

# Cultural ergonomics in localization

## Engineering a more inclusive language product

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Cultural ergonomics aims to integrate the dimension of culture into systems and products to make them safer, more useful, and more accessible to a wider range of multicultural users. This makes it an effective conceptual tool to create a localized product that is more inclusive. By using the example of security questions in drop-down menus replicated across North American English websites, this paper argues that overlooking ‘culture’ as a site of diverse experiences leads to a harder-to-navigate product for the multicultural user. By juxtaposing the reality of a multicultural context with the monoethnic, middle-class, and heteronormative cultural dimensions of security questions, the cloning of questions across websites can be seen as satisfying the needs of the dominant power rather than the subordinated peoples – both immigrant and non-heteronormative. Operationalizing cultural ergonomics in the translation workflow provides a means to recognize and address this power imbalance.

**Keywords:** culture, ergonomics, localization, translation, immigrant, heteronormative

### 1. Introduction

This paper applies critical discourse analysis (Wodak and Meyer 2016) to the language of website security questions to foreground the reading of gender, class, and ethnicity. Security questions listed in drop-down menus are a product of data security measures. They first appear when the user is prompted to create an account, and subsequently when extra security measures are deemed necessary to access that account. They are an understudied text type for localization that may be categorized under technical writing, where authorship (the human dimension) is suppressed and assumed by the system. Replication, rather than originality, becomes the modus operandi.

By applying discourse analysis to security questions, this paper demonstrates how they are oriented towards the values and privileges of a North American, white, Anglophone, suburban, heteronormative middle-class. To prevent the replication of cultural bias in the localized product, ‘cultural ergonomics’ is introduced as an effective conceptual framework under which the translator/localizer can identify the bias and revise the language to be more inclusive. The concept is taken from the field of product and systems engineering, which aims to integrate the dimension of culture into systems and products to make them safer, more useful, and more accessible to a wider range of multicultural users (Smith-Jackson, Resnick, and Johnson 2014). Two ways to operationalize cultural ergonomics are examined: self-framing of security questions and ‘sensitivity reading’.

When performing discourse analysis, the author, whose identity varies from this North American demographic, assumes the role of the user navigating the security questions in drop-down menus. In the hard sciences, this methodology is considered to yield interpretation that is anecdotal or subjective. But foregrounding the identity of the author to yield interpretation that may be singular does not exclude the possibility of the results contributing to research in the field. An individual’s ethnicity, gender, class, or culture naturally positions this individual within a larger community, in which common traits and conditions can be identified. Therefore, structurally speaking, the author or the author’s experience cannot be entirely singular, and this method invites other users/readers to either see themselves in the author or see how their points of view differ from those of the author or the community in which the author represents a data point. This is an approach that is viable and practiced in literary criticism under the reader-response theory, where the meaning and significance of the text in question – how it ‘makes sense’ to one but not the other – can only be activated with the participation of the reader and seen through the reader’s individual experience (Fish 1980; Iser 1978).

In the drop-down menus, questions such as “What is the first name of the best man at your wedding?” are ubiquitous; yet their non-inclusive biases are left unchecked to this day. One cannot simply localize these types of questions by using the latest, most efficient technologies. If anything, localization goes beyond the facile use of technology. It requires a nuanced, culturally critical, and philosophical understanding of ‘translation.’ However, it is often assumed, and taken for granted, that ‘translation’ is necessarily going from one language into a ‘different’ one – from Chinese into English or French into Spanish, for example – with an emphasis on the conversion between different language *scripts*.

