

Massively Open Translation: Unpacking the Relationship Between Technology and Translation in the 21st Century

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Globalization and translation go hand in hand because translation functions as a mechanism to enable global communication in an increasingly interconnected world. Within the technological trend set by Web 2.0 and its user-centeredness, translation practices began to incorporate an alternative scenario based on translation by self-selected volunteers. Under the framework of critical theory of technology, this article scrutinizes the development of translation as a mass, open, and collaborative task that I call *massively open translation*. Critical theory of technology is used to unpack the way in which technology is effecting a transformation of translation toward higher translator autonomy, uncovering the nature of the relationship between technology and translation.

Keywords: translation technology, critical theory of technology, translation profession, translation theory, open translation, crowdsourcing

Introduction: Today's Dynamic Landscape Surrounding Translation

The concept of globalization inspires varied interpretations depending on disciplinary perspective, although most highlight the increased interconnection and interdependency between nation-states as a result of economic and cultural practices (e.g., Tomlinson, 1991). From a translation studies perspective, Cronin (2013, p. 491) maintains that "globalization is quite literally unthinkable without the operation of translation and translators." In the localization industry, which is specialized in turning out global-ready digital products and services, translation is treated as part of GILT (globalization, internationalization, localization, and translation), which explicitly places translation in the context of globalization. Globalization accelerated by the continued advances of the Internet with its associated technologies has served to make the role of translation much more visible than before to a wide segment of society in which individual Internet users experience the need for interlingual and intercultural communication. By the same token, the relative ease of translating text on the Internet on the fly via translation apps may be making (human-based) translation appear facile and therefore less visible (Cronin, 2010). All in all, what some call "digital globalization" (Folaron, 2006, p. 196) has affected ordinary citizens by progressively

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making national boundaries porous and highlighting the need for translation of a wide range of content circulated on the Internet in different languages. Of particular relevance to this article is the emergence of Web 2.0 environments, which have made Internet users not only consumers of online content but also creators of user-generated content (UGC). As a result, UGC has flooded cyberspace alongside professionally generated content, with some becoming potentially subject to translation and translation itself becoming user-generated, with users acting as ad hoc translators of selected content.

In this technological milieu, everyday Internet users, in addition to public organizations, and multinationals dealing with international audiences felt the need for translation. In turn, free online solutions based on automatic translation (formally called MT for "machine translation") such as Google Translate and Microsoft Bing Translator became widespread, serving translation demand from Internet users who prioritize immediacy, cost, and convenience over quality and who do not consider professional services necessary. Monthly active users of Translate.Google.com were in excess of 200 million as of April 2012,¹ a statistic that suggests the pervasiveness of free online MT. Furthermore, according to the Translation Automation User Society (TAUS), language service providers have now begun to employ MT "en masse" (Choudhury & McConnell, 2013, p. 8). MT has never before been so widely employed by professional translation providers, and this trend suggests greater acceptance of the technology by the professional community with the likely improved applicability of MT but also reflects the increased need to cut the time and cost inherent in human translation.

Although the translation industry remains fragmented and varies in its level of sophistication in the use of technologies, computer-aided translation (CAT) has become mainstream for commercial translation production, and such technology applications continue to dynamically change human-machine interactions in translation (O'Brien, 2012). An extended role of technology in translation comes as no surprise in the sense that the affinity between translation and computing has long been recognized and that technology plays an increasingly invasive role (Sager, 1994). Translation memory (TM) forms today's main CAT technology, enabling recycling of similar previous translations and integration with MT to prevent the translator having to translate from scratch. Today's translation tools are increasingly cloud based and are often sharable with other translators. However, translation production based on CAT is essentially sequential, as a translate-edit-proofread (TEP) model (Kelly, Ray, & DePalma, 2011), although more parallel processes may occur in a simultaneous shipment (sim-ship) model in the localization industry, where localized products are shipped together with their originals. For current commercial translation production systems, balancing speed (time to market), quality, and cost remains a challenge. And this is where solutions from MT and a crowdsourcing model—distributed problem solving with the help of an Internet crowd—are increasingly seen as viable alternatives in certain scenarios (Choudhury & McConnell, 2013).

In the age of the Internet, MT has become a vibrant area of practice and research with tangible consequences for the public and society, such as in the case of emergency communication responses for major earthquakes (Munro, 2013). The increasing interest in MT can be linked to the expanding online

¹ This excludes the use of Google Translate on other platforms such as YouTube (source: <http://googleblog.blogspot.co.nz/2012/04/breaking-down-language-barriersix-years.html>).

world creating synchronous translation needs for assimilation purposes, which can be met by a quick-and-dirty gisting MT solution. For higher quality translation aimed for dissemination, postedited MT is serving certain global business needs. Another reason for the rise of MT lies with a paradigm shift in the MT architecture from rule based (RBMT) to data driven, in the form of statistical MT (SMT). The latter exploits linguistic data such as existing translations generated both by humans and by MT that have become abundant and accessible in the online world to efficiently build and improve such MT. The data-driven approach used in today's mainstream MT architecture illustrates affinity with contemporary technological trends of crowdsourcing in resource sharing. It is beyond the scope of this article to delve further into technical details of MT (see Hutchins & Somers, 1992, for historical developments mainly of RBMT; and Koehn, 2010, on SMT), yet it is important to recognize its profound implications for the translation industry and for lay users. To this end, the above outline provides the reader with a snapshot of the contemporary translation landscape in a technologizing world, illustrating a deepening relationship between translation and technology.

