Naturally, a phenomenon such as this one may be examined from various perspectives. One possible perspective to examining a phenomenon is to describe the distinctively different ways in which people experience and conceptualize it. This article examines the interaction of visual and verbal information within an illustrated technical source text as conceptualized by a group of master's level translation students. The research approach adopted for this purpose is phenomenography, which aims to map the different ways in which a phenomenon or an aspect of the world may be experienced, conceptualized, perceived, and understood by different people (Marton, 1994, p. 4424; 1988, p. 144). Phenomenography sets out to examine *how* people comment on a particular phenomenon, and its aim is to describe the *variation* in the ways of conceptualizing the phenomenon.

The data of the study consist of translation diaries—reports on the problems encountered, the strategies employed to solve them, and so on—written

about the translation process of an illustrated technical text during a technical translation course from English to Finnish. The students were not specifically instructed to comment on the images or their interaction with the verbal text in their diaries. For this reason, prior to analyzing *how* the students comment on the interaction of verbal and visual information, the analysts must determine *if* the students comment on the issue—do they inspect the images and do they pay attention to their interaction with the verbal text? If the students were to regard the images, for instance, as merely decorative elements, it is unlikely that they would comment on them when discussing their translation strategies. The research questions that the article sets out to answer may hence be formulated as follows: “Are translation students aware of the interaction of verbal and visual information in illustrated technical texts?” and “How do translation students conceptualize the interaction of verbal and visual information within the translation of an illustrated technical text?”

## **Background of the Research Project**

The study presented in this article is a part of a research project investigating how an illustrated technical text is processed in translation. The research data of the project consists of the translations of an illustrated technical text made by translation students as well as the translation diaries examined in this article. The data were produced during a technical translation course at the University of Tampere, Finland. The research subjects were a group of eight master’s level translation students who all spoke Finnish as their native language. All of the students had received a bachelor’s degree in English translation at the University of Tampere, having therefore completed both theoretical as well as practical translation courses—both from and into English. The students were given one week to finish the translation assignment. The use of dictionaries and other reference resources was allowed. After the students had completed the translation task, a group interview was conducted in which the students were informed of the aim of the research and where they had the chance to comment on the task. The research project was submitted for evaluation by the university’s ethics committee

for research involving human subjects and it was exempted from the need for a review. All eight students gave written consent to participate in the study.

The source text for the translation assignment presented the illustrated operating principles of two different types of wet magnetic separation devices used in the mining industry for ore beneficiation. The source text, including its illustrations, was produced specifically for the purposes of this research with the help of the staff of the Geological Survey of Finland. It was written in English and proofread by an expert at the Western Australian School of Mines. The source text consisted of just over 500 words and two large colored images, and I consider it to be a representative example of an illustrated technical text as defined above.

A broad range of research has established that, when reading an illustrated text, readers process both words and images, and form their interpretation of the multimodal text based on both verbal and visual information (e.g., Connors, 2013; Hegarty and Just 1993; Mayer, 2002; 2005; Schnotz and Bannert, 2003; Schnotz and Kürschner, 2008; Wasylenky and Tapajna, 2001; Youngs and Serafini, 2013). The information provided by the two modes may hence be deeply intertwined in the reader's mind. When designing the source text for the study, I considered it possible that if the messages conveyed by the two modes were perfectly symmetrical—in other words, they expressed precisely corresponding information—then the students might not be able to distinguish which parts of their interpretation consisted of information derived verbally and which visually. Hence, they could be inclined to underestimate the importance of the visual information within the process even if they had inspected the images with great care; after all, it is words that they undoubtedly acknowledge reading, and it is words that they produce.

For this reason, the relationship between the words and the images in the source text was modified in certain parts of the source text so that the information conveyed by the two modes was, in one way or another, *asymmetrical*. For instance, in one section of the source text, visual information was deleted from the image: the verbal text accurately described a particular part of the operating process—tailings or nonmagnetic particles exiting the separator—but the

corresponding information could not be found in the image. On two occasions, the visual and verbal texts were modified so that the information provided by the two was straightforwardly contradictory: the verbal text expressed that the device was submerged under water, while only the bottom–most part of the device was under water in the image, and the verbal text expressed that a certain part of the device was located in the *upper* part of the device while, according to the image, the part was in the *lower* part of the device. Further, the shape of a part of the device called *launder* was modified: while the term typically refers to a trough or a long, narrow container, it was presented in the image as nearly square–shaped. The rationale behind these modifications was that the asymmetry of information might make it easier to distinguish which mode the translation student considered to be of more relevance during translation.

