



ISSN: 2153-9480. Volume 10, Number 1. October - 2017

Making culture relevant in technical translation with dynamic equivalence: The case of bilingual instructions

Massimo Verzella
Penn State Behrend

Introduction: Translators as beta users and mediators

One of the central tenets of technical communication research and pedagogy is user-analysis (Redish, 2010; Barnum & Redish, 2011). Technical documents conceived to be used by individuals from different backgrounds should be the product of cycles of negotiations between authors and audiences. Similarly, the idea of participatory design (Ehn, 1993; Courage & Baxter, 2005; Simonsen & Robertson, 2012) revolves around a rhetoric of collaboration and shared-authoring that involves users at all stages of product or content development. User-centered and user-participatory approaches emphasize the importance of user feedback to identify not only problems, but also possibilities that writers and designers might fail to consider. Sauer's (1998) influential research on risk communication in the mining industry offers strong arguments in support of the idea that technical instructions and safety documentation should be developed with the help of target audiences. Knowledge on risk reduction often originates with experienced miners, hence the need to involve them in the development of safety regulations. Hart-Davidson (2013) cites Sauer's work to point out that technical communicators should aim to become users' advocates by using the information gathered by audience analysis to grant not only the usability but also the usefulness of documentation.

A key professional figure who can help technical writers protect users' needs is the translator. Translators can be seen as users who are also producers of meaning, and translation an act of mediation enacted through the negotiation of meaning making. Importantly, translators can help development teams understand what type of cultural differences are relevant for user experience design (a crucial point identified by Quesenberry & Szuc, 2012), how much language matters in design, and what adjustments are necessary to prepare digital products and documentation for localization. In a compelling study on workplace safety and communication risk, Evia and Patriarca (2012) show how most official documentation created for Latino construction workers follows the 'transmission view' of communication, in which technical communicators act simply

as unobtrusive vehicles for the message that subject-matter experts send to audiences. This way of understanding the role of technical communicators mirrors the commonplace idea of translators as invisible middlemen who work alone and whose role is to faithfully transfer meaning across languages. First, we cannot accept the idea of professional translators as working alone: Translators are always involved in collaborative networks that bring together document initiators, authors, translation initiators, target audiences, and other translators (whose help can now be sought through several internet platforms such as Proz.com) in a process of negotiation that transforms the source texts (ST) into a usable and useful target texts (TT). Secondly, the myth of the docile and subservient translator has been deconstructed by several influential studies (see, e.g., Venuti, 1995; Venuti, 1998) that offered strong arguments for a reconceptualization of translating work as a way of creatively mediate between cultures, languages, and rhetorical traditions. Technical translators are equally creative when they manipulate STs to achieve *dynamic equivalence* in target TTs. The concept of *dynamic equivalence* was first put forward by Nida (1964) to distinguish this goal of translation from the goal of achieving *formal equivalence*, which makes translators place more attention on the message itself, in both form and content. In contrast, *dynamic equivalence* is an approach to translation in which the ST is translated thought for thought rather than word for word. In other words, *dynamic equivalence* is a form of equivalence in which the focus of attention is directed toward the receptor response, rather than the ST.

Whenever a technical document is created to solve a problem that users from diverse cultural backgrounds might encounter, translators have the responsibility to act as brokers in the exchange of information. Their goal is to ensure that the relationship between target audience and message is substantially the same as that which existed between the original target audiences and the message. For this reason, project managers and technical writers should not request the services of translators *a posteriori*, once the writing process is concluded, but rather *in itinere*, i.e. at key stages of the creative process. This move would allow writers to understand whether or not the documents that they are creating can be localized in a reasonable amount of time and with reasonable costs. While it is true that writers can adopt complex sets of strategies (Maylath 1997, 2002) or style guides (Kohl, 2008) to make their documentation translation-ready, nothing can replace the input of translators when the goal is to obtain detailed feedback on the clarity of the original document.

For example, even the most experienced technical writers, especially when they use their native language, will have a hard time identifying and expunging idioms from their drafts. Research in the field of linguistics (Bolinger 1976; Pawley and Syder 1983; Sinclair, 1991; Wray, 2002) shows that people tend to use prefabricated structures when they speak and write in their native language. Both spoken utterances and written texts are largely composed of multi-word expressions that constitute single choices in the mental lexicon of a person. While the use of prefabricated and memorized structures speeds up communication between people and groups who have access to the shared reservoir of concepts and cultural ideas that lend meaning to these structures, no common knowledge can be assumed in many instances of international technical communication. In these situations, technical communicators should make a conscious effort to use less memorized expressions and more phrases constructed bottom-up to imitate the non-native speakers' tendency to construct sentences more analytically (Erman & Warren, 2000).

However, it can be extremely difficult for technical writers, especially monoglots, to predict what kind of expressions and prefabricated chunks are likely to cause trouble to non-native speakers and reword these formulaic expressions from the ground up; hence the need to establish sound forms of collaboration with translators who are better trained to identify confusing idioms and formulaic expressions in the ST.

Moving from linguistic to rhetorical considerations, what makes international technical communication particularly challenging is the fact that rhetorical expectations shift across social groups and cultural traditions. In a study developed to identify audience preferences for the organizational structure of user manuals, Ulijin (1996) found that readers judge documents written in languages other than their native language employing criteria familiar to them. In other words, they look for familiar rhetorical patterns in documents written in unfamiliar languages. A similar study, Thatcher's (1999) comparative analysis on communication patterns preferred by U.S. and South American personnel within a multinational organization, shows that when it comes to document structure and paragraphing, South American audiences tend to favor narrative and drama-like structures over direct, hierarchical, and analytical structures. Another example of how contrasting rhetorical traditions might complicate translation is offered by bilingual instructions. Whoever compares user manuals and "how-to" instructions written in English with their translation in Italian cannot fail to notice that commands expressed in the imperative mood are often replaced by the infinitive form of a verb, the effect of which is to make the command more impersonal and polite, in line with Italian readers' expectations.

The ubiquity of this shift in documents translated from English into Italian shows how rhetorical considerations impact the translation process even when the ST is a technical document. This means that, in different degrees and depending on the formality of the register used, everything we say or write leaves a residue of meaning that is linked to rhetorical and cultural values that must be unpacked, disassembled, and reassembled by translators. By studying what type of shifts translators are likely to make, we can identify rhetorical and cultural differences that are relevant for UXD with the goal of developing new strategies for the creation of technical documentation. To return to Evia and Patriarca's (2012) study on workplace safety and communication risk, one of their most relevant findings is that participatory translation favors an important redistribution of power between subject matter experts, technical communicators, translators, and users by "taking the tacit knowledge of the receivers, the workers, into consideration via methods that encourage early and frequent input" (p. 361). These conclusions support the idea of technical communication and translation as sister activities that benefit from participatory design.

Importantly, the adoption of participatory design also satisfies calls for an ethics of engagement (Salvo, 2001) expressed in technical communication research. Technical communicators and translators have an ethical responsibility to stimulate users into finding ways to make their voices heard while inviting producers to become more responsive to the needs of diverse users and the cultural dynamics of diverse locales. I agree with Salvo (2001) when he claims that, to achieve this goal, technical communicators need to raise the dialogic interaction between these populations.

Competing paradigms in the study of international technical communication

Within the area of international technical communication, the long term goal of the present study is to identify research methods that do not rely on quantitative studies of cultural dimensions, still inspired by work conducted by Geert Hofstede in the late 60s and early 70s. Hofstede (1980) derives his four (that later become five) dimensions of cultural variability from examining work-related values in employees of IBM who lived in 40 different countries and spoke 20 different languages. In a particularly clear illustration of Hofstede's model, Schmitz (2014) explains that each dimension of culture "provides a bipolar solution spectrum for one issue. People of different countries choose differently from the solution spectrums and, therefore, on average they can be positioned at different points between the two opposite endpoints of each dimension" (p. 12). Most of later cultural frameworks are indebted to Hofstede's model (Taras, Rowney, & Steel, 2009), which has been employed across a wide spectrum of disciplines, ranging from international business (Kirkman, Lowe, & Gibson, 2006) to information technology (Myers & Tan, 2002).