In parallel with advances of translation technologies, an Internet crowd has emerged as an alternative translation solution to various translation needs. For example, in recent years, the use of crowdsourcing to engage people with language skills in emergency scenarios has demonstrated a practical humanitarian application of this model that can be rapidly deployed to facilitate the interlingual communication necessary for efficient rescue and recovery in critical life-or-death situations (Munro, 2013). In addition, Facebook Translations (Dombek, 2014) and TED Open Translation (O'Hagan, 2012) were among relatively early prominent examples of crowdsourcing as applied to translation by for-profit and nonprofit organizations alike. Preceding such developments was Wikipedia, which extended its success in involving self-selected contributors in building the world's biggest encyclopedia to creating the world's most multilingual encyclopedia, served by an army of volunteer translators. At its launch in 2001, Wikipedia was an English-language project, but during the same year, the German, French, and Spanish domains were created in preparation for multilingual versions, although not without initial technical challenges (Lih, 2009). Today the Wikipedia user can arrive through interlanguage links at a given article in a chosen available language that may be a translation or the originally authored article. According to Wikipedia's own statistics from in December 2014, its articles were available in 239 languages.² The overall substantial volume indicates the likely extent of volunteer translation efforts, although the precise amount of translation is difficult to ascertain because of Wikipedia's parallel authoring approach, where the content in each language may be written from the ground up or translated. Figure 1 shows the 10 largest Wikipedias as of January 2015 according to language groups in terms of the number of articles available, as indicated on the Wikipedia homepage. The dominance of certain groups such as German is attributed to its well-established hacker and open-source culture supplying dedicated online communities of contributors (Lih, 2009), and the relatively high ranking of Polish also suggests active online participants in Poland. This ranking primarily indicates the level of online involvement by the given language community rather than the order of commercial significance of the markets. Furthermore, Wikipedia translation has served to illustrate the emergence of translation as a distributed self-regulating task and as a new approach to the subject matter rendered "with that particular linguistic and cultural audience in mind" (Désilets, Gonzalez, Paquet, & Stojanovic, 2006, p. 20). It was Wikipedia's deliberate

² <http://stats.wikimedia.org/EN/Sitemap.htm>

decision to allow different language communities to apply “their own flavor of neutral point of view, and also to allow the language culture to come through” (Lih, 2009, p. 140).

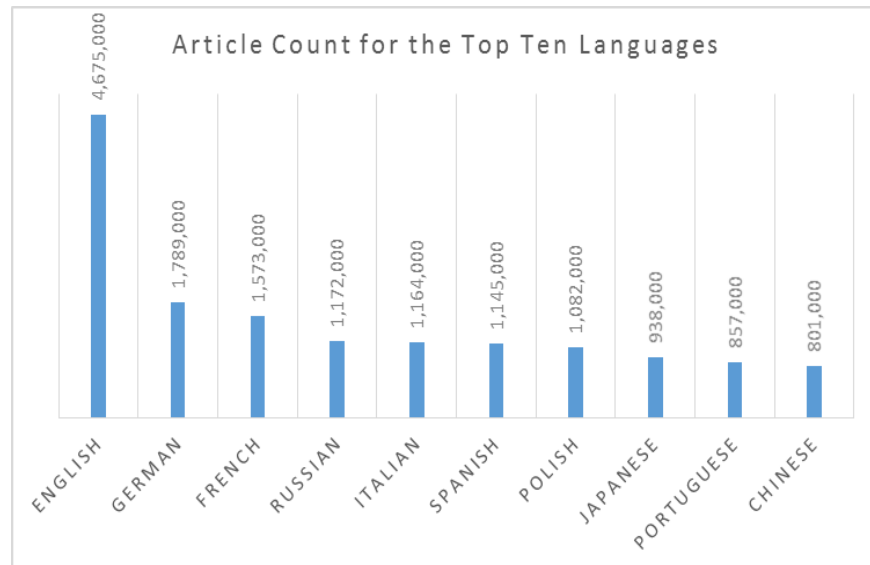


Figure 1. Wikipedia according to the number of articles in different languages.

Source: Adapted from <http://www.wikipedia.org/> as of January 21, 2015.

Against this backdrop, the present article examines online translation practices emerging as open tasks distributed among a large number of unspecified Internet users. As illustrated by the mechanism used in Wikipedia, such practices operate on the basis of self-selection of the participants and self-repair of the work quality by collaborators (Désilets, 2007). Exploiting ever more ubiquitous online environments, contingent translation groups are initiated online and formed organically, representing an ad hoc, primarily volunteer workforce solicited through an open call. These practices indicate a shift from translation as a closed shop run by professional translators to an open task, redefining the scope and the nature of translation. In order to evaluate this significant transformation, this article seeks to analyze the phenomenon according to the framework of critical theory of technology (CTT). To do so, I call the emerging form of translation *massively open translation* (MOT), connoting a new technical feasibility to afford a translation activity that is open to participants on a massive scale. MOT is so named in analogy with relatively recent phenomena such as massive open online courses (MOOCs) and massively open online games (MOOGs). The term is also conceptually linked to ideas such as massive online collaboration (MOC), as proposed by Désilets (2007). In particular, in Désilets' vision, MOC is seen as facilitating the creation of high-quality sharable linguistic resources such as terminological databases and translation memories that have since been taken up, albeit to a limited extent, by international organizations and industry associations such as the European Commission and TAUS, respectively. The next section outlines the basic tenet of CTT as relevant to this article, followed by its application for Wikipedia and Facebook translation projects as developing forms of MOT. Key insights and emerging issues are highlighted in

discussion before the implications of MOT are summarized in conclusion. I hope that a critical analysis of such translation practices with a technology focus will pave the way to understanding the transformation taking place in translation in the 21st century.