In a pre-translation questionnaire, half of the students estimated their background knowledge of ore beneficiation as “none” and half as “very little.” Even though these estimations are rather subjective, the students’ level of background knowledge of the subject matter is an important factor to consider: previous research within educational psychology investigating university students’ reading comprehension of illustrated scientific texts has established that students with low prior knowledge of the subject matter at hand observe the illustrations in more detail than students with high prior knowledge (Mayer and Gallini, 1990). The fact that none of the students reported being considerably better acquainted with the subject matter than the rest of the group adds to the comparability of the data.

The present article concentrates on examining a relatively small number of translation students. The study does not intend to generalize its observations to all translation students and, even less so, to professional translators who may generally be expected to employ translation strategies differing from those employed by translation students (e.g., Göpferich, 2010). It should be emphasized that in the discussion of the results of the analysis, the term “translator” as opposed to “translation student” is employed; in that context, it is used to refer to “the person who translated something.”

## Translation Diaries as Research Data

Translation students at the University of Tampere are asked to write translation diaries of a large majority of the translation assignments that they are given during the study program. They are generally instructed to comment on the communicative situation—commissioner of the translation, the target audience, and so on—and on the source text itself—its style, text type, and subject area. They are also asked to describe the translation process—macro and micro level strategies—and to specify the sources consulted, including dictionaries and parallel texts—texts originally written in the target language with a purpose similar to that of the source text. Finally, they are instructed to reflect on the quality of their own work and to assess what they learned during the assignment (UTA käännöskomenttiosio). These translation diaries could be described as *semistructured* as instructions for writing the diaries are generally provided in the first year of the study program and, after the students are accustomed to writing them, the instructions are not regularly reinforced.

This translation diary procedure is highly similar to the Integrated Problem and Decision Reporting (IPDR) procedure introduced by Gile (2004, p. 15): both set “a systematic requirement for written introspective reporting by students whenever they hand in a translation assignment.” In both forms of reporting, students discuss the problems they encountered during the translation process, the steps they took to solve them, and the rationale behind their decisions. Students also introduce the sources and references they consulted during the task. The reports are collected in a written form with no strict reporting format or structure except for the initial instructions from the instructors (Gile, 2004, pp. 3–4). Introspective reporting benefits the students and the instructors alike. Gile describes that writing reports increases the students’ awareness of their translation process: it emphasizes that translation is a demanding operation requiring intense decision-making, and it encourages the students to devote more effort to their work. It also provides the instructors with a better view to what the students are doing and what they find particularly

difficult, as well as how to interpret their translations and to identify their strategies (pp. 4–9).

Gile, too, remarks that apart from having a didactic function, these introspective reports may also be used as data for research (pp. 8–9). Translation process research has employed other introspection methods as well, including think-aloud methods and retrospection (e.g., Tirkkonen-Condit and Jääskeläinen, 2000). Gile (2004, pp. 8–9) emphasizes that IPDR offers “no revolutionary way of accessing information not available through other methods,” but that compared to other introspection methods, it does have its benefits: the data is easily gathered and available to the researcher in a directly readable form. Further, IPDR does not include distraction between translating and verbalizing one’s thoughts at the same time, nor does it require the students to work under strict time limitations or with a particular software. Gile (p. 10) concludes that the main limitation of IPDR as a data collection method lies in the unpredictable, possibly noncomprehensive nature of the data, and suggests that more complete reports could perhaps be produced with the help of a more structured set of questions posed for the translators. Göpferich and Jääskeläinen (2009, p. 172) make the same observation, stating that the contents of the reports depend entirely on what the translators themselves regard as relevant. Yet, the justification for the use of the data collection method in this particular study lies in that very notion: one of the aims of the study was to elucidate whether the translation students indeed regard visual information as relevant enough to analyse in their diaries. In addition, as discussed in the following section, it would be highly questionable to perform a phenomenographic analysis on translation diaries written in response to a structured set of questions.