Moreover, ‘translation’ in localization industry discourse is rendered synonymous with literalism, something that is *too facile* and has *no depth*: “[S]ome Japanese game developers are paying more attention to how games are localized for

overseas markets, going *beyond facile translations* to a more *in-depth recasting* of games for different markets” (Tabuchi 2010, emphasis added).<sup>1</sup>

Echoing this devaluation of translation, the popular trade magazine, *Multilingual* (2023), asserts in its “About Us” statement (emphasis added):

[Localization], or its attempts, are all around us—in our user manuals, on our websites, in our software, on our menus. *To call it translation is short-selling it.* Translation may be involved, but *even a good translation may fail to appeal to you, the end user.*

This statement ignores scholarship that shows how translated texts have, throughout history, been manipulated, domesticated, and censored (Chuileanáin, Cuilleanáin, and Parris 2009) to erase any trace of the Other that might disrupt what is called the ‘user experience’ in industry parlance. It is also unlikely that the 2,745 signatories of authors, translators, and supporters to date of the open letter #TranslatorsOnTheCover (Society of Authors 2024), a campaign widely reported in mainstream media and the publishing industry, would see the framing of ‘just’ translation as *just* (Khomami 2023; Stewart 2021). The signatories are likely an underrepresentation of the number of participants who attend the annual conferences of the American Literary Translators Association or American Translators Association, and who believe in the value of translation. Otherwise, the associations would not have been established and running since 1978 (ALTA 2024) and 1959 (ATA 2024b), respectively.

The origins of the divide between localization and translation can be traced to where the act of translation manifests itself: one in the publishing industry (skewed literary), the other in the information technology industry (skewed technical), where the term ‘localization’

was initially used by the first programmers and engineers writing code and developing English-language software to refer to the additional linguistic-cultural phase of adaptation required for successful exportation of the software into international markets. (Folaron 2006, 197)

That is, the signified act is the same (what is done to the text), but the signifiers – the terms ‘translation’ or ‘localization’ – are different depending on where the act is situated (in which industry) and the nature of the final product (‘literary’ or ‘technology-oriented’, in broad strokes). Hence, the adaptation of *video* games falls under ‘localization’; *Multilingual* (2023) gives examples such as “user manuals, websites, software, and menus” (emphasis added); and definitions included

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1. Originally cited in Tsai (2014) to argue against ‘translation’ being positioned as but a linguistic exercise in equivalence.

in academic imprints say “localization is the process of adapting *digital* products and accompanying materials to suit target-market locales” (Sikes 2011, emphasis added).

Yet the analysis of security questions demonstrates that industry may claim to ‘localize’ the source to meet the specific needs of the target user in a target culture, but if that ‘culture’ is not critically examined and takes a back seat to technology, then there may be a disproportionate focus on the technical aspects of industry software platforms that perform the mechanics of localization. Integrating the concept of ‘cultural ergonomics’ into industry training and the translation workflow may serve as a means to a more balanced approach to create a more inclusive language product because it more effectively addresses what “deviate[s] from the user’s *mental models or ways of thinking*” that “can cause the users to experience negative consequences from frustration to severe physical injury or even death” (Johnson 2014, 73; emphasis added).

## 2. Security questions

Rather than examining how the language product may deviate from the user’s mental model or way of thinking, assessment in translation and localization often gauges quality by privileging the authority of the source text and favoring a source-target contrastive analysis with focus on the ‘accuracy’ of the target text, which is usually determined by how much deviation it presents from the source.<sup>2</sup> This practice stems from the Saussurian theory that language is a self-contained system, but this linguistic paradigm no longer meets the needs of our multicultural context. By applying critical discourse analysis to the security questions, this section demonstrates how they may not even ‘translate’ for the user *prior* to being localized into another language for a foreign market. This is because ‘translation’ as a hermeneutic process occurs in the minds of both immigrant and domestic users *within the same script and same borders*.

The security questions as source text are drawn from two sources. The first source is the website for the Canada Revenue Agency, a government agency website that all legal residents, including immigrants, must navigate in order to pay taxes, a mandatory legal requirement. The second is the website of a popular

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2. See ATA’s Certification Program Framework for Standardized Error Making (ATA 2017) and Flowchart for Error Point Decisions (ATA 2024a), where labels such as “faithfulness,” “misunderstanding of source text,” “omissions,” “meaning lost,” “identifiable by comparing to source text” exemplify the prevailing discourse of anchoring the ‘correct’ meaning within the source text.