With reference to methodological debates in the interdisciplinary field of technical communication, Thatcher (2010) defends quantitative studies of cultural difference by warning against the idea of the *incommensurability* or incomparability of cultures. Most of the key intercultural researchers, he observes, use quantitative descriptive methods to explore values across cultures, looking for patterns as well as exceptions. But Thatcher (2010) also adds that etic approaches might have validity problems unless they are qualified with emic details: "Using the etic approach in global professional communication research and then qualifying it with emic details improves the logistics, fairness, and validity of the research" (p. 13). Hofstede's dimensions of cultural variation might serve as etic frames for understanding cultural differences, but it is necessary to integrate these models with theories produced through constructivist approaches. If my interpretation is correct, Thatcher's goal here is to reconcile different traditions and competing paradigms in the study of intercultural communication, but his call for mixed method research leaves a central question unanswered. The main problem with etic approaches is that culture is unfailingly associated, or better conflated, with national affiliation, as if the most distinctive traits of our personality, behavior, and communication style were directly related to the first page of our passports, which carry crucial information on who we are.

What is perplexing about Hofstede's worldview and research methodology is that they are based on the understanding of culture as an essence, or a software that is 'installed' in individuals by birth and belonging. Even more controversial is his association of culture with national culture, which inspires endless comparisons between groups of people whose complex socio-cultural affiliations are reduced to their citizenship status. The idea that cultural difference is immutable saw an important revival during the era of nationalism, marked by political efforts to establish and celebrate boundaries that ideally preserved distinctions between people. According to Pieterse (2015), the problem with this type of cultural 'differentialism,' is that it fails to consider the interplay between the local and the global. Pieterse describes human experience as fluid and open-ended, and makes a strong case for an understanding of globalization as characterized by

Rhetoric, Professional Communication, and Globalization
October 2017, Volume 10, Number 1, 54-77.

deterritorialized flows that lead to constant mixing and hybridization. Within the framework of cosmopolitan theory, Appiah (2006) makes a similar call for renewed attention and appreciation for what he calls cultural ‘contamination,’ which he presents as a force that constantly changes behaviors and world views. A willingness to embrace the idea of ‘contamination,’ Appiah claims, should go hand in hand with the rejection of ideas of purism that feed on myths of authenticity and primordialism. From these perspectives, the main problem with Hofstede’s research is that his model is not flexible enough to make room for competing views of cultural change as growing sameness or ongoing mixing and hybridization. In particular, it is difficult to accept the idea of cultures as islands of homogeneity in a world characterized by increased connectivity and growing contact between people within a drive towards exchange, cooperation, and mixing that policies based on nostalgia or exceptionalism can only temporarily halt. With Sun (2012), I believe that we should move beyond the idea of cultures as essences and toward a dynamic understanding of culture as dialogic, the product of recurrent cycles of negotiation of meaning across social groups.

An understanding of culture as something that we *do*, rather something that we *have* (Piller, 2011) is the keystone of the present study. If we reject common material origin (biology, ethnicity, nationality, consanguinity and other such potentially dangerous affiliation criteria) as mediums of sociality, we need to study how languages are used in spoken and written communication to mediate and transcend differences, real or perceived. We need to focus on how individuals negotiate their meaning-making strategies by relying on a variety of translation strategies whose goal is to synthesize the familiar and the unfamiliar into hybrid expressive forms. This move will allow us to strike a balance between a tendency to study what is distinctive about different cultures and a competing drive to explore how cultures become hybridized through contact and cooperation between people. A return to language as the most important factor to consider in international professional communication studies promises to help researchers in a variety of disciplines to develop theories that are more grounded in the facts of real life; on real, everyday encounters between individuals who are willing to use a wealth of accommodation strategies to collaborate in the social construction of meaning and knowledge.

Descriptive translation studies: Focus on shifts

The germ of this study is the idea that translators can be considered beta users of technical documentation. By studying how translators receive, digest, and adapt a variety of textual products for new locales, we can understand what type of cultural differences are relevant for user experience design, or better, what type of cultural differences are made relevant by these beta users of technical documents. With the goal of analyzing the work of cultural and rhetorical mediation conducted by translators, I rely on descriptive translation studies (DTS), a branch of translation studies that promotes the empirical comparison and analysis of STs and TTs to formulate partial theories of translation.

In a foundational study of translation research, Holmes (1988/2004) proposed a complex framework that describes what translation studies cover. First, he distinguishes between ‘pure’ and ‘applied’ areas of research. Within the pure areas of research, he distinguishes between normative translation theory and non-prescriptive translation studies. Non-prescriptive DTS, Holmes adds, can focus on the products, functions, or processes of translation. The present study

Rhetoric, Professional Communication, and Globalization
October 2017, Volume 10, Number 1, 54-77.

falls within the subcategory of product-oriented DTS, which aims at developing partial theories of translation in a variety of specific subdivisions (discourse types or text genres, for example) through the comparative analysis of several pairs of STs and TTs based on the identification of translation shifts. In *Descriptive Translation Studies—and beyond* (1995), Toury argues that a target-oriented approach to the study of translation does not exclude the analysis of the ST. The observation starts with the TT but it is not exhausted at this stage of analysis. What this means is that it falls within the scope of DTS to investigate TTs and translation methods in their organic relationship with STs. In keeping with this orientation to the study of translation as an activity that is imbricated with the activity of writing, the present study intends to shed light on how translation, even technical translation, can be much more than a derivative effort in imitation. Having established that the main goal of DTS is to investigate the complex relationships between STs and TTs, it is now crucial to shed light on the concept of translation shifts. In Hatim and Munday's (2004) definition, a shift "is said to occur if, in a given TT, a translation equivalent other than the formal correspondent occurs for a specific source language element" (p. 28). Popovič provides a broader definition of shifts as "all that appears new with respect to the original, or fails to appear where it might have been expected" (1970, p. 79). Popovič ventures beyond shifts that are explainable through linguistic theories and concepts to consider shifts caused by literary (he deals mainly with literary translations), textual, and cultural considerations.

Importantly, Toury (1995) cautions against a negative view of shifts as errors or unnecessary departures from formal equivalence. His understanding of the concept of translation equivalence is at odds with prescriptive approaches sanctioned by older paradigms in translation theory. Toury assumes that the equivalence between a TT and a ST is a given. For this reason, analysis should not focus prescriptively on whether a given TT or TT-expression is 'equivalent' to the ST or ST-expression. Instead, it should focus on how the assumed equivalence has been realized. The search for translation shifts should not be aimed at finding what the translation could have had in common with the original text but does not. Rather, the goal should consist in finding the type of relationships established between ST and TT, and how these relationships might influence the writing process. In perfect alignment with this understanding of the goals of DTS, the focus of the present research is not on miscommunication due to linguistic and cultural differences, but rather on how individuals negotiate these differences to overcome real or perceived obstacles in the way of international technical communication.