Translation and Technology: A Critical Theory of Technology Perspective

It is challenging to find an appropriate theoretical framework in which to critically examine technology and to elicit its significant impacts on translation. This partly arises from the fact that technological factors are not fully incorporated into mainstream translation theories, which have so far failed to acknowledge an epistemic influence of technology on translation (Williams, 2013). Although the pervasive technological impact on translation practices has been reflected in modern translator training (EMT Expert Group, 2009), little progress has been made to explicitly incorporate technological factors into the otherwise increasingly sophisticated theoretical basis of translation (O'Hagan, 2013). The discussion on a technological turn in translation studies has been largely based on "an emergent property from new forms of translation practice" and not driven by "theoretical developments in cognate areas of inquiry," as observed by Cronin (2010, p. 1). This could also account for why the vibrant research field on MT and localization as part of software engineering rarely avails itself of otherwise rich theoretical constructs in translation studies. This state of affairs questions the applicability of current translation theories in relation to the increasingly invasive role of technology in translation and also raises the need for translation studies to embrace more technology-oriented cross-disciplinary perspectives.

In an attempt to fill the current gap in theorizing the impact of technology, the present article draws on the framework of critical theory of technology (CTT), with specific cases of MOT. CTT serves to highlight technology as a key factor transforming social and professional practices, providing a nuanced perspective rather than being tied to the binary approach to technology as either autonomous or human controlled. As is implied in the concept of MOT being open, the recent phenomenon of participatory translation has shown a democratizing impact of technology on translation by opening it up to a massive self-selected, interest-based crowd for timely delivery of a large variety of translation. However, the extent of democratization is not yet clearly understood, as divisive views on this phenomenon indicate. The application of crowdsourcing to translation has been generally cast in a positive, progressive light, especially in business contexts (Howe, 2008) but met with protest and criticism from the professional community of translators (e.g., Stejskal, 2009). Similarly, translation research (e.g., McDonough Dolmaya, 2012, 2014) has highlighted ethical issues and a potentially negative public image of the profession, which may be at risk of becoming perceived as an area of work readily replaceable by untrained nonprofessional translators.

This article analyzes such developments by treating contemporary translation as a purposeful system in which translation technology facilitates human productivity in CAT. Although CAT continues to evolve as a rationalized technological system, today's commercial translation is primarily a closed system in contrast to open participatory systems such as MOT. A theoretical framework based on CTT seeks to elicit new dimensions represented in MOT that may be seen as subversive developments (Cronin, 2010) and as democratic ones in comparison to well-established conventional translation systems. CTT, attributed to Feenberg (1991, 2002), posits that technologies as rationalized systems are, in fact, laden

with value and embodiments of the sociopolitical order; hence it is not possible to treat them as neutral and separate from society. In particular, this article adapts a CTT framework outlined by Grimes & Feenberg (2013) with a focus on such factors as user innovation and public interventions in technological environments. Grimes and Feenberg argue that democratic rationalization of technology occurs when the general public intervenes in the design of technologies based on their user experience, which is fed back into the original design of the technology. On the basis of CTT, the deepening relationship between technology and society in current technological environments can be highlighted by public acceptance of a given technology, leading to society in which "technical power is increasingly distributed across the populations concerned rather than concentrated at the top of administrative hierarchies" (Grimes & Feenberg, 2013, p. 127).

CTT stems from the Frankfurt School critical social theory, which has roots in Marxism and is applicable to critical analysis of any rational systems, including technology, in modern society. By treating technology as inseparable from sociopolitical values (Grimes & Feenberg, 2013), CTT aims to reconcile views between substantivism, which assumes autonomy and an inherent bias of technologies toward domination, and constructivism, which sees technologies as contingent on different social factors specific to each technology with no inherent forces behind technological progress (Grimes & Feenberg, 2013). Both positions are considered to be responses to the now outdated view that technologies are mere tools with no consequent social impacts. Based on some of the limitations and complementary dimensions of substantivism and constructivism, CTT provides an analytical framework to understanding technology by combining philosophical (substantive) and sociological (constructivist) viewpoints. In operationalizing CTT, Grimes and Feenberg (2013) proposed a dual-level common framework that they call "instrumentalization theory" (pp. 124–125), which is divided into primary and secondary instrumentalization: The primary level examines the functional constitution of a given technology, and the secondary level focuses on actors associated with the technology for their experience and recontextualization of technology. Furthermore, these two levels are understood to be iterative and interactive, influencing the cycle of development of the given technology (Grimes & Feenberg, 2013). CTT accommodates the experience of the users of the technology as something "not extraneous to technology but indeed essential to its successful development" (p. 127). The recognition by CTT of the democratizing and also subversive elements of technology as social rationalization through user intervention seems highly relevant in considering MOT.