## **Research Approach and Process**

The research approach adopted in the analysis of the translation diaries is phenomenography, which sets out to map the different ways in which various aspects of the world are experienced, conceptualized, perceived, and understood by different people (Marton, 1994, p. 4424; 1988, p. 144). Phenomenography was

developed and has mainly been applied within an educational context. Yet, its aim transcends the educational context as the approach sets out to identify similarities and differences in the way we experience and comprehend phenomena in the world around us (Marton, 1994, p. 4429).

Rather than a single method of analysis, phenomenography is an integral perspective on research. It is underpinned by the adoption of a second-order perspective, which refers to focusing on how things appear to people instead of focusing on how things “really are” in the world. In other words, within the so-called first-order perspective, research aims to make statements about the world (Marton, 1981, p. 178) and could pose a question such as “How do words and images interact in illustrated texts?” Within the second-order perspective adopted in phenomenography, on the other hand, research aims to make statements about people’s conceptions of the world (ibid.), posing questions such as “How do translators themselves experience and conceptualize word–image interaction in illustrated texts?” In order to fully understand the phenomenon of word–image interaction within translation, observations made from the first-order perspective may be complemented by those made from the second-order perspective.

## **Phenomenographic Analysis and Issues of Data Collection**

The data used in phenomenographic research is collected from a group of people individually reflecting on their experience of a phenomenon (Reed, 2006, p. 5). The researcher goes through the data and looks for expressions—direct quotes—that refer to experiencing the phenomenon under study in a certain way. Based on their similarities and differences, these experiences are arranged into groups referred to as *categories of description* (Marton, 1988, p. 145). In other words, the categories are not selected in advance but emerge from the data as expressions are brought together and compared. As the same individual may express more than one way of conceptualizing the phenomenon when in different situations, the individual—in this case, the individual translator—is not the unit of analysis (Marton and Pong, 2005, p. 346). Instead, the categories of description are

arrived at by “separating forms of thought both from the thinking and the thinker” (Marton, 1981, p. 196).

Since the categories are the result of reflections about the same phenomenon, they are meaningfully related to each other. Further, as some ways of experiencing a phenomenon may be more comprehensive than others in relation to a particular criterion, it may be possible to establish a *hierarchy* between the categories of description (Marton, 1994, p. 4426). The main aim of phenomenographic analysis is to identify the relationships or the structure between the categories. The structured set of categories of description is called *the outcome space* of the phenomenon in question, and it constitutes the main outcome of phenomenographic research (Marton, 1994, p. 4424). Since phenomenographic research in general—this study being no exception—analyzes a relatively small number of research subjects, the outcome space may never be claimed to be exhaustive. The goal is simply that the outcome space is complete in the sense that nothing has been left out of the collective experience of the particular group (Marton and Booth, 1997, p. 125).

The dominant method of data collection in phenomenographic research has traditionally been the individual interview, but some studies have also employed group interviews, children’s drawings, written responses, and historical documents (Marton, 1994, p. 4427), as well as unstructured learning diaries (Prinsloo, Slade, and Galpin, 2011) as research data. As explained above, the data used in this study consists of semistructured translation diaries written by a group of translation students. This type of data has both advantages and disadvantages as research data for phenomenographic inquiry. An obvious disadvantage is that the method of data collection does not offer a chance to ask the students for further clarifications of their reflections. A clear advantage, on the other hand, is that the researcher cannot guide the students’ reflections by—consciously or unconsciously—imposing one’s own presuppositions of the phenomenon in the form of follow-up questions. Marton (1988, p. 154) emphasizes that any guiding questions used within the process of phenomenographic data collection should be as open-ended as possible, allowing for the subjects to “choose the dimensions of the question they want to answer.” The dimensions of the answer reflect what the

subject holds relevant and are therefore informative in themselves. Since the translation students of the study were not instructed to comment on the images, it may be concluded that all comments regarding visual information and word-image interaction were made because the students regarded them as relevant issues to discuss.

### **Procedure of Analysis Followed in the Study**

Exact rules of procedure for undertaking phenomenographic analysis cannot be specified: as Marton (1988, p. 154) concludes, finding out the ways in which a phenomenon is conceptualized by different individuals “takes some discovery” for which no algorithms can be provided. Yet, a general way of proceeding can be described; the procedure followed in this study is based on the general guidelines provided by Marton (1988, pp. 154–155), Marton (1994, p. 4428), and Larsson and Holmström (2007, p. 57). Even though the number of steps and the use of some terminological choices differ in these guidelines, the key elements provided remain the same for them all.