Critics generally agree that the most comprehensive taxonomy of translation shifts is to be found in Jean-Paul Vinay and Jean Darbelnet's *Comparative stylistics of French and English* (1958/1995). Vinay and Darbelnet classify shifts based on the translation procedures that triggered the shift. They differentiate between direct translation, which covers borrowing, calque and literal translation, and oblique translation, which relies on transposition, modulation, equivalence, and adaptation. These translation methods can be applied on three levels of language: the lexicon; the grammatical structures; and the message. Within Vinay and Darbelnet's framework, a shift can be defined as an oblique translation method that results in the breaking of the formal correspondence between ST and TT. All procedures other than literal translation are likely to result in a shift. While it can be tempting to label many types of shifts as unnecessary deviations, the truth is that an ample gamut of shifts appear to be reasonable and

justified when the function, or *skopos* (Vermeer, 1989), of the translation is adequately assessed. Many translation shifts that at a superficial level of analysis might appear to be unnecessary can be justified when one considers the exigence for the translation and the needs of the final users of the translated document. Only *dynamic equivalence* can guarantee the usability of a technical document. This means that translators of technical documents should adopt a functional/pragmatic concept of invariance that entails a willingness to manipulate the ST as needed, so that the TT can function in a new locale in exactly the same way in which the ST functions in the original locale.

To conduct research on translation shifts, I collected a corpus of “How-to” instructions created by native speakers of English and their translations into Italian, completed by native speakers of Italian. Before offering more details on the organization of the present case study and method of analysis, in the section that follows I will offer some reflections on the typical features of the genre of technical instructions.

The genre of technical instructions

Markel (2015) defines a set of instructions as “process description written to help readers perform a specific task” (p. 551). Lannon and Gurak’s definition provides a more nuanced identification of the typical audiences for these technical documents. After underlining that instructions “spell out” the steps required for completing one or multiple tasks, they observe that the audience for this type of document might be people who do not know how to perform the task, or people who either performed the task but cannot remember how or want to perform it more effectively (2016, p. 243). Tebeaux and Dragga distinguish between procedures, which provide general guidelines for performing a task, and instructions, which provide specific, detailed steps (2015, p. 274). They also place emphasis on how instructions carry heavy legal liability: “Well designed, clear, complete, accurate instructions can become good sales documents while preventing lawsuits if equipment or products are damaged because users did not or could not follow the instructions” (p. 275). Having clarified the differences between instructions, specifications, and procedures/protocols, Johnson-Sheehan (2015) provides the following definition for the genre of instructions: “Instructions describe how to perform a specific task. They typically describe how to assemble a product or do something step by step” (p. 153).

All these technical communication scholars agree that writers should carefully analyze audience, purpose, and context of use for a specific set of instructions before making decisions concerning its scope, design, structure, and style. Significantly, Humbley et al. (2005) describe instructions as persuasive texts with a perlocutionary function. Instructions aim at readers performing activities in a certain way, or a certain order, or with the right equipment, and so on. As concerns questions of style, a certain flexibility in the selection of register and tone can be accepted, but there is no leverage with monoreferentiality (the strict association between a word and a delimited, well defined meaning) and terminological consistency. These typical features of specialized and controlled languages should always be preserved.

Any decision on translation strategies to be used for a set of instructions will depend on a thorough assessment of the rhetorical situation. The exigence for the creation of a set of

instructions can be identified with the need to instruct an audience of lay persons on how to complete a fairly technical task safely and in a reasonable amount of time. Writers of instructions can enjoy a certain degree of freedom in their rhetorical and stylistic choices, provided that their tactics are tailored to users' needs and expectations. Do readers expect the instructions to be couched in casual speech, consultative style, or formal style? Do they expect to be directly addressed by the writer or not? Do they expect the writer to be detached and use impersonal constructions? In other words, what type of relationship do the writers want to establish with their readers? What type of relationship do they want to establish between a product and its users? Instructions do not have to be always formal and impersonal. Especially in cases in which readers might find the information intimidating, writers can reassure readers through a variety of pragmatic strategies that include the use of a casual, conversational style.

Besides addressing reader expectations, translators should consider what Chesterman (1997) calls *professional norms*. These include the *accountability norm*, an ethical norm that binds the translator to professional standards of integrity and thoroughness; the *communication norm*, a social norm that assigns the translator the role of broker whose goal is to ensure maximum communication between the parties; and the *relation norm*, a linguistic norm that focuses on the relation of functional equivalence between ST and TT. This relation will be determined by consideration of the rhetorical situation, genre, commissioner's goal, the intentions of the original writer, and the assumed needs of the new users.

If we adopt Snell-Hornby's (1988) distinction between opaque and transparent style, we might argue that, as prototypical technical documents, instructions should exhibit a transparent style that will strive to enact the principles of precision, objectivity, economy, clarity, and appropriateness of expression. However, the realization of each of these principles can have a negative impact on the realization of a different principle. For example, authors might be tempted to create noun clusters for the sake of economy. But clarity is far from enhanced when lexical density replaces the grammatical intricacy that is typical of the casual style. As John Kohl (1999) convincingly argues, any decrease in the use of grammatical words and syntactic cues corresponds to an increase in the probability of translation errors. Syntactic cues, Kohl argues, "are elements or aspects of language that help readers correctly analyze sentence structure and/or to identify parts of speech" (1999, p. 149). Syntactic cues make it easier for readers to predict the structure of subsequent parts of a sentence (p. 150) and eliminate certain types of ambiguities that might cause problems to both human translators and machine-translation systems. When we eliminate syntactic cues to pack meaning in fewer words, we muddle the message and leave to translators the task of restoring the logical links between words and ideas. While rules such as terminological consistency should be rigorously respected by writers and translators, other stylistic conventions traditionally associated to scientific and technical writing can be either ignored or violated for the sake of the most important functional requirements for a set of instructions, their usefulness and usability.

Participants and procedure for the case study

For my research on translation shifts, I compiled a corpus of 40 texts that includes 20 instructions written in English by students enrolled in a technical writing class in a U.S. university and their translations into Italian, completed by students majoring in English studies in

Rhetoric, Professional Communication, and Globalization
October 2017, Volume 10, Number 1, 54-77.

an Italian institution of higher education. The authors of the instructions are all native speakers of English. The translators are native speakers of Italian. Both groups of students were connected through their participation to an instantiation of the Trans-Atlantic and Pacific Project (TAPP). TAPP is an international project that invites students in several partner universities across the world to collaborate to complete writing and translation assignments (Maylath, Vandepitte, & Moustén, 2008; Moustén, Vandepitte, & Maylath, 2008; Moustén et al., 2010; Sorensen, Hammer, & Maylath, 2015; Vandepitte et al., 2015). In its typical instantiation, this project is organized in the following way: Students enrolled in technical writing classes in the U.S. write a set of instructions and then prepare them for translation. Students enrolled in translation classes in partner universities overseas negotiate the translation with the authors and then send them the final version of the translation. Projects like TAPP help students learn how to prepare technical documents for translation and localization; how to collaborate in cross-cultural virtual teams to develop usable and useful documentation; and how to build trust and mutual respect by resorting to face-negotiation techniques. The instructors who join TAPP also aim at simulating workplace conditions through the creation of networked learning environments that allow students to “experience technical texts situated in cultural expectations” (Maylath, Vandepitte, & Moustén, 2008, p. 52).

Project partners became acquainted with each other by introducing themselves by email, communication platforms such as Skype and Google Hangouts, or Facebook instant messaging. The majority of students (92%) also joined a Facebook group created ad hoc for this project. The TAPP Facebook page was soon populated with images posted by students to present their living and working environments, as well as their interests. As soon as the instructions were written, the authors emailed their texts directly to their translation partners, who were given a 3-week deadline to translate the ST. During the translation phase, the translators were encouraged to ask questions to the authors to obtain explanations and clarifications of obscure technical terms, formulaic expressions, or entire passages.

The total number of words for the corpus of English instructions is 19,121. The total number of words for the corpus of instructions in Italian is 19,046. The average length of the STs (in English) is 956 words. As concerns the TTs (in Italian), the average length is 952 words. Two criteria governed the selection of texts for this corpus: diversity and level of technicality. The corpus covers a wide range of topics and disciplinary areas that go from agriculture to engineering. At the same time, the “how-to” instructions included in the corpus are semi-technical, i.e. created by *specialists for interested lay persons*, to use Gläser’s (1995) terminology. When compared to highly technical instructions, semi-technical instructions place less linguistic and pragmatic constraints on both the writing and translation processes, thus opening a space for a wider range of shifts in the TT.