The technological environments centered on Web 2.0 unleashed opportunities for Internet users to engage in chosen online activities, adding to the spread of "participatory culture" (Jenkins, 2006) with a significant social dimension. Such a technological milieu makes the idea of democratization particularly applicable, as users contribute to the shaping of technology. To highlight the various impacts of technology, CTT uses the concepts of *formal bias* and *technical code*. The former refers to bias embedded in the "design, development and eventual implementation of technology" (Grimes & Feenberg, 2013, p. 123) as opposed to the bias based on the more subjective user experience. Formal bias in CTT also relates to "underdetermination" of technology, which allows room for users to interfere and innovate—a concept based on a constructivist perspective of technology where "the technical properties of a device are insufficient to determine its design" (ibid., p. 124). This seems highly relevant to the ethos of open-source movements, permitting users to enhance software from the source code, which is made accessible. In CTT, the concept of technical code is used to uncover features in the given technology that reflect

“unexamined cultural assumptions literally designed into technology itself” (ibid.). MOT will be analyzed on the basis of formal bias and technical code in comparison with those of conventional translation as a proprietary closed system. In turn, rationalization in technology is considered in terms of democratization and subversion, both of which stress the shift of focus onto users and openness of the translation system. In the next section, the concept of *open* is examined in the context of MOT and in reference to the crowdsourcing model applied to translation, which is a hotly debated topic in translation studies (O’Hagan, 2011, 2013).

Applying Critical Theory of Technology to Wikipedia and Facebook Translation as MOT

With the aim of shedding light onto the transformation taking place in translation, a CTT framework is applied to the emerging practices of MOT. On the basis of scale and visibility, Wikipedia and Facebook translation initiatives are put under focus as examples of MOT under development. The analysis also takes into account the distinction between a bottom-up approach (i.e., Wikipedia) versus a top-down one (i.e., Facebook), as highlighted by Brabham (2013) as a significant factor in considering distributed online collaborative practices. In particular, both examples are treated as a translation system to discuss their primary instrumentalization (i.e., formal function as separate from the contexts of use and users) and their secondary instrumentalization (i.e., functions recontextualized in sociopolitical situations of use and users of the system). This analytical approach involves the identification of technical code to explore formal bias to consider rationalization of translation as a technological system, including user interventions. In a traditional closed translation model, human translators would often adjust their approach to a CAT-based workflow, normally with little room for intervention in accordance with expectations of the proprietary technology paradigm. Despite dissatisfaction often voiced in translators’ forums such as ProZ.com about proprietary CAT tools, to date the mainstream proprietary tools have not been replaced by open-source platforms for professional translation. Historically, the opportunity for professional translators to influence the design of translation systems tended to be minimal, with CAT systems continuing to be designed with insufficient user (translator) feedback (O’Brien, 2012). Such a tendency can be seen as yet further evidence of a lower-autonomy profession (LAP), with translators remaining subservient to technology, as suggested in Katan’s (2011) study based on a survey of nearly 1,000 professional translators and interpreters. In this picture, MOT may be injecting a major impetus by affording translators, who may be nonprofessional translators in the main, a more active role in shaping their translation environments. The following subsections examine each MOT in some detail.

Wikipedia Translation

Launched in January 2001, Wikipedia articles in English reached more than 4.6 million articles as of December 2014, and six other languages also exceeded the 1-million-article mark (see Figure 1). The rate of growth clearly demonstrates the impact of opening the floor to the whole online world. Wikipedia’s innovative distributed collaboration model for building the encyclopedia also led to its novel translation initiatives. Central to the technological platform for Wikipedia translation is wiki, which, according to Wikipedia,³ refers to “a web application which allows collaborative modification, extension, or deletion of

³ Retrieved from <http://en.wikipedia.org/wiki/Wiki>

its content and structure." As a collaborative web-authoring tool, wiki innovation, known as "The Wiki Way," entails (a) democratic peer review, (b) ease of access and open editing, (c) incremental growth, and (d) free-form content, each of which contrasts with conventional approaches such as centralized peer review and editing with top-down control and with upfront design and structured content (Désilets et al., 2006). The use of wiki makes Wikipedia viable as open collaboration, allowing contributors to edit previous entries by others, with the trace of all changes automatically archived as "revision history" until the article being edited is removed. This basic structure used for Wikipedia is also applied for its translation initiatives, as explained in Wikipedia⁴:

Wikipedia is a multilingual project. Articles on the same subject in different languages can be edited independently; they do not have to be translations of one another or correspond closely in form, style or content. Still, translation is often useful to spread information between articles in different languages. Translation between Wikipedias need not transfer all content from any given article. *If certain portions of an article appear to be low-quality or unverifiable, use your judgment and do not translate this content.* [emphasis mine]

This translation brief reflects Wikipedia's feature of parallel authoring, in which content across languages is not necessarily intended to be identical due to parallel language communities working on the same topic independently (Désilets et al., 2006). It also signals the difference from a conventional translation in that Wikipedia translators are explicitly asked to apply their assessment to the quality of the source text and to translate selectively. This approach echoes some of the ideas behind FLOSS (Free/Libra Open Source Software⁵) Open Translation, in which volunteer translators are also encouraged to take a proactive role. In addition, it is most revealing that a recent study (Hale, 2014) supports the claim that Wikipedia translation as cross-lingual editing contributes to easing of a self-focus bias tendency in articles written by each language community. This hints at a type of autonomy being exercised, albeit implicitly, by some Wikipedia translators towards restoring a neutral point of view appropriate for an encyclopedia.