The first stage of analysis included reading through the data various times. The data consisted of eight translation diaries ranging from 400 to 900 words. I observed that seven out of the eight translation students had commented on issues relating to visual information and therefore concluded that the analysis was indeed possible. When reading through the data, my aim was first to gain a tentative understanding of what the students said and then, with each rereading, to obtain a more comprehensive understanding of the data as a whole. In the second stage of the analysis, I began to select parts of the data that answered the question “What do the translation students say about images or the interaction of images and words?” This guiding question was deliberately formulated as a rather open one in order to avoid misjudging what the students regarded as relevant. The selected parts ranged from individual phrases to parts of longer reflection. At the end of this stage, I had gathered a collection of quotes—the “data pool” of my study—consisting of 53 quotations. The translation diary, which included no

references in regard to the visual, was consequently left outside of the analysis at this point.

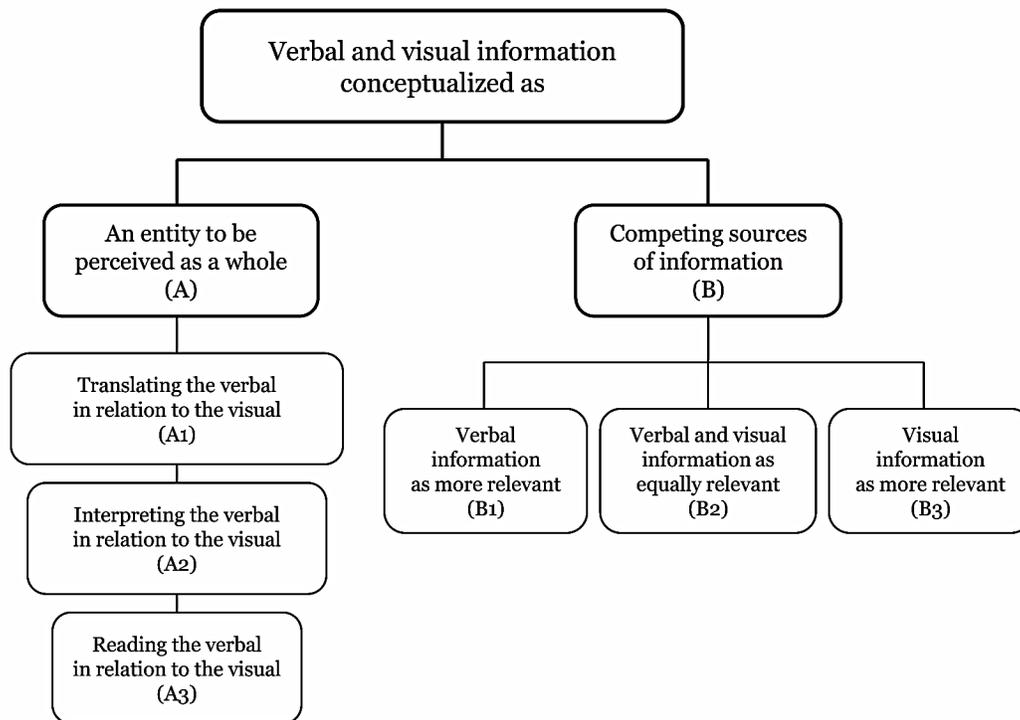
In the third stage of the analysis, my attention shifted from the individual students to the meaning embedded in the data pool as a whole. In other words, at this stage of phenomenographic analysis, forms of thought are conclusively separated from the thinker; beyond this point, the analysis no longer specifies which research subject each quotation belongs to. At this stage, my aim was to identify the different ways of understanding the phenomenon, the guiding question being “What are the different ways in which the translation students conceptualize the interaction of verbal and visual information?” I read through the quotes again and began to perceive some general themes that ran across the pool. The quotations were arranged into (tentative) groups based on their similarities and differences. Eventually, this led to establishing clearer borders between the groups. It was then possible to detect and determine the distinguishing features of each group. These groups now formed the categories of description of my study. Structuring the outcome space, the final stage of analysis proceeded hand in hand with the previous stage. This outcome space constitutes the final result of the analysis; it represents a contrastive comparison of the different ways of conceptualizing the interaction of verbal and visual information in the particular source text by the particular group of translation students.