For this study, I focused on the four translation strategies listed below. For the definition of these strategies, I draw mainly from Vinay and Darbelnet (1958/1995).

1. **Explicitation:** A stylistic translation technique which consists of making explicit in the target language what remains implicit in the source language. Blum-Kulka (1986/2000) describes *explicitation* as a typical feature of translated texts. Her research shows how

translators tend to expand the TT, building into it a semantic redundancy that is often absent in the ST.

2. Implication: A stylistic translation technique which consists of making what is explicit in the source language implicit in the target language by relying on the context or the situation for conveying the meaning.

3. Generalization: The translation technique in which a specific term is translated by a more general term.

4. Particularization: The translation technique in which a general term is translated by a more specific term.

The overarching goal of this study was to identify regularities that shed light on how non-professional translators mediate between languages and rhetorical traditions. The main research question was: With reference to specific translation methods—Explicitation, Implication, Generalization, Particularization—what evidence is there of uniformity of practice in the translation of “how-to” instructions from English into Italian?

Besides focusing on shifts produced by these translation strategies, I also wanted to identify other factors that might induce translators to stray from formal equivalence to dynamic equivalence in the translation of technical documents.

To identify translation shifts, I adopted Toury’s (1995) three-phase methodology:

- Stage one is to situate the text within the target culture system.
- Stage two is to compare the ST and the TT to identify relationships between ‘coupled pairs’ of ST and TT segments.
- Stage three is devoted to the formulation of generalizations about norms of translational equivalence through the analysis of the regularities evinced by translation shifts.

I follow Toury for two main reasons: First, this research method is appropriate to the genre of texts under investigation in this study. As Munday (2008) underlines in one of the most influential introductions to translation studies, the descriptive model lends itself to the examination of the translation of technical texts (pp. 115-116). Second, the adoption of this method enhances the replicability of this study.

I asked an independent coder to use the same method and procedure to identify translation shifts in the same corpus. For my analysis, I focused only on the shifts that we both identified, while discarding all shifts that only one of us identified. With only two exceptions, once we agreed that a shift had taken place in the TT, we also agreed on the classification of the shift into the four types of translation strategies defined above (Explicitation, Implication, Generalization, Particularization).

Results

Explicitation and implicitation

Out of 219 shifts in the category explicitation/implicitation, we identified 82 occurrences of explicitation (mean: 4.1; median: 3.5; mode: 3; standard deviation 2.4) and 137 occurrences of implicitation (mean: 6.85; median: 6.5; mode: 9; standard deviation 3.8). When compared to the dataset of explicitation, the dataset for implicitation is more dispersed, which suggests that there is higher variation in translation behaviors as far as implicitation is concerned. The percentages of explicitation and implicitation shifts are given in the pie chart below (Figure 1).

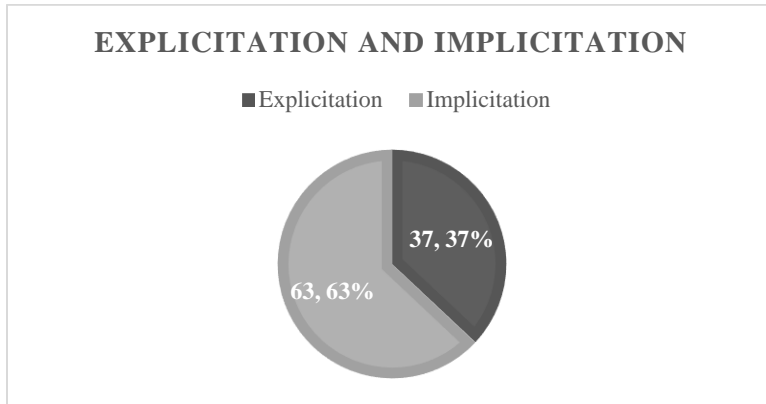


Figure 1. Percentages of explicitation and implicitation shifts.

These results can be surprising given that translation theorists often point out that translated texts tend to be longer and more explicit than original texts. However, it is important to keep in mind that the authors of these translations are not professional translators, but undergraduate students majoring in English. While the authors of the instructions resorted to several techniques of disambiguation in their texts—redundancy, repetition of the logical subject of the sentence, clarification—the inexperienced translators who participated to this project appeared to be more concerned about questions of style, flow, and economy of expression. Specifically, translators eliminated repetitions by using an ample range of pronouns with anaphoric function, especially *ci* and *ne*. The following examples will clarify how these pronouns are used in Italian:

Example of a sentence with <i>ci</i> in Italian	Translation of the sentence into English
Sei andato a New York? Sì, <i>ci</i> sono andato.	Did you go to New York? Yes, I did (or I have been there).
Note: In this example, <i>ci</i> replaces <i>to New York</i>	

Example of a sentence with <i>ne</i> in Italian	Translation of the sentence into English
Quanti fratelli hai? <i>Ne</i> ho sette	How many brothers do you have? I have got six.

Note: In this example, <i>ne</i> replaces <i>di fratelli</i>	
--	--

In Italian, *ci* can replace a phrase referring to a place, introduced by the prepositions *a*, *in*, and *su*. *Ne* can replace a noun to avoid repetition when talking about the quantity of something which has already been mentioned. Similarly to what happens when *this*, *that*, *these*, and *those* are used as pronouns (see Kohl, 2008, pp. 105-107), the use of *ci* and *ne* can cause problems to readers and translators because the antecedent of these pronouns might be unclear or ambiguous. With the goal of avoid repetitions and improving flow, translators often overlooked the need for clarity and accuracy in technical documentation.

In the two sub-sections that follow, I will offer some examples of explicitation and implicitation shifts along with back translations of the renderings from Italian into English and comments on the causes and consequences of these types of shifts.

EXAMPLES OF EXPLICITATION:

Example 1

ST (English): <i>How to make Dippin' Dots with liquid nitrogen</i>	TT (Italian): <i>Come preparare i Dippin' Dots con l'azoto liquido</i>	Back translation
This will allow air bubbles to escape	Questo permetterà alle bolle d'aria intrappolate nel gelato di fuoriuscire	This will allow the air bubbles entrapped in the ice cream to come out.

Example 2

ST (English): <i>How to perform CPR</i>	TT (Italian): <i>Come eseguire un RCP</i>	Back translation
Pinch the nostrils shut for mouth-to-mouth breathing and cover the person's mouth with yours, making a seal.	Chiudete le narici con le dita per praticare la respirazione bocca a bocca e coprite la bocca del paziente con la vostra, cercando di non lasciare spazio per il passaggio dell'aria.	Close the nostrils with your fingers to perform mouth-to-mouth breathing, and cover the person's mouth with yours, trying not to leave a space for the air flow.

The first example is a typical example of an explicitation shift. The goal of the translator is to disambiguate meaning by qualifying the noun phrase *air bubbles* with the adjectival phrase *entrapped in the ice cream*. In the second example, the translator reformulated the unit *making a seal* into a longer adverbial clause that allows readers to understand not only what needs to be done, but also the goal of the specific action to be performed. Explicitation techniques are very common in technical translations in that they allow to avoid ambiguity by adding information

that is implied in the ST. As texts travel from locale to locale, and from context to context, some of the meanings packed within words and sentences might be lost. Translators must take good care to unpack these meanings and decide when a more explicit and rendering might make the TT more useful and usable. It is not faithfulness to the original text that is required of technical translation; rather, the goal is to allow the target audience to use a set of instructions to perform the same tasks that the original audience should be able to perform using the ST.