Wikipedia translation allegedly achieves its quality on the principle of self-repair, with fellow volunteers jumping in to correct any errors. Its fundamental wiki-based technical code potentially allows such a functionality, which can be considered part of the primary instrumentalization by inviting collaborators to take action appropriately. The wiki design allows corrections to take place immediately by collaborators, but at the same time, it requires that such errors be identified in the first place. An empirical study by McDonough Dolmaya (2014) on the quality of Wikipedia translation found that not all types of errors equally attract timely corrections. Although the study was based on a corpus created with a limited number of articles in only French and Spanish translated into English, such findings suggest that the Wikipedia open translation is not a foolproof approach and that the resulting translations "can never

⁴ Retrieved from <http://en.wikipedia.org/wiki/Wikipedia:Translation>

⁵ According to Richard Stallman (see GNU Operating System link <https://www.gnu.org/philosophy/floss-and-foss.html>) of the Free Software Foundation, the distinction between FOSS and FLOSS is significant in that the former focuses more on open software than free software movement, whereas the latter is more neutral in its emphasis. For the purpose of this article, the latter abbreviation is used for neutrality.

be considered definitive versions, but rather evolving texts” (McDonough Dolmaya, 2014, p. 29). For this reason, there remains the issue of inconsistency of the final quality of the translation.

Wikipedia translation employs a bottom-up organization driven by user initiatives. For example, user initiatives introduced structures such as a translation subcommittee in order to maintain translation requests and other communication channels.⁶ The technical code embedded in Wikipedia translation is geared for democratic organization, yet the design of the platform for translation indicates weakness in countering the issue of untimely error detection and the lack of full completion of the task depending on the topic, affecting quality. Also, its look and feel and workings based on wiki markup language may be perceived as less user-friendly (Lih, 2009) than more purpose-built platforms such as Facebook Translations, as discussed below. This can be taken as the legacy of open-source platforms, which are typically designed for people with technical backgrounds rather than for more general users. In this sense, the technical code embedded in Wikipedia translation may not be entirely conducive to democratizing or inclusive to all types of potential volunteers. Although the substantial volume of Wikipedia articles available in different languages indicates that the approach based on massive online collaboration works, the secondary instrumentalization of the translation system may be limited because only the more technically minded are privileged to influence the design, thereby showing formal bias toward techies. Part of Wikipedia’s success is due to its many technological solutions for quality control implemented by users (Lih, 2009). For example, software robots (computer programs) known as “bots” undo vandalism and perform other repetitive tasks. Bots are another part of technical code that anticipates unethical user behavior and unprofessional oversights, such as frequent spelling inconsistencies and errors. Interestingly, bots in Wikipedia are often monitored by human editors, as in the case of “spellbots” which are used to assist, not replace, human decisions (Lih, 2009, p. 105). Although Wikipedia maximally exploits technical solutions in automating certain tasks, it is noteworthy that some of its technologies are under human surveillance and that it treats encyclopedia building as essentially a human-oriented task, allowing “tech elite and tech averse to work side by side toward the same goal...” (ibid., p. 99).

Facebook Translations

Launched in 2004, Facebook has continued to grow to become the main social networking site, reaching more than 1.35 billion users worldwide at the end of 2014 (Grossman, 2014). Part of this global expansion was the need to make the initially English-only Facebook website available in different languages by turning to its users to meet the translation needs. The website was rapidly made available in languages other than English based on a crowdsourcing model with an open call sent to Facebook users. As is already widely reported elsewhere, its first Spanish version allegedly took only four weeks to be released in February 2008, and it was followed shortly thereafter by French and German versions. Facebook claimed that the primary motivation for soliciting users’ help was not to cut costs but to build on and strengthen Facebook’s user community (Losse, 2008). Also, professional language services providers met certain types of translation requirements, including auditing some of the user-based translation. Facebook argued that any cost savings that may have been achieved were absorbed into the design and

⁶ Retrieved from <http://meta.wikimedia.org/wiki/Translation>

development of a purpose-built translation crowdsourcing platform, calling the overall approach "Community Translation on a Social Network."⁷

Facebook Translations is essentially organized in a top-down approach in so far as its translation system is concerned. The only way anyone can participate in translating Facebook is through its dedicated platform, which requires a user to register with Facebook. The primary instrumentalization of this platform provides translation functionality by breaking down the content into small chunks called strings (made up of words, phrases, or short sentences) that make each translation component a minimum unit of meaning so as not to daunt volunteer user translators. They are not obligated to complete any specific amount of translation and can choose a string they are prepared to translate. Another design feature of Facebook translation is usability with translation quality in mind, as illustrated by the platform's displaying the context for the given string and including a related glossary. It also incorporates an option to carry out other tasks such as editing and voting on other contributors' translations within the same environment, or if "inline translation" is chosen, it leaves the translator in the normal Facebook environment so the translation task can take place concurrently with the translator's normal social networking activities (for further detailed explanations of the platform see Dombek, 2014, pp. 47–53). Being part of the dynamic proprietary social networking platform, the Facebook translation system can change at any time without any prior notice, as Facebook makes all decisions about the organization of translation and its technical platform (Dombek, 2014).