## **Results of the Phenomenographic Analysis**

The results of the analysis are presented in Figure 1 on page 72 as a set of categories of description in an outcome space, symbolizing the range of the different ways in which the phenomenon under investigation was conceptualized collectively. To demonstrate that the categories of description are indeed supported by empirical data, the categories are presented with example quotes from the data (Francis, 1996, p. 44; Åkerlind, 2005, pp. 331–332). The quotations have been translated from Finnish into English. Since the quotations have been removed from their original contexts, I added contextual information in brackets when considered necessary. Even though elsewhere in the article *a text* consisting

**Figure 1**

*The outcome space of translation students' ways of conceptualizing the interaction of visual and verbal information in the source text.*



of verbal information only is referred to as *a verbal text*, the students, quite naturally, refer to verbal text simply as “text” in the quotations.

The analysis identified two qualitatively distinct main categories of description representing the translation students' ways of conceptualizing the interaction of verbal and visual information in the source text:

- A. Conceptualizing the verbal and the visual as an entity to be perceived as a whole
- B. Conceptualizing the verbal and the visual as competing sources of information

In other words, the first main category represents experiences related to perceiving the combination of word and image as an inseparable whole, and the second represents experiences related to consciously dissecting the combination of verbal and visual information and evaluating the two modes as separate sources of information. Both main categories include subcategories; the subcategories in group A take the form of a linear hierarchy of inclusiveness—the lower categories are logically included in the higher ones—whereas the subcategories in group B are qualitatively exclusive of each other.

### **Main Category A: Conceptualizing the Verbal and the Visual as an Entity to be Perceived as a Whole**

In the first main category, the combination of word and image was conceptualized as an entity to be read, interpreted and translated as a whole. Characteristic of these experiences was that the information conveyed by the two modes was combined into a single message, the integrality of which was not questioned. This was reflected particularly well in experiences related to instances of asymmetry of information. The translators expressed three hierarchically related aspects to conceptualizing the multimodal source text as a whole. The category is hence divided into three subcategories, hierarchically linked based on their inclusiveness and relative completeness: A3 at the bottom of the hierarchy is the most basic category and A1 at the top is the most comprehensive, logically subsuming both lower subcategories of A2 and A1.

**Reading the verbal in relation to the visual (A3).** This subcategory concentrates on describing how the verbal and the visual are read side by side and how the attention of the translator alternates between the visual and the verbal in different stages of translation. The focus of the subcategory is hence on the external representations: the actual verbal source text and the illustrations. Characteristic of these experiences is that the image is conceptualized as an integral part of the multimodal source text: it is involved within source text inspection in various stages of translation. An example of the source text

comprehension stage is illustrated in the quotation below in which the translator describes stopping to check the image after reading small segments of the verbal source text:

In other words, I read them [*words and images*] side by side; in each part, I stopped to see where it [*the slurry*] really goes.

In the following quotation, the translator reports having spotted an instance of asymmetry between the verbal and visual texts in the revision stage of the translation process:

I didn't notice it until four hours before the deadline and then I sort of panicked.

The quotation illustrates how the revision stage, too, has included switching attention between the two modes; comparing the verbal text (either the source or the target or both) with the image.

**Interpreting the verbal in relation to the visual (A2).** Relatively more complete than the previous subcategory, this subcategory represents experiences of interpreting and comprehending the multimodal source text as a whole instead of merely switching attention between the two modes. In other words, the focus of the category is on interpretation and forming an internal or mental representation of the two external representations. This subcategory logically subsumes the lower subcategory introduced above: interpreting the two modes in relation to each other presupposes that the translator has inspected them both. Many of these experiences are related to resorting to images for confirmation of acquired verbal text contents—even though, admittedly, these experiences only describe the students' own subjective understanding of their comprehension process.

The images acted as elements supporting and confirming my text comprehension.

Images helped me process and comprehend the text.