EXAMPLES OF IMPLICITATION:

Example 3

ST (English): <i>How to create a YouTube channel</i>	TT (Italian): <i>Come creare un canale YouTube</i>	Back Translation
Videos on YouTube are accessible to everyone without setting up a channel, but to upload a video yourself you will need to create a personalized channel.	I video su YouTube sono accessibili a tutti senza creare un canale, ma per caricare un video avrai bisogno di crearne uno personalizzato (emphasis mine)	Videos on YouTube are accessible to everyone without setting up a channel, but to upload a video you will need to create a personalized one.

Example 4

ST (English): <i>Making rope from tree bark</i>	TT (Italian): <i>Come fare una corda con la corteccia di un albero</i>	Back Translation
The dead protective outer bark that the eye can see is not the stuff you are looking for.	La parte più esterna della corteccia non è ciò che vi serve.	The outer part of the bark is not what you need.

Example 3 shows how the pronoun *ne* is used as a suffix of *creare* (*to create*) with the goal of avoiding the repetition of the word *channel*. While a human translator should not have problems translating this sentence back into English or into other languages, the use of *ne* does not facilitate comprehension in that *ne* could refer to both the channel and the video. Google Translate renders the Italian sentence in this way: “The videos on YouTube are accessible to all without creating a channel, but to upload a video you will need to create your own.” When I asked translators to account for their use of *ne* as a pronoun, they confirmed that they considered economy of expression, rather than clarity, as a priority. In example 4 the translator decided to cut two descriptors of the outer bark, *dead protective* as well as the entire relative clause *that the eye can see*. Presumably, the translator found this information either not relevant or not helpful, and opted for economy of expression instead. To avoid making errors in this type of situations, a translator could ask the author of a technical document how the addition of descriptors contributes to improve the usability of a specific segment of the TT. This question could either lead to the revision of the ST or the preservation of the original phrasing in both ST and TT. To conclude, this example shows why it is important that writers and translators collaborate to the

creation of the original text through an iterative cycle of writing and usability testing that can result in a translation-ready ST.

Particularization and generalization

Out of 118 identified shifts in the category particularization/generalization, we identified 77 occurrences of particularization (mean: 3.85; median: 3; mode: 3; standard deviation 2) and 41 occurrences of generalization (mean: 2.05; median: 2; mode: 2; standard deviation 1.3). The percentages of particularization and generalization shifts are given in the pie chart below (Figure 2)

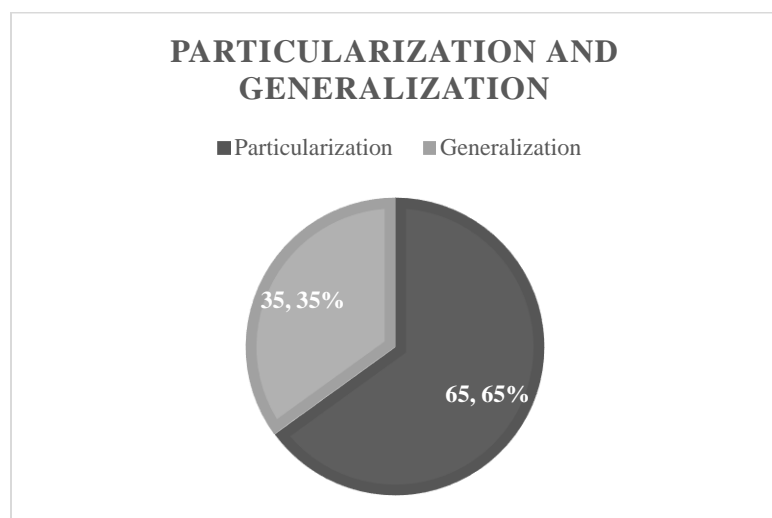


Figure 2. Percentages of particularization and generalization.

These results show that translators are keen to correct cases of hypernymy, i.e. vagueness in lexical choice, by replacing broad, general words with more precise equivalents. In this context, the frequent use of particularization shifts shows that non-professional translators are aware of the importance of precision and accuracy at the word level. While at the sentence level we have seen how translators tend to sacrifice precision and clarity to improve variety and flow, at the word level they strive for precision. Vice versa, non-professional technical writers go to great lengths to avoid ambiguity through redundancy and repetition, but do not pay enough attention to word choice.

EXAMPLES OF PARTICULARIZATION:

Example 5

ST (English):	TT (Italian):	Back Translation
<i>How to make Dippin' Dots with liquid nitrogen</i>	<i>Come preparare i Dippin' Dots con l'azoto liquido</i>	
Eyewear	Occhiali protettivi	Protective eyewear

Example 6

Rhetoric, Professional Communication, and Globalization
 October 2017, Volume 10, Number 1, 54-77.

ST (English): <i>How to make a solar powered USB charger</i>	TT (Italian): <i>Come costruire un caricatore USB alimentato da energia solare</i>	Back Translation
Using figure 10, solder the two pieces together.	Tenendo d'esempio la figura 10, saldare solder le due parti.	Keeping figure 10 as a reference, solder the two pieces together.

Example 5 shows how the translator tries to enhance the accuracy and precision of the TT through hyponymy. A close examination of other coupled pairs of ST and TT segments taken both from the same pair of texts and other texts featuring cases of particularization reveals that inexperienced translators are rarely consistent in their use of particularization. While they seem to be almost instinctively driven to improve the semantic precision of the ST translation units, they lack metacognition of the importance of this translation strategy. In other words, inexperienced translators use particularization shifts, but they do not fully realize why they use this translation strategy. Example 6 shows how, rather than resorting to a literal translation and render the hypernym *using* with the formal equivalent *usando*, the translator opted for a solution that clearly explains how to use figure 10, i.e. as a reference while completing the step.

EXAMPLES OF GENERALIZATION:

Example 7

ST (English): <i>Making rope from tree bark</i>	TT (Italian): <i>Come fare una corda con la corteccia di un albero</i>	Back Translation
In many trees this inner bark is very strong and stringy and can be peeled away.	In molti alberi questa corteccia interna è molto dura e fibrosa e può essere rimossa.	In many trees this inner bark is very strong and stringy and can be removed.

Example 8

ST (English): <i>Coleman 3-person tent building</i>	TT (Italian): <i>Montaggio della tenda Coleman 3-person</i>	Back Translation
If needed, readjust the tent stakes.	Se necessario, sistemare i pali della tenda.	If needed, fix the tent stakes.

In example 7, the Italian verb *rimuovere* (*remove*) is more broad and general than *peel away*, but the translator opted to resort to the minimax strategy. While translation theory tends to be normative and focus on optimal solutions, Jiří Levý (1967/2000) convincingly showed how actual translation work is often pragmatic: translators tend to choose renderings that promise a maximum of effect with a minimum of effort. In this case, the generalization is unlikely to cause problems to users because the context helps to disambiguate the meaning of the Italian verb *rimossa*. This example shows how translators often need to walk the rope between faithfulness,

Rhetoric, Professional Communication, and Globalization
October 2017, Volume 10, Number 1, 54-77.

usability in the target locale, and pragmatic concerns (time to complete the translation, most importantly). In example 8 the Italian verb *sistemare* (*to fix*) is very broad and ambiguous; it can convey an ample range of meanings depending on context. Once again, the translator resorted to the minimax strategy to save time; two other translation options were *aggiustare* (whose core meaning is still *to fix*) and *allineare*, but *aggiustare* is still rather broad, and *allineare* is closer to *align* than it is to *readjust*. It is important to emphasize, here, that the genre of technical instructions, especially when they are written in controlled or highly specialized languages, requires that translators preserve monoreferentiality (a term used to indicate that in a given context only one meaning of a term is allowed) and terminological consistency.