Facebook provides a space for user-translator communities to interact within a given language group. Such a communication space usually attracts the most dedicated members of the group, who treat translating tasks extremely seriously and post questions and feedback about all aspects of the translations, including issues concerning the platform. Despite the overt success in rapidly turning monolingual Facebook into multilingual websites, a case study on Polish Facebook translators (Dombek, 2014) found dissatisfaction and disenchantment by some of the translation community members, who were often discouraged to continue their work. These reactions stemmed from the lack of consistent follow-up by Facebook in relation to the translator discussions, even when concrete actions or responses were needed. Dombek's ethnographic study found that ostensive forms of acknowledgement from Facebook such as the leaderboard mechanism recognizing top contributors are seldom perceived by Facebook translators as key motivating factors. It seems that volunteers' initial enthusiasm was often deflated because they perceived a lack of response from organizers as their disinterest in the translation work. In relation to the secondary instrumentalization, user-translators are unable to change the technology even if they are aware of the problems, while Facebook may suddenly modify the platform without any user consultation or for any obvious reason. Although this scenario may differ depending on the relative commercial importance of particular language communities, by and large, the general tendency seems to be that the organizer hopes the community will run itself. This suggests that the technology (in this case, the Facebook Translations platform) does not allow user input to be effectively fed back into the system, and this in turn stifles the initial user motivation and limits exploitation of user innovation.

⁷ Facebook filed for a patent application for its Facebook Translations at the United States Patent and Trademark Office in 2009, calling its invention "Community Translation on a Social Network."

Drawing on the above analysis, the next section examines key characteristics of MOT, starting with related key concepts.

Discussion: From Open Translation and Translation Crowdsourcing to Massively Open Translation

The relatively new status of MOT is evident in unstable usage of associated terminology. To begin, *open translation* is discussed in relation to *translation crowdsourcing*. *Open translation* is a term initially introduced by open-source software translation communities, with “open” stressing the meaning of “free” as “libre,” hence, “freedom.” The original conceptualization of open translation posits the role of translation in a broader context of Internet-driven globalization, with translation playing a critical role for enabling information access to everyone (Hyde, 2011). In a particular reference to the inadequacy of MT, Hyde argues that human volunteers can best achieve the mission of forging access to an expanding range of knowledge sources in multiple languages, as stated in the following vision:

The polyglot internet demands that we explore the possibility and power of distributed human translation. Hundreds of millions of internet users speak multiple languages; some percentage of these users are capable of translating. . . .These users could be the backbone of a powerful, distributed peer production system able to tackle the audacious task of translating the internet. (Hyde, 2011, p. 3)

Open translation seeks to make accessible a vast volume of multilingual content on the Internet with a distributed model, especially by reaching out to general Internet users as translators. Hyde (2011, p. 13) explains open translation as “a nascent field of practice emerging at the crossroads of three dynamic movements of the information and internet eras” consisting of (a) open content, (b) free/libre/open source software, and (c) open/peer production. Open content refers to a wide range of resources available under open licenses, such as Creative Commons, as in the case of Wikipedia. Based on these ideas, the term *open translation* is used in a very specific way to mean “the set of practices and work processes for translating and maintaining open content using FLOSS tools, and using the internet to make that content and those tools and processes available to the largest number of writers and readers” (ibid.). In relation to the mode of work in open translation, Hyde declares that translators are moving from “an individual sport to a team sport” (ibid.) and, in quoting a fellow FLOSS colleague Ethan Zuckerman, further suggests that open translation is transforming translators to engage in “journalism on the web,” involving “curating, annotating, rating, and linking” (ibid.); the open translation task encompasses actively sourcing the content to be translated and making accessible to the wider community the translated content, neither of which forms the typical brief for professional translations. This indicates a broader scope of the role than one normally assigned to professional translators and is suggestive of a form of activism (Baker, 2006). Such a flavor is also discernible in findings in McDonough Dolmaya’s (2012) survey study on Wikipedia translators, who consider that translation is serving as “a means of rectifying the inequalities in the way information is made available to various language communities” (p. 184). However, the same study also highlighted that not all participants were driven by a social or political agenda, with some treating it merely as “a hobby or pastime” and the source for enjoyment and

intellectual stimulation (ibid., p.187). Yet, as mentioned earlier, there is some empirical evidence to correlate Wikipedia translators' multilingual editing input to the levelling effect of self-focus bias of the original articles (Hale 2014). Interestingly, Katan's (2011) survey study found professional translators to be "hardly activist" (p. 75) with little evidence of that interventionist traits that some translation theorists (e.g., Baker, 2006) claim as inherent in the very act of translation. Compared to the more autonomous image of interpreters belonging to a higher-autonomy profession (HAP), Katan found that translators' images are often collocated with expressions such as "automatic," "computer assisted," "machine," "technical" or "free on-line," which he suggests as pointing to "non-human, technical LAP" (p. 78). In the context of Katan's study, professional translators are negatively linked to the use of technology they depend on. In the emerging forms of translation such as MOT, technology forms as an essential supportive infrastructure upon which the translation work is made open to anyone who is self-declared to be fit for the task. Here the dependency on technology can be seen as something positive that even promotes the image of higher autonomy of the group that exploits technological solutions to its advantage.