North American commercial airline,<sup>3</sup> which represents the kind of commercial business many immigrants inevitably come across because of their need to travel between their home country and adopted country. These two sites were chosen not only for their high probability of user interaction, but also because they are representative of both the government sector (state revenue) and the commercial sector (for-profit) which intend to extract monetary contributions from their respective citizens or consumers. The monetary aspect makes the imbalance of power relations between state/capital and citizen/labor even more conspicuous, rendering them effective examples for critical cultural examination.

## 2.1 Canada revenue agency security questions

All taxpaying Canadians – including immigrant and non-heteronormative domestic users – must access the Canada Revenue Agency (CRA) website to set up security questions to protect their data, making it an ideal case study for the need of cultural ergonomics at the state level. In Figure 1 (CRA 2021a), upon creating the account, the user is reminded that “your security questions and answers should be easy for you to remember but hard for others to guess.” Yet the system does not allow the user to create their own questions, fundamentally depriving the user of agency in the matter of “easy.”

Your security questions and answers should be **easy for you to remember** but hard for others to guess.

Your answers:

- must contain at least 3 characters
- are not case-sensitive

The only special characters you can use are:

- dot (.)
- comma (,)
- dash (-)
- apostrophe ('')

**\* Question 1 (required)**

**\* Answer 1 (required)**

Figure 1. CRA Security Question Setup Page

3. Due to copyright terms the name of the airline is anonymized.

Instead of creating one's own questions, the user is presented with a drop-down menu of system-generated, system-defined questions shown in Figure 2 (CRA 2021a).

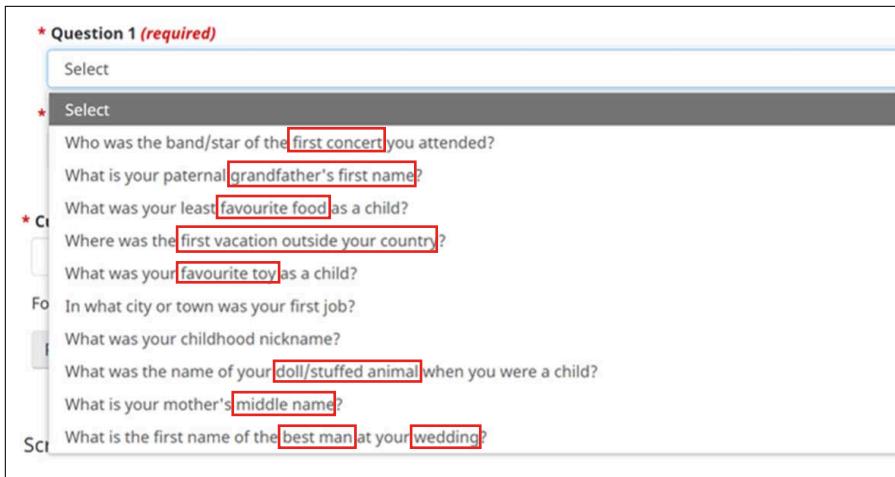


Figure 2. CRA Security Questions Drop-Down Menu

The questions in Figure 2, and particularly those in red, are not necessarily “easy” for someone like the author, who identifies as a straight, cisgender woman, and ethnic Chinese, who was born in Canada but came of age in Taiwan, and whose ‘native’ culture is Chinese and spoken language, Mandarin. The quotation marks around ‘native’ highlight the problematic nature of this dichotomic term for many users like the author who have each foot squarely planted in ‘the other’ culture. The difficulties of each question in red are respectively elaborated in the following discourse analysis foregrounding gender, ethnicity, and class privilege within a larger postcolonial context.

*Who was the band/star of the first concert you attended?* This alludes to that rite of passage familiar to people who watch American sitcoms, shows, and movies where the impressionable teenager goes to their first concert. The author, as user, understands this question, by way of ‘cultural translation,’ because she watched *That 70s Show*, an American sitcom, in English, where the imagery and discourse of ‘rock’ permeated the cultural setting, most notably in the reference to Kiss. But having mainly grown up in a semi-autocratic society in the late 1980s and early 1990s in Taiwan, she finds this question alien to her rite of passage and, therefore, not “easy” to answer.