Other factors influencing shifts from formal equivalence to dynamic equivalence

The qualitative study of pairs of units of translation also revealed that translators tend to add or reduce emphasis based on their personal considerations on the seriousness or gravity of topic and contexts. The examples below show how English writers and Italian translators often disagree on what topics justify the use of emphasize.

Example 9

ST (English): <i>How to extract blood from a canine jugular vein</i>	TT (Italian): <i>Come prelevare sangue da una vena giugulare canina</i>	Back Translation
A necessary procedure utilized in vet...	Una delle procedure fondamentali utilizzate in veterinaria...	One of the fundamental procedures utilized in vet...

Example 10

ST (English): <i>How to grow a vegetable garden</i>	TT (Italian): <i>Come realizzare un orto</i>	Back Translation
Terraced hill sides are suitable for a garden	I pendii di colline a terrazza sono perfetti per il giardinaggio.	Terraced hill sides are perfect for gardening.

On a superficial analysis, these examples and other similar shifts that can be identified throughout the corpus might suggest that inexperienced translators tend to increase emphasis to engage readers or underline the importance of a step or procedure. But a more in-depth study of rhetorical shifts in emphasis reveals that there are contexts in which translators are ready to diminish emphasis by mitigating the force of statements for topics that, in their opinion, are not worthy of emphasis—life in the outdoors, for example. Individuals living in southern Italy are likely to spend warm spring and summer days at the beach, rather than hiking or camping in the woods. Because they do not see how exciting and challenging camping can be—the whole experience is just unfamiliar to them—these translators tend to water down what they perceive to be hyperbolic statements concerning survival strategies in the outdoors. The examples below, from the instructions *Making rope from tree bark* (*Come fare una corda con la corteccia di un albero*) perfectly capture this approach:

Example 11

ST (English): <i>Making rope from tree bark</i>	TT (Italian): <i>Come fare una corda con la corteccia di un albero</i>	Back Translation
Survival scenario	Situazione di difficoltà	Situation of difficulty

Example 12

ST (English): <i>Making rope from tree bark</i>	TT (Italian): <i>Come fare una corda con la corteccia di un albero</i>	Back Translation
You now have another survival skill that may come in useful	Avrete imparato qualcosa che può esservi utile	You will have learnt something that could come in handy.

One final pattern that emerged from the study of coupled pairs is the tendency on the part of translators to replace inanimate agents with living agents. Due to the small size of the corpus, it is not possible to generalize based on the few cases identified. However, these limited findings show possible directions for future research in the area of descriptive translation studies. It is important to keep in mind that the present study is exploratory in nature: My primary goal was to identify patterns in the use of translation shifts that could be further investigated through the creation of bigger corpora. The examples below illustrate examples of how inanimate agents are replaced with living agents in two different pairs of instructions.

Example 13

ST (English): <i>How to grow a vegetable garden</i>	TT (Italian): <i>Come realizzare un orto</i>	Back Translation
The amount of water this garden has access to.	La quantita' d'acqua da fornire all'orto.	The amount of water that needs to be provided (that one needs to provide) to the garden

Example 14

ST (English): <i>How to extract blood from a canine jugular vein</i>	TT (Italian): <i>Come prelevare sangue da una vena giugulare canina</i>	Back Translation
You will want to immediately place the cap back on your needle to prevent it from poking anyone else.	Reinserire immediatamente il cappuccino sull'ago per evitare che qualcun'altro si possa tagliare.	Immediately place the cap back to avoid that somebody else can cut himself.

In example 13 the translator indirectly reintroduced human agency by using the infinitive construction *da fornire* (literal meaning: *To be given*). Because a literal translation would be perfectly appropriate here, the translator’s rendering is marked. Translators rarely go through the trouble of changing the structure of a sentence unless they believe that the original phrasing cannot be effectively rendered for the target audience. In example 14 agency is transferred from the needle to the indefinite pronoun *qualcuno* (*someone*), always used to replace human subjects. It cannot go unnoticed, here, that the solution adopted by the Italian translator unwittingly introduces a tinge of sexist language in the message, considering that *qualcun’altro* (*somebody else*) can only refer to masculine agents.

Partially connected to shifts in emphasis is example 15 below, taken from the instructions entitled *How to grow a vegetable garden*:

Example 15

ST (English): <i>How to grow a vegetable garden</i>	TT (Italian): <i>Come realizzare un orto</i>	Back Translation
Start with plants that are more difficult to kill.	Inizia con piante che muoiono meno facilmente.	Start with plants that do not easily die.

In this case the translator sent an inquiry to the author to ask about the use of the verb *kill* in a context that does not seem to justify the selection of such a loaded word. The author explained that the use of *kill* in this context would not surprise U.S. readers in that it is relatively conventional and idiomatic. The translator accepted the explanation, but made a strong case for the need to resort to functional (rather than formal) equivalence in the TT for reasons that have to do with cultural appropriateness and reader expectations in the target locale. The American student kept the word *kill* in the ST, while the translator opted for the litotic expression *plants that don’t easily die* for the TT.

Conclusion

A key aim of descriptive translation studies is to investigate TTs and translation methods in their relationship with STs. Within this branch of translation studies, the goal of the present study was to shed light on how translation, even technical translation, establishes complex relationships not only between STs and TTs, but also between source culture and target culture. The comparative analysis of the parallel corpora of “how-to” instructions revealed that there is a certain uniformity of practice in the translation of this type of technical documents from English into Italian. With reference to the specific translation strategies illustrated in the methods section—Explicitation, Implication, Generalization, Particularization—findings show that non-professional translators tend to use Implication more than they use Explicitation, and Particularization more than Generalization. Non-professional translators are careful to enhance accuracy at the word level, but give high priority to economy of expression, rather than explicitation, at the sentence level. Specifically, translators appeared to be focused on avoiding

repetitions and improving sentence flow through the transformation of compound sentences into complex sentences. While the adoption of this strategy shows lack of training and experience on the part of the translators, their interpretation of the needs of the target audience is not completely off the mark when we factor in Ulijn and Strother's (1995) and St. Amant's (1999) observations concerning the stylistic preferences of Southern European audiences. While American style manuals advise writers to keep sentences short and avoid multiple clauses, Southern European audiences expect longer sentences which include more details in technical writing. More often than not, Ulijn and Strother point out, users of technical documents are well educated individuals who "might expect longer sentences in user documentation to take a product seriously" (p. 203). By avoiding what they perceived as choppy (and sloppy) style, the goal of the translators was to preserve the seriousness of the topic while showing respect for the intellectual capabilities of the target audience. On a rhetorical level, their reasoning is sound; but on a more practical level, the use of complex sentences and implicitation, as well as the elimination of redundancy, might obscure the clarity of explanations and directions. What makes a good technical translator is the ability to decide when it makes sense to go against cultural and rhetorical expectations for the sake of clarity and usability.

These problems of calibration between faithfulness and effectiveness, redundancy and economy of expression, clarity and rhetorical appropriateness, should be resolved through a more intense collaborative work between writers and translators. On one side, authors of technical documentation should point out when formal equivalence and faithfulness to the original text might be necessary to prevent errors and usability issues. On the other side, translators should consult with technical writers before manipulating the ST for rhetorical purposes. Technical writers should also be keen to emphasize the importance of consistency in the adoption of translation strategies and in the rendering of technical terms. The quality of the bilingual documentation compiled in the two corpora was negatively impacted by the translators' tendency to oscillate between different translation strategies that were not always selected for the purpose of improving the usability of the documentation in the target locale. Because both writing and translation were not always seen as iterative processes that require collaboration and constant negotiation of meaning, STs and TTs often appear disconnected, as if their creation was driven by different goals.