Another form of MOT relates to the concept of crowdsourcing. It was initially conceptualized by *Wired* magazine journalist Jeff Howe (2006), who associated the idea with outsourcing in defining the new concept as "the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call." In addition to practical applications, the crowdsourcing phenomenon has inspired academic research from various perspectives (see Brabham, 2013). Seeing varied definitions being used, Estellés-Arolas and González-Ladrón-de-Guevara (2012) studied scholarly literature on crowdsourcing and suggested a combined description:

A type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge, and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage what the user has brought to the venture, whose form will depend on the type of activity undertaken. (p. 197)

The above definition suggests the following as key characteristics of crowdsourcing: (a) an online activity involving various types of tasks solicited from a group, (b) voluntary participation, and (c) mutual benefit for the initiator and the participants. These are applicable to translation crowdsourcing, where a translation problem is tackled by a group of volunteers working in collaboration and connected on an online platform (Dombek, 2014). The immediate difference between open translation and translation crowdsourcing seems to be that the former specifies the use of open-source tools in translating and also limits the translation content to be that made available under open licenses. Other related terms often used interchangeably include *community translation*, *collaborative translation*, and *volunteer translation*. All these terms capture certain key features of new MOT translation practices that take place in a

distributed collaborative mode on the Internet, typically by volunteers who are usually not remunerated. Matt Stanford of Twitter International's comments on the term *community translation* as compared to *crowdsourcing* shares insight gained as the organizer of such an initiative. He distinguishes crowdsourcing "as an activity that requires very *little or no prior knowledge* of the problem space at hand and which can benefit solely from a wealth of different opinions/views/activities" whereas community translation relies heavily on a "user's *prior knowledge*" [original emphasis].⁸

Facebook also uses the term *community translation* as mentioned earlier. This suggests that organizations that have embarked on this distributed model of translation by users recognize the importance of participants' prior subject knowledge. However, the varied terminology arguably reflects unclear distinctions currently made between these similar, competing concepts. Brabham (2013) maintains that open-source and commons-based peer production are "technically" not crowdsourcing, which is, by definition, pre-structured in a top-down manner in his opinion. However, within translation studies, Wikipedia translation is generally considered a type of translation crowdsourcing (e.g., Dombek, 2014; McDonough Dolmaya, 2014). Brabham explains that open-source production aims to produce "a common resource on their own terms, in their own format, in self-governing community" (2013, p. 6), and similarly, commons-based production involves "no top-down directive" (ibid., p. 7). According to Brabham, crowdsourcing is something organized by the project or the project sponsor who has the control as opposed to, for example, Wikipedia in which "the work is generated and governed by the community, all from the bottom up" (ibid., p. 8). If these distinctions are applied to open translation and translation crowdsourcing, the two are different: In the former, a crowd organizes and governs the translation initiatives, whereas in the latter, the crowd uses the provided structure and is organized more in a top-down manner. However, as implied in Brabham's (2013) cautious comments on the subtle difference between crowdsourcing and open-source/commons-based approaches, there are many overlapping elements.

McDonough Dolmaya (2012, p. 168) refers to translation crowdsourcing as "collaborative efforts to translate online content both by amateurs and professionals," including Wikipedia translation. She drew on the crowdsourcing classification in reference to Ray and Kelly (2011) with three types: (a) product-driven seeking to make open-source products available in different languages, (b) cause-driven purpose by nonprofit organizations seeking translation for worthy causes such as humanitarian efforts, and (c) outsourcing by for-profit organizations to meet their translation needs, such as in the case of Facebook Translations. McDonough Dolmaya (2012) considered Wikipedia translation as a case of "cause-driven" participation based on the encyclopedia's mission to share knowledge across different language groups (p. 176). In this classification, approaches to organization (e.g., top-down versus bottom-up) of crowdsourcing initiatives do not seem to be considered. In her study on the subject, Dombek (2014) also considered Wikipedia translation as a case of translation crowdsourcing. She proposed a translation

⁸ This was Matt Stanford's response on May 28, 2011, in an online forum to the question, "What key benefits did Twitter (product) and Facebook uncover in crowdsourcing their translations?" Available at <http://www.quora.com/What-key-benefits-did-Twitter-and-Facebook-uncover-in-crowdsourcing-their-translations>

crowdsourcing typology according to whether the initiator is the content user (e.g., Wikipedia) or the content owner (e.g., Facebook, TED Open Translation Project) and whether it is by a for-profit or nonprofit organization. Each of the three types then entails a different purpose behind the call for translation: (a) user-initiated and nonprofit, to share the content in a given language; (b) content owner-initiated and nonprofit, to support ideology or cause and to spread knowledge; and (c) content owner-initiated and for-profit, to reduce translation cost and build the user community. Dombek puts Wikipedia translation under the category of user-initiated for nonprofit organizations. The main difference between Brabham's (2013) conceptualization of crowdsourcing and those by McDonough Dolmaya (2012) and Dombek (2014) seems to lie in Brabham's separation of user-initiated examples such as FLOSS open translation and Wikipedia translation from more structurally top-down managed initiatives such as Facebook translation, which are considered crowdsourcing. Brabham sees the following as key associated concepts underpinning crowdsourcing: participatory culture on the Internet, problem solving and user innovation, and collective intelligence in the form of the wisdom of the crowd. According to these underlying concepts of crowdsourcing, one could argue that all of them apply to MOT, in which the Internet provides the backbone enabling interaction and a global reach to appropriate talent. This provides a new avenue for problem solving by inviting active user input on a massive scale, which could lead to the "wisdom of crowds" (Surowiecki, 2004). Surowiecki's main argument was that the information aggregated from a crowd would often be better than that information from any individual member alone if the crowd has sufficient diversity. However, prior knowledge is considered significant in opening translation to the public even though it is often participants' self-selection that determines their suitability.