Interestingly, these experiences were not limited to the images of the source text at hand but were also related to other visual information the translators had employed within the translation process. These images could be described as *visual parallel texts*—images produced for a similar purpose to that of the images of the source text:

Google image search was extremely helpful in assuring I had understood certain parts of the equipment somewhat correctly.

The asymmetry of information between the modes of the source text was experienced as hindering source text comprehension. The following quotations are related to the translators reflecting on the part of the source text where information (exit route of the tailings) was missing from the image:

I understand the operating principle of the equipment rather well, even though I do not understand where the tailings go in the counter current separator.

I still [*after completing the assignment*] do not understand where they [*tailings*] go.

These experiences reflect a clear effort to interpret the multimodal source text as a whole: visual and verbal information are mapped onto each other to a degree that not being able to confirm the verbally acquired information from the image leaves the translator with an impression of not having understood the verbal text at all. Despite the obvious asymmetry of information, the truth value of neither mode is questioned.

**Translating the verbal in relation to the visual (A1).** The most comprehensive subcategory, this subcategory focuses on translating the internal representation formed from the external representations; in other words, the interaction of visual and verbal information. It is highest up in the hierarchy because translation presupposes interpretation. Even though translation can be described as verbal activity in the sense that it is verbal text that the translator produces, these experiences clearly reflect how images define what the most suitable or “the

correct” translation solution is. Translation solutions are based on or justified with visual information, as exemplified by the following quotation:

Thanks to the images, I had the courage to deviate from the source text more radically. I was more certain that I had understood the text correctly, and was therefore more confident about the suitability of the deviating translation solutions to each given context.

The following two quotations are excellent examples of how the image may specify the meaning of a particular element in the verbal source text and how the image defines what the correct translation solution is. In the first, the translator compares a list of possible translation choices to the information provided by the image, and in the second, the suitability of the translation solution is assessed in relation to visual information:

Judging by the image, the part in question is not a funnel, a gearbox, an access door box or a charge pocket.

“A container” is an easy choice since it is so generic it can be of any shape at all.

Some of these experiences, too, were related to visual parallel texts. The following quotation illustrates how a translation solution is based on visual information found in other images:

After I checked images of similar devices online, I decided to change it [*the translation solution*].

In the following quotation, the translator reflects on the translation of the word “feedbox,” and reports having found a Finnish equivalent for a *similar looking part* labeled in an image describing the production process of biofuel. The external similarity—and, perhaps, the assumed functional similarity—of the parts in the two images is considered to ratify the use of the equivalent in the translation:

I found an image of a similar feedbox in a text describing the production of biofuel. I believe this validates my choice.

All in all, the experiences in main category A indicate a conscious effort to map visual and verbal information onto each other and to apprehend each mode in terms of the other. This way of conceptualizing the interaction of modes did not include questioning the accuracy of either one, even when there was a clear asymmetry of information between the two.

## **Main Category B: Conceptualizing the Verbal and the Visual as Competing Sources of Information**

Category B represents experiences of consciously dissecting the multimodal source text and conceptualizing word and image as separate sources of information. These experiences were related to evaluating the verbal and the visual modes as sources of information, or assessing their usefulness and trustworthiness in relation to each other. Most—but, interestingly, not all—of the experiences in this category were related to the instances of asymmetry of information between the modes. Some of the experiences in the category—in subcategory B3, to be precise—also included examples of the translator assessing the usefulness and trustworthiness of the modes on a more general level: in other words, when the multimodal source text did not directly prompt a reason to do so. Three qualitatively exclusive subcategories were detected, representing the variation in the ways of conceptualizing the two modes as sources of information in relation to each other.

**Conceptualizing verbal information as more relevant (B1).** In this subcategory, visual information was experienced primarily as subsidiary to verbal information. Characteristic of these experiences was that the usefulness of the image was questioned when the two modes provided asymmetrical information:

The second image was not as informative as the text.

These experiences also reflect discrediting the contents of the visual source text when the two modes were contradictory to each other.

I trusted the contents of the text completely and therefore ignored the inadequacy of the image.

In one part, the information in the source text differed from that claimed by the image.

**Conceptualizing verbal and visual information as equally relevant (B2).** This subcategory supports a view of considering word and image as sources of information with an equal status, not explicitly identifying either one as more trustworthy than the other.

There might be a mistake in the paragraph because according to the image, the tailings are collected in the lower part of the machine, and not in the upper part as expressed in the text.