*What is your paternal grandfather's first name?* The author, as user, has never uttered the first name of her grandfather on either side. In Chinese family culture,

the first names of elders are rarely uttered in direct conversation or in passing conversation. It is considered disrespectful to do so. Their first names are therefore not easy to remember.

*What was your least favorite food as a child?* This assumes the user comes from a class or culture where a child is allowed to speak or think of food in terms of “favorite” or not. That implies choice, the kind that may be more afforded to children in certain middle-class ethnic demographics. This is then not necessarily an “easy” question-answer pair to remember for those from a less privileged economic class or culture that asks children to suppress individual desire.

*Where was the first vacation outside of your country?* This question contains a multitude of assumptions. First, what is “your country”? For the immigrant, is it Canada or is it their ‘country of origin’? What about for the refugee? What country do we mean and what do we mean by “outside”? Then comes the value-loaded “vacation.” This implies a choice of leisure more afforded to people of a certain middle-class ethnic demographic. Moreover, if 64.5% of Canadian adults have passports (CNW 2018), it points to the fact that 35.5% would likely not be traveling abroad, a not insignificant portion. It is also worth pointing out – as security questions are found within North America in general – that within US domestic borders, passport ownership is not equally distributed among communities. While ownership rates in Urban Suburbs (64%) and Big Cities (62%) exceed the national average of 56%,<sup>4</sup> the African American South (39%) and Evangelical Hubs (38%) fall significantly below (Chinni 2023). The Pew Research Center also highlights income divide as an indicator of who travels abroad: “Almost half (48%) of those earning less than \$30,000 a year have not left the country, compared with 28% of those who earn between \$30,000 and \$79,999 a year and 10% of those earning \$80,000 or more” (Silver 2021). These statistics demonstrate that a question like this can be perceived as discriminatory, alienating, or judgmental to those who may not have the means to travel abroad or who do not see it as a defining life event.

*What was your favorite toy as a child?* This falls into the same category as “favorite” foods. Not all children grow up with toys. Not all families have the privilege of offering toys to their children. The user, depending on class or culture, may find it challenging to compare and recall a “favorite” one.

*What was the name of your doll/stuffed animal when you were a child?* This presents similar assumptions as the previous question: the privilege of toys. The addition of the ‘slash,’ however, invites a possible gender binary reading since

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4. The US Department of State (2023) gives the national rate of passport ownership at 46%. However, the American Communities Project national average of 56% is cited because the Project offers a more nuanced view of demographic differences.

“doll” is strongly connotated as a toy girls play with. The slash may present itself as being more inclusive so that “stuffed animal” – a seemingly more gender-neutral category of toy – can be considered, but its addition also works to signal the exclusionary quality of “doll.”

*What is your mother’s middle name?* The author’s mother – i.e. the user’s mother – applied a Western name, ‘Connie,’ in Canada. Her Chinese first name, structurally speaking, became her “middle name” when it was written in English to conform to Western naming norms. But that is not her “middle name.” The Chinese naming system does not include a “middle name.” Moreover, the spelling conversion from Chinese into English is unstandardized in Taiwan. To this day Taiwan does not use China’s Pinyin system for the translation of names. This means the user’s mother’s middle name is difficult for her to remember in English because it does not conform to the conventional spelling of English names such as ‘Alice’ or ‘Mary’ nor does it follow Pinyin. It is not even “middle.”

*What is the first name of the best man at your wedding?* This is a jarring question because of the richness of its assumptions. The author, as user, did not happen to have a wedding; by extension, there was no such thing as a “best man.” She simply had a witness at the court. She is also divorced. Even though divorce rates in the US have seen a decline from 2011–2021 (Washington and Scherer 2023), divorce remains a reality for many given the substantial rise in divorce rates for persons aged 35 and over from 1990–2008 (Kennedy and Ruggles 2014). This means a divorcee would likely not want to remember a wedding every time a security question pops up. Regardless of West or East or immigration status, people could also be in a committed relationship that was not a result of a wedding, and did not need the presence of a “best” anyone to bear witness to it. If one did not believe in marriage as an institution between a man and a woman, but rather as an oppressive force of contractual submission, one would likely be highly offended by the imposed normative expectations of this question.