This disconnect between STs and TTs, which is due both to writers and translators' inexperience and to the influence of different rhetorical traditions, could be mitigated if writing and translation were understood as iterative processes that can be integrated through the establishment of feedback loops. Translators should be invited to take part in the development/writing process, rather than hired *a posteriori* to localize products/texts that they do not understand. In other words, translators should be invited to contribute to the creation of technical documentation during all stages of development, so that they can fully understand what writers intend to do and why. We can obtain quality localization only when authors and translators negotiate content in a cyclical, iterative way.

Shifts in emphasis proved to be the most interesting phenomena of cultural mediation observed in the corpus in that they show how translators *do* culture, i.e. how they make culture relevant as they adjust form and content for a new locale. Translators tend to emphasize or de-emphasize the

illocutionary force of descriptions, definitions, and directions, depending on topic and context. Intensifiers can be either added to neutral descriptions for phatic reasons, or eliminated when instructions cover contexts and topics that have less relevance or appeal in the target culture. Because life in the wild outdoors is not particularly appealing, or exciting, to individuals born and raised in the coastal cities of southern Italy, “survival strategies” were demoted to the rank of “useful skills” to know. A word of caution is necessary here: These shifts in emphasis suggest a general tendency, rather than a clear pattern. Future research on larger corpora could adopt the methods of computational linguistics to obtain more extensive and reliable data on the use of intensifiers in texts translated from English into Italian, just to mention one out of several possibilities for research.

The incident of the word *kill*, used in a set of instructions on gardening, further shows how technical writers and translators *do* culture even as they create technical documentation. Many of the students who authored the instructions are also hunters who know how to use a range of guns and rifles. In contrast, gun-ownership is extremely rare in Italy. The vast majority of the Italian population, especially generations born after the 1970s, condemns hunting as a cruel, inhuman practice. The act of killing is more familiar in the American Midwestern prairies and forests than it is in the southern Italian expanses of vines and olive tree cultivations. For this reason, the author of the instructions entitled *How to grow a vegetable garden* and the translator could not reach an agreement on the use of the word *kill*: The author preserved this charged word in the ST, while the translator opted for “plants that do not easily die” to meet readers’ expectations in the target locale.

The most important story that translation shifts tell us is that translation is UX (Lefevre, 2012). My study shows that we can obtain quality localization only when authors and translators negotiate content in a cyclical, iterative way. Importantly, the findings of this type of research can guide us toward a fine-tuning of writing programs that intend to prepare students to the challenges of international professional communication. Before we can help students write for a global audience we need to understand how the form and content of technical messages are manipulated by professional and non-professional translators. More specifically, we need to understand when cultural differences become relevant for translators, making them shift from *formal equivalence* to *dynamic equivalence*. Instead of describing cultures as immutable essences; instead of studying how culture, understood as national culture, influences thought and behavior, we need to understand how we all *do* culture; what makes us reproduce and reinforce cultural and rhetorical conventions that are constructed, rather than given or fixed.

References

- Appiah, A. (2006). *Cosmopolitanism: ethics in a world of strangers*. New York: W.W. Norton.
- Barnum, C., & Redish, J. (2011). Overlap, influence, intertwining: The interplay of UX and technical communication. *Journal of Usability Studies*, 6(3), 90-101.
- Blum-Kulka, S. (1986/2000). Shifts of cohesion and coherence in translation. In L. Venuti (Ed.) (2000), *The translation studies reader* (pp. 298-313). London and New York: Routledge.
- Bolinger, D. (1976). Meaning and memory. *Forum Linguisticum*, 1, 1-14.

- Chesterman, A. (1997). *Memes of translation: The spread of ideas in translation theory*. Amsterdam and Philadelphia: John Benjamins.
- Courage, C., & Baxter, K. (2005). *Understanding your users. A practical guide to user requirements: methods, tools, and techniques*. San Francisco: Elsevier.
- Ehn, P. (1993). Scandinavian design: On participation and skill. In D. Schuler & A. Namioka (Eds.), *Participatory design: Principles and practices* (pp. 41-77). Mahwah, NJ: Lawrence Erlbaum Associates.
- Erman, B. & Warren B. (2000). The idiom principle and the open choice principle. *Text*, 20(1), 87-120.
- Evia, C., & Patriarca, A. (2012). Beyond compliance: Participatory translation of safety communication for Latino construction workers. *Journal of Business and Technical Communication*, 26, 340-367.
- Gläser, R. (1995). *Linguistic features and genre profiles in scientific English*. Bern, Berlin, Frankfurt: Lang.
- Hart-Davidson, W. (2013). What are the work patterns of technical communication? In J. Johnson-Eilola & S. A. Selber (Eds.), *Solving problems in technical communication* (pp. 50-73). Chicago: University of Chicago Press.
- Hatim, J., & Munday, B. (2004). *Translation: An advanced resource book*. London and New York: Routledge.
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.
- Holmes, J. S. (1988/2004). The name and nature of translation studies. In L. Venuti (Ed.) (2004), *The translation studies reader* (pp. 180-192). London and New York: Routledge.
- Humbley, J., Maylath, B., Mousten, B., Vandepitte, S., & Veisblat, L. (2005). Learning Localization through Trans-Atlantic collaboration. In G. F. Hayhoe (Ed.), *Proceedings of the IEEE International Professional Communication Conference*, 10-13 July 2005, University of Limerick, Ireland (pp. 578-595). New York: IEEE.
- Johnson-Sheehan, R. (2015). *Technical communication today*. Boston: Pearson.
- Kirkman, B. L., Lowe, K. B., & Gibson, C. B. (2006). A quarter century of *Culture's consequences*: A review of empirical research incorporating Hofstede's cultural values framework. *Journal of International Business Studies*, 37(3), 285-320.
- Kohl, J. R. (1999). Improving translatability and readability with syntactic cues. *Technical Communication*, 46(2), 149-166.
- Kohl, J. R. (2008). *The global English style guide: Writing clear, translatable documentation for a global market*. Cary, NC: SAS Institute.
- Lannon, J., & Gurak, L. (2016). *Strategies for technical communication in the workplace*. Boston: Pearson.
- Lefevre, A. (2012). Translation is UX. *A List Apart*, 366. Retrieved from <http://alistapart.com/article/translation-is-ux>
- Levý, J. (1967/2000). Translation as a decision making process. In L. Venuti (Ed.) (2000), *The translation studies reader* (pp. 148-159). New York: Routledge.
- Markel, M. (2015). *Technical communication*. Boston: Bedford/St. Martin's.
- Maylath, B. (1997). Writing globally: Teaching the technical writing student to prepare documents for translation. *Journal of Business and Technical Communication*, 11, 339-352