In the above quotation, the asymmetry of information is reported in a somewhat neutral manner: the translator states that one mode expresses this piece of information in one way, and the other mode in another way. The translator does not directly propose that the verbal text is mistaken, but that there *might* be a mistake. This subcategory did not emerge from the data as a prominent one; in fact, the quotation above was the only one representing a view of not directly disregarding either mode. All other quotations referring to conceptualizing the issue reflected a considerably more explicit stance towards privileging either verbal or visual information.

**Conceptualizing visual information as more relevant (B3).** This subcategory was related to experiencing verbal information as subsidiary to visual. Visual information was conceptualized as both amplifying the verbal, in other words, providing information not available from the verbal text, as well as annulling or discrediting the contents of the verbal text when the two modes were contradictory to each other. Out of the three subcategories in category B, B3 emerged from the data as the most prominent one. Unlike the subcategories of B1

and B2, these experiences were not limited to discussing instances of asymmetry of information between the modes but were also made on a more general level; reflection on the visual mode being more informative than the verbal was often related to the comprehension of the subject matter, in other words, the operating principle of devices the source text describes:

The image gave me a better overall understanding of the subject, revealed the shape of the parts and the direction of the flow of the substances etc.

Compared to subcategory A2, in which the image was conceptualized as affirming the acquired verbal text contents, the image is here conceptualized as helping in source text comprehension by offering information not retrievable from the verbal text. In fact, visual information was conceptualized as so intrinsic to the comprehension of the operating principle of the device that the translators reported having imagined it in the parts where visual information was missing from the image:

I looked at the image to assess where they [*particles missing from the image*] actually go.

In this subcategory, the experiences related to conceptualizing the contradiction of information between the two modes reflected conceptualizing the verbal element as mistaken. This was, in fact, the most common way of commenting on the instances of contradiction.

The contradiction between the text and the image made me question the accuracy/incorrectness of the text.

...the part which talked about the location of the tailings launders, claiming it to be in the upper part of the equipment, while the image clearly shows that it is one of the bottommost parts of the equipment.

Another part indicative of the somewhat deficient connection between image and text is the part which says that the drum is submerged in the tank, which I

understand to mean that the drum is entirely under water – yet, this is not the case.

Some of these experiences were also justified with visual parallel texts:

In the image (or in other images I saw) it [*part of the equipment*] is not in the upper part.

Interestingly, even though these experiences reflected a clear tendency to identify the verbal component as mistaken, most of these translators also mentioned that they did not, in fact, change the “mistaken” verbal information in their translations: even though they were convinced that the verbal text was wrong, they reported that they did not feel they had the authority to change it. All in all, main category B suggests that the combination of verbal and visual information may be approached with strategies reflecting varying attitudes towards the importance and relevance of both modes.

The group interview conducted a week after the translation assignments had been handed in shed some further light on the translators’ thought processes. As mentioned above, one of the students did not discuss the images at all in the translation diary. Yet, in the group interview, this particular student reported having studied the images in great detail—however, this had been done even before reading the verbal source text for the first time. In the student’s own words, the student had examined the images first to gain a general idea of the subject matter and had then moved on to read and translate the verbal text, disregarding the images. This illustrates that visual information may be approached with different reading strategies. Further, several students discussed the part of the source text in which visual information had been deleted and mentioned that it had not occurred to them that the image could be faulty in any way—they had simply thought they were “too stupid” to understand the process correctly. Further, one of the students reported having thought that the asymmetry of information could well have been due to difficulties in printing the colors correctly—that, for some reason, the color blue (the color of the deleted

information) had not printed correctly. These notions are discussed in the following section in relation to the results of the phenomenographic analysis.

## **Conclusions**

This study set out to elucidate if a group of translation students were aware of the interaction of verbal and visual information in an illustrated technical source text as well as to characterize the different ways in which the students conceptualized this interaction. Visual information—in particular, instances of asymmetry of information between verbal and visual information—was widely discussed in the translation diaries, which confirmed that most students had indeed inspected the images. Further, in the group interview, the one translator who did not discuss the issue in the translation diary confirmed having inspected the images. In other words, all eight translators inspected the images while reading the source text. Moreover, visual information was considered to be a relevant part of the source text; at times the translators concluded that they esteemed verbal information above the visual, but even such a comment indicates that the translator consciously negotiated the relationship between the modes. In answer to the first research question, it may hence be concluded that the translators were principally aware of the interaction of verbal and visual information, even though one of them only inspected the images before starting the actual translation of the verbal text.