Figure 3 (CRA 2021b) displays the questions that pop up to “verify your identity” when the website wants to rule out unauthorized access to your account. The first question – *In what city or town did your mother and father meet?* – suggests that the user, possibly a second-generation immigrant child divorced from their parents’ native culture, language, and local geographies, would be knowledgeable about the actual foreign city or town in which their parents met. If the city or town did not have a standardized English spelling or pronunciation, it would be even more difficult to remember consistently. The second question – *What is the name of your first pet?* – assumes that the user’s family must have had a pet like many ‘all-American’ families on television or in the movies. The third and last question is the hackneyed “favorite” one, which denotes the privilege of choice not afforded to all.

**Verify your identity**

We need to verify your identity before you can access the CRA's sign in services because you have not used this user ID and password for some time.

**Question**  
In what city or town did your mother and father meet?  
\* Answer (required)

**Question**  
What is the name of your first pet?  
\* Answer (required)

**Question**  
What is your favourite meal?  
\* Answer (required)

Figure 3. CRA ‘Verify Your Identity’ Prompt

## 2.2 Commercial airline security questions

The Canada Revenue Agency security questions are representative of questions provided for the user at the onset of creating an account or resetting the password. For this reason, only two questions from the commercial airline’s security questions (accessed in 2021) are chosen for analysis because they add to the repertoire of problematic assumptions. The layout of the drop-down menu selection is largely the same as the CRA’s website.<sup>5</sup>

The first of said questions asks for a favourite pizza topping in the drop-down menu. The recurring theme of “favourite” emerges alongside very specific and limited choices: barbecue chicken, pineapple, pepperoni, bacon, onion, zucchini, garlic, mushroom, ham, and spinach. The author, as user, would have chosen her favourite topping to be “anchovies,” but this is nowhere to be seen on the list, which is not a surprise, since recent surveys showed anchovies to be the least popular topping among Americans (YouGov 2021; Sanders and Ballard 2023). The American (or Anglophone) mainstream discourse of anti-anchovies is perfectly captured in the subheadline of a *Slate* piece: “Almost *no one* likes them” (Palmer 2012, emphasis added). “No one” is decidedly exclusionary considering the immigrant population from cultures that regularly consume salted seafood and the lower class origins of pizza and anchovies (Helstoky 2008, 23–25). The choice of

5. Due to copyright terms, the commercial airline is anonymized and the questions are not reproduced in screenshot form.

pizza also assumes that it is a food item regularly consumed, ignoring the fact that for immigrant families, pizza may not be a common option, but more like eating at McDonald's, "a rare outing for an immigrant family like mine," as recounted by the journalist Melissa Hung (2018), whose story resonated strongly with the author's own family upbringing. In other words, this question may be exclusively for a particular type of user and exclusionary of other types.

The other question concerns the choice of a favorite sea animal among an incongruous grouping of sea creatures – manatee, seal, orca/killer whale, sea otter, oyster, skate, shrimp, jellyfish, lobster, fish – suggesting they either could be one's favorite type of seafood to be eaten at the table as delicacies or admired in the wild or captivity. Both delicacies and admiration denote a certain middle-class privilege of seafood or family trips to see the animals. It is difficult to imagine this kind of "favorite" for less privileged families given the financial conditions necessary for seafood or trips. In fact, asking the user to choose among *incongruous* choices poses a difficult premise for anyone parsing the list for a "favorite," regardless of the user's cultural identity. In effect, because of cognitive incongruity, this question may pose difficulties for anyone, let alone less privileged immigrants or those who hail from landlocked geographies.

### 2.3 Chinese security questions

Security questions drawn from the Chinese version of a US-based software service often used to check for plagiarism<sup>6</sup> are further provided here as evidence of the systemic automated transfer of cultural bias across websites, despite claims from the localization industry that digital products are culturally adapted to suit the target locale. The English back translations for the Chinese security questions<sup>7</sup> accessed in 2023 in Taiwan are provided by the author. Only questions perceived as problematic are accompanied by analysis.