The term *massively* in MOT signifies a scale of participant numbers unlikely to be attained were these activities offered offline, as demonstrated in MOOCs and MMOGs. Technology provides the connectivity that allows a substantial number of participants with relevant interest and familiarity with the subject matter to simultaneously engage in translation. This in turn implies a profound change in dynamics in the process compared to solitary translation conducted in a TEP mode. Along with the question of scalability, the impact of the mass participation is among the issues yet to be fully investigated. One negative impact that has been well observed is subversive behavior of a crowd compared to that of "flashmobs" (Cronin, 2010, p. 5). As with Wikipedia, the issue of vandalism is also anecdotally reported in Facebook translation in the case of a volunteer translator deliberately planting poor or irrelevant translation. And such incidents may not always be captured by a bot or the community members in a timely manner. User innovation and subversion are two sides of a coin evident potentially in any crowdsourcing and are technically encoded in MOT, as highlighted in the analysis based on CTT.

On the basis of the above discussion and for the purpose of this article, MOT is defined as a large-scale online participatory translation collaboration that seeks to attract relevant crowds who in turn ideally form a community earnestly engaged in the given task. Here, the meaning of *open* is not limited to open-license content or tools but is also taken as freedom of participation by individuals ideally with relevant knowledge and skills. Furthermore, the concept also links to the idea behind "open access" today discussed in the context of availability of academic literature (Suber, 2012), meaning the ability to access information freely in terms of cost or copyright. Transformation of translation as manifest in emerging MOT practices can arguably be characterized in terms of democratic rationalization of technology. Wikipedia translation leaves, as expected, a close trace of the open-source approach as in FLOSS Open

Translation. Its organization is bottom-up in nature with room for user intervention and innovation, further opening the role of volunteer translators to tasks beyond translating merely what is given to determining what should be translated according to their assessment of the quality of the user-generated source content. In this way, the technical code embedded in Wikipedia translation accommodates and promotes volunteer-translator autonomy, but only insofar as techies and nontechies can work together in harmony to compensate for the user-unfriendly aspects of the wiki (Lih, 2009). By comparison, Facebook translation imposes a top-down organization in which actions of volunteer-translators are directed through its purpose-designed user-friendly platform. The mission of Facebook to spread its own social networking ethos seems to be embedded in the technical code of the Facebook platform, such as in the voting mechanism for everyone to assess fellow Facebook translators' input, closely following the Facebook style of likes and unlikes. Here, although the volunteer-translators are given opportunities to discuss and debate their translation issues through community forums, their freedom to control the technology is curtailed. As a result, they often seek guidance from Facebook, for example, to tweak glitches in the translation platform. However, the platform does not require that the organizer respond to such requests. In this way, despite the apparent freedom and democratic decisions regarding translation given to user-translators in the case of Facebook, the technical code suggests the deliberate restriction on such authority, in contrast to Wikipedia translation. This could point to eventual low autonomy somewhat replicating today's professional translation as portrayed in Katan (2011). These are challenging issues that call for further attention in designing future MOT systems.

Conclusion

Despite the generally acknowledged close relationship between technology and translation, mainstream translation theories remain inadequate to fully address critical issues arising in this nexus. This article attempted to elicit some of the impacts of technology on translation under the framework of critical theory of technology by treating emerging translation practices as massively open translation. CTT assumes that technology is not neutral and reflects specific surrounding sociopolitical environments that affect users and their interactions, as can be revealed by technical code and formal bias. Under the CTT lens, MOT indicates a degree of democratic rationalization of the translation system in the making, involving self-selected mass participation in translation. The opportunity for Internet users to come together to translate with adaptable technological environments tests the intrinsic relationship between technology and translation from a new perspective. The potentially broadened scope of the role of translators in some MOT contexts can indeed be contrasted with the self-perception of today's professional translators as occupying a lower autonomy profession (LAP) (Katan, 2011). Yet the focus on technical code embedded in different forms of MOT pointed to certain constraints in technology that are stunting translator autonomy: Wikipedia translation allows a higher level of user autonomy, but that depends on the technical expertise of the user translation community members; Facebook only permits a limited degree of such autonomy, despite all appearances of a user-driven translation practice, similar to today's proprietary CAT-based environments. For now, at least some of the self-declared translators who participate in MOT show that they are engaged in translation in an autonomous way, developing a critical attitude toward the surrounding technological environments. Here there is a sign of translation shifting from a normative to a transformative practice with future implications for the profession and for society at large. I hope that this brief study will provide an impetus for scholars to continue to investigate and

contribute to understanding the technological turn in translation studies and to building the theoretical basis to best reflect translation's increasingly important role in the globalizing world of the 21st century.

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