In answer to the second research question, the study identified two distinct main categories of conceptualizing the interaction of verbal and visual information in an illustrated technical source text: either making a conscious effort to read, interpret and translate the combination of the modes as a whole, or separating the two modes of the source text for comparison and evaluation. These categories are not meant to describe individual translators: as often happens in phenomenographic research (Marton, 1994, p. 4428), the same individuals expressed more than one way of conceptualizing the phenomenon when approaching it from different angles.

The experiences in the category of perceiving the combination of words and images as an inseparable whole indicated a conscious effort to map visual and verbal information onto each other. When this was impeded by deleting information from the image, the translators seemed to be left with an impression of not having understood the source text at all. Unlike in the second category, the truth value of neither mode was not questioned. These observations—together with the students' accounts of how they did not doubt the information conveyed by the images, expressed during the group interview—suggest that images are considered to have a relatively high truth value; in other words, that they accurately depict the objects they represent. An obvious failure to do so was explained by doubting one's own sense or blaming it on the reproduction rather than production of the image. When referring directly to translation, the experiences in this category illustrated how translation solutions were negotiated from the interaction of the two modes; the verbal source text evoked various different translation solutions, and the image defined what “the correct” solution was.

In the category of evaluating words and images as competing sources of information, three different stances were identified: translators either considered verbal information as more relevant than the visual, considered them both as equally relevant, or considered visual information as more relevant than the verbal. In other words, the combination of verbal and visual information was approached with strategies reflecting varying attitudes towards the importance and relevance of both modes. It may be reasonably assumed that these underlying attitudes may affect subsequent translation choices: for instance, valuing visual information above the verbal could lead to translation choices based more on visual information than the verbal. Once again, it has to be emphasized that these categories did not characterize individual translators: the same translators adopted different stances towards the two modes in different situations.

In their translation diaries, the students concentrated mainly on discussing the features of the target text and describing their translation process. A few, but not all, discussed the communicative situation and reflected upon the quality of their own work. Yet, the most recurring theme in the translation diaries were the

difficulties produced by the asymmetry of information between the two modes. This suggests that visual and verbal information challenging or contradicting each other disturbed the translation process considerably. The translator who did not employ visual information during the actual translation stage did not discuss these parts of the source text at all in the translation diary, which may be interpreted as implying two things: first, the fact that the rest of the group singled these parts out as difficult to translate was indeed due to lack of coherence between the modes—as opposed to the verbal source text simply being more difficult in these parts. Second, it implies that a verbal text coupled with images may be interpreted and translated differently than the same text without images; the source text without the images is, in a sense, a different source text.

The most significant conclusion that may be drawn from the present study is that the translation students did not merely assign the visual source text to a decorative or contextual role; instead, they conceptualized it as an important source of information, capable of amplifying, specifying, and even annulling elements of the verbal source text. Further, some of the reflection in both categories was made in reference to images other than those constituting the visual source text, referred to in this article as *visual parallel texts*. This reflection indicated that visual parallel texts were considered as useful and reliable sources of information. All in all, the observations made in the article have great consequences for translation studies—a discipline that has traditionally been heavily language-oriented (O’Sullivan, 2013, pp. 2–3; Kaindl, 2013, p. 257). Hence, this article emphasizes the importance of acknowledging images as an object of inquiry in their own right within the discipline, both in translation research as well as translator training.

The observations made in this article from the second-order perspective can contribute to future research on word–image interaction in translation made from the first-order perspective; in other words, studying illustrated source texts or their translations directly. The main limitation of the findings is that the ways of conceptualizing word–image interaction are not an exhaustive description of all the possible ways of conceptualizing the phenomenon. It is likely that an analysis with a different sample of translation students would result in additional

categories of description. An interesting topic for future research would also be to analyse whether professional translators would conceptualize the phenomenon differently than translation students would. Further research could also investigate how translators conceptualize word–image interaction in other illustrated text types, for instance in children’s picture books. ■

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