1. *Which song did you first slow dance to?* This recalls Western ballroom dances for a more privileged class, or proms that are familiar to North Americans, but far from the norm for the population in Taiwan.
  2. *Who is the author of the first book you read?*
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6. Due to copyright terms the name of the software service is anonymized and the questions are not reproduced in screenshot form.

7. The Chinese questions: 您第一次跳慢舞的歌曲是哪一首？您印象中看過的第一本書作者是哪位？您的老家位於哪條街上？您第一輛車的製造商及型號是？您扮過的第一個超級英雄是誰？您小時候最要好的朋友叫做什麼名字？您的父母是在哪個城市認識的？您第一次旅遊的地點是哪裡？您第一次去電影院看的電影是哪一部？您購買的第一張唱片名稱是什麼？

3. *What street was your first home on?* Official Chinese addresses may contain the name of a ‘street,’ and that name can be transliterated into English. But the spatial connotation – or spatial ‘imaginary’ – of this question is one of cognitive dissonance because of its wording. It evokes what the influential American cultural critic David Brooks (2020) criticizes as the imaginary norm of the nuclear family “with one or two kids, probably living in some detached family *home* on some suburban street,” even though this version of the American family was “a freakish historical moment” occupying but a brief post-war period between 1950–1965 (57; emphasis added). If it is already cognitively remote for the American population as Brooks suggests, it can only be more removed from the geographical realities of non-American cities, such as the sprawling of streets into lanes (*xiang*) and alleyways (*nong*) in the Taiwanese context, and high-rise units with barely a view of a street. It becomes a question that evokes a cultural landscape that does not exist for a portion of domestic and foreign-born users alike. For the myth of the traditional family rooted in post-World War II idealism see Nicholson (1997), and Dickinson (2015) for the construction of a suburban imaginary.
4. *What is the make and model of your first car?* The convenience and affordability of public transportation – absent in many North American cities – make car ownership unnecessary, or a delayed necessity, in major cities in Asia. This is why this question – along the series of ‘first’ questions here that allude to certain rites of passage – does not resonate as strongly in Taiwan. One way to localize this for Taiwan would be to replace “car” with “motorcycle.” Notwithstanding observational evidence, the latest data provided by the Highway Bureau (2024) shows that the number of registered motorcycles (or scooters) consistently outnumbered those of registered sedans since 1991, the earliest year data was made publicly available online.
5. *What is the first superhero you dressed up as?* The concept and terminology of ‘superhero’ is non-Chinese. It references a modern Western cultural category popularized by comic books and Hollywood. “Dressing up” also likely references the cultural practice of wearing costumes on Halloween. Though popular among certain middle- and upper-class demographics, the practice is overall less ingrained in Taiwan.
6. *What is the name of your childhood best friend?*
7. *In what city did your father and mother meet?* Nearly identical to CRA’s website.
8. *Where did you go for your first vacation?* Nearly identical to CRA’s website.
9. *What was the first movie you saw in a theater?* This question could be updated without the reference to a theater or phrased as “What was one of your favorite movies?” Given the proliferation of platforms where movies can be

shown or, rather, streamed, ‘going to the movies’ does not necessarily hold the cultural significance it once did. For the rising demographic that primarily consumes information and media via a mobile device, using streaming services such as Netflix, Disney+, and Apple TV, the formulation of this question may seem less inclusionary of user experiences.

10. *What is the title of the first album you bought?* This can be seen as an outdated question given the shift to digital music and the deconstruction of the “album,” which can be traced to the peer-to-peer file sharing service that Napster offered in 1999 to the legalized purchase of individual songs offered by Apple’s iTunes Store in 2003. Consumers have since enjoyed buying songs a piece, or can now simply stream music via subscription service on platforms such as Apple Music or Spotify. Instead of buying ‘albums,’ they can curate their own ‘playlists.’

### 3. Cultural ergonomics and the multicultural context

For the multicultural user who may not necessarily live in a ‘foreign’ country, but are immigrants navigating a society where English is dominant, the drop-down menu of security questions is a difficult language product to navigate. It does not ‘translate’ – even when the user, like the author, may be fluent in the language of English, to the extent it can be effectively labelled as the ‘native’ language or ‘mother tongue,’ notwithstanding how one-dimensional these labels may be for the multicultural user.