- Maylath, B. (2002). Editing for global contexts. In C. Rude (Ed.), *Technical editing* (pp. 347-366). New York: Longman.
- Maylath, B., Vandepitte, S., & Moustén, B. (2008). Growing grassroots partnerships: Trans-Atlantic collaboration between American instructors and students of technical writing and European instructors and students of translation. In M. W. Stärke-Meyerring (Ed.), *Designing global learning environments: visionary partnerships, policies, and pedagogies* (pp. 52-66). Rotterdam: Sense Publishers.
- Moustén, B., Vandepitte, S., & Maylath, B. (2008). Intercultural collaboration in the trans-Atlantic project: Pedagogical theories and practices in teaching procedural instructions across cultural contexts. In D. Stärke-Meyerring & M. Wilson (Eds.), *Designing global learning environments: Visionary partnerships, policies, and pedagogies* (pp. 129-144). Rotterdam: Sense.
- Moustén, B., Maylath, B., Vandepitte, S. & Humbley, J. (2010). Learning localization through trans-Atlantic collaboration: Bridging the gap between professions. *IEEE Transactions on Professional Communication*, 53(4), 401-411.
- Munday, J. (2008). *Introducing translation studies: Theories and applications*. London and New York: Routledge.
- Myers, M. D. & Tan, F. B. (2002). Beyond models of national culture in information systems research. *Journal of Global Information Management*, 10(1), 24-32.
- Nida, E. A. (1964). *Toward a science of translating: With special reference to principles and procedures involved in Bible translating*. Leiden: E. J. Brill.
- Pawley, A. & Syder, F. (1983). Two puzzles for linguistic theory: Nativelike selection and nativelike fluency. In J. C. Richards & R. W. Schmidt (Eds.), *Language and communication* (pp. 191-226). London: Longman.
- Pieterse, N. J. (2015). *Globalization and culture: Global mélange*. Lanham: Rowman and Littlefield.
- Piller, I. (2011). *Intercultural communication: A critical introduction*. Edinburgh: Edinburgh University Press.
- Popovič, A. (1970). The concept of “shift of expression” in translation analysis. In J. S. Holmes (Ed.), *The nature of translation: Essays on the theory and practice of literary translation* (pp. 78-87). The Hague & Paris: Mouton.
- Quesenbery, W. & Szuc, D. (2012). *Global UX: Design & research in a connected world*. Burlington, MA: Morgan Kaufmann.
- Redish, J. (2010). Technical communication & usability: Intertwined strands and mutual influences. *IEEE Transactions on Professional Communication*, 53(3), 191-201.
- Salvo, M. (2001). Ethics of engagement: User-centered design and rhetorical methodology. *Technical Communication Quarterly*, 19(3), 273-290.
- Sauer, B. (1998). Embodied knowledge: The textual representation of embodied sensory information in a dynamic and uncertain material environment. *Written Communication*, 18, 131-169.
- Schmitz, L. (2014). Are Hofstede’s dimensions valid? A test for measurement invariance of Uncertainty Avoidance. *Interculture Journal*, 13, 11-26.
- Simonsen, J., & Robertson, T. (Eds.) (2012). *Routledge international handbook of participatory design*. New York: Routledge.
- Sinclair, J. McH. (1991). *Corpus, concordance, collocation*. Oxford: Oxford University Press.
- Rhetoric, Professional Communication, and Globalization*
October 2017, Volume 10, Number 1, 54-77.

- Snell-Hornby, M. (1988). *Translation studies. An integrated approach*. Amsterdam and Philadelphia: Benjamins.
- Sorensen, K., Hammer, S., & Maylath, B. (2015). Synchronous and asynchronous online international collaboration: The Trans-Atlantic & Pacific Project. *Connexions: International Professional Communication Journal*, 3(1), 153-177.
- St. Amant, K. (1999). When culture and rhetoric contrast: Examining English as the international language of technical communication. *IEEE Transactions on Professional Communication*, 42, 297-299.
- Sun, H. (2012). *Cross-cultural technology design: Creating culture-sensitive technology for local users*. New York: Oxford University Press.
- Taras, V., Rowney, J., & Steel, P. (2009). Half a century of measuring culture: Approaches, challenges, limitations, and suggestions based on the analysis of 112 instruments for quantifying culture. *Journal of International Management*, 15(4), 50-75.
- Tebeaux, E., & Dragga, S. (2015). *The essentials of technical communication*. Oxford and New York: Oxford University Press.
- Thatcher, B. (1999). Cultural and rhetorical adaptations for South American audiences. *Technical Communication*, 46, 177-195.
- Thatcher, B. (2010). Eight needed developments and eight critical contexts for global inquiry. *RPCG: Rhetoric, Professional Communication, and Globalization*, 1(1), 1-34.
- Toury, G. (1995). *Descriptive Translation Studies—and beyond*. Amsterdam Philadelphia: John Benjamins Pub. Co.
- Ulijn, J. M. (1996). Translating the culture of technical documents: Some experimental evidence. In D. C. Andrews (Ed.), *International dimensions of technical communication* (pp. 69-86). Arlington, VA: STC.
- Ulijn, J. M., & Strother, J. B. (1995) *Communicating in business and technology: From psycholinguistic theory to international practice*. Frankfurt, Germany: Peter Lang.
- Vandepitte, S., Moustien, B., Maylath, B., Isohella, S., Musacchio, M.T., & Palumbo, G. (2015). Translation competence research data in multilateral international and interprofessional collaborative learning. In Cui, Y., & Zhao, W. (Eds.), *Teaching language translation and interpretation: Methods, theories, and trends* (pp. 137-159). Hershey, PA: IGI Global.
- Venuti, L. (1995) *The translator's invisibility: A history of translation*, London and New York: Routledge.
- Venuti, L. (1998) *The scandals of translation: Towards an ethics of difference*, London and New York: Routledge.
- Vermeer, H. J. (1989), Skopos and commission in translational action. In A. Chesterman (Ed.), *Readings in translation theory* (pp. 173-187). Helsinki: Finn Lectura.
- Vinay, J. P., & Darbelnet, J. (1958/1995). *Comparative stylistics of French and English: A methodology for translation*. Amsterdam, Netherlands, Philadelphia, PA: J. Benjamins.
- Wray, A. (2002). *Formulaic language and the lexicon*. Stanford, CA: California University Press.

Appendix: Pairs of source texts and target texts included in the corpus

	Source Text in English	Number of words	Target text in Italian	Number of words
Pair 1	<i>How create a YouTube channel</i>	525	<i>Come creare un canale YouTube</i>	445
Pair 2	<i>How to make Dippin' dots</i>	662	<i>Come preparare I Dippin' dots</i>	674
Pair 3	<i>How to make a balloon powered car</i>	974	<i>Come costruire un'automobile a palloncino</i>	944
Pair 4	<i>How to grow a vegetable garden</i>	2561	<i>Come realizzare un orto</i>	2579
Pair 5	<i>Sodlon bicycle computer basic setup</i>	432	<i>Come programmare il ciclomotore Sodlon</i>	463
Pair 6	<i>How to perform CPR</i>	874	<i>Come eseguire un RCP</i>	915
Pair 7	<i>How to change the engine oil in motorized vehicles</i>	678	<i>Come cambiare l'olio a un veicolo a motore</i>	668
Pair 8	<i>Making rope from tree bark</i>	570	<i>Come fare una corda con la corteccia di un albero</i>	563
Pair 9	<i>How to make a 3D printed prosthetic hand</i>	941	<i>Come produrre una protesi per la mano stampata in 3D</i>	955
Pair 10	<i>How to assemble a computer</i>	1198	<i>Come assemblare un computer</i>	1183
Pair 11	<i>How to make a solar powered USB charger</i>	1157	<i>Come costruire un caricatore USB alimentato da energia solare</i>	1152
Pair 12	<i>How to disassemble and clean an AR-15 rifle</i>	1208	<i>Smontare e pulire un fucile AR-15</i>	1219
Pair 13	<i>How to change oil in your car</i>	871	<i>Come cambiare l'olio della tua macchina</i>	883
Pair 14	<i>How to change a tire</i>	641	<i>Come cambiare una gomma</i>	630
Pair 15	<i>How to build an electromagnet</i>	705	<i>Come costruire un elettromagnete</i>	707
Pair 16	<i>Coleman tent building instructions</i>	621	<i>Istruzioni di montaggio della tenda Coleman</i>	616
Pair 17	<i>How to extract blood from a canine jugular vein</i>	1648	<i>Come prelevare sangue da una vena giugulare canina</i>	1633
Pair 18	<i>How to set up a Tom Tom 50</i>	1279	<i>Come regolare un Tom Tom 50</i>	1286
Pair 19	<i>How to sharpen ice hockey skates</i>	932	<i>Come affilare pattini da Hokey</i>	893
Pair 20	<i>How to perform a full tire check</i>	644	<i>Come eseguire un controllo accurato dello pneumatico</i>	628