The target population that these questions seem to address can be said to exist in the romantic past, a time of post-WWII economic boom, when the concept and economies of the middle class took hold. Current conditions make these questions highly inadequate not just for growing immigrant populations, but also for changing cultural demographics. These conditions include the yawning gap between the rich and the poor; the vast power concentrated in the hands of the ultra-rich and hollowing out of the middle class; the evolution of heteronormative expectations in relationships; the promotion of LGBTQ+ rights and deconstruction of gender norms; and changing cultural values on everything from food to marriage. If the Canadian government, in the name of inclusion, would like to offer the CRA site in more languages aside from the official languages of French and English, or if other websites intend to be more inclusive, the content should be effectively localized by those who are sufficiently *culturally literate* to re-articulate North American heteronormative power dynamics in a more inclusive manner. This is where an industry training component called ‘cultural ergonomics in localization’ could make a difference in producing more inclusive language products.

### 3.1 The monoethnic user at the center of ergonomics

Though industry marketing language favors positioning translation and localization as a means to bridge cultural divide, it cannot be denied that the driving force behind translation is inequality between languages and cultures. The overwhelming flow of translations from languages of power (such as English) to ‘weaker’ languages (spoken by the former colonies of the English empire and later the consumer markets for corporate America) attests to that inequality (Brisset and Colón 2020). This is why cultural studies issues, such as gender, power, and identity, should be an integral part of industry training.

‘Ergonomics,’ however, may be a more effective concept – as opposed to ‘cultural studies’ – to engage industry in producing more inclusive products because historically it has been grounded in the reality of engineering the material world in a way that is conducive to better human experiences. Its origins are industrial; the manufacturing of equipment and operation of machines and systems has long been what drives the development of its principles (for the history and definition of ergonomics see Liem 2017, 2–6). Yet the decided focus on the human factor in production and processes makes it inevitable that ergonomics should confront the ethnocentrism – mainly Anglo-American and Western European – that perpetrates the field of science and engineering. As Chapanis (1974, 153; emphasis added) pointed out nearly five decades ago:

...I doubt whether anyone would dispute that up to the present time, ergonomics has been largely an *American* and *Western European* discipline. Until a few years ago, almost all the research in the field had been done in America and Western Europe. As a result, our findings apply to large-boned people, people who were born to or use the *English language*, and people who have *Western customs, habits* and *ways of life*. That is a pretty small percentage of the world's population.

Kaplan (2004) attributes Chapanis (1974) for ushering in the modern recognition of cultural ergonomics as a rightful field of study, but he also readily acknowledged that in the thirty years between then (1974) and now (2004), “the field has only recently begun to advance” (2). It is not exactly a mystery why research did not accelerate until much later, notably around and after the creation of the World Trade Organization in 1995, when the full forces of globalization in trade and commerce were unleashed, and its repercussions predominantly felt by the non-Western developing economies and global south.

A case in point is the dominance and expansion during this time of American computing and Internet technology sold as processes and products developed by companies such as IBM, Microsoft, Apple, Yahoo, Google, and eBay. In fact, this is what ushered in the concept of ‘localization’ when the term first gained currency

in the IT industry. Thus was born the association of ‘localization’ with technology and the computer-assisted translation tools often used by technical translators. As more and more products and services underwent the process of internationalization, the term also evolved. Broadly defined: “Tailoring a product to appeal to the needs and desires of local users, and to communicate with these users effectively, is called localization” (Chong 2004, 289).

As a designer of Web-based user experience for Yahoo!’s global services in twenty-three markets, Chong (2004) further qualifies that “[D]eeper levels of localization move *beyond translation* to include *cultural* and *social* aspects of the *locale* where the online service will be launched” (289; emphasis added). The acknowledgement of cultural and social factors by pioneering web services such as Yahoo! serve as an incentive and reminder that industry training in ‘culture’ should be desired. To further this paper’s argument of the normative power of the American suburb is the fact that the first Yahoo! Mail icon designed in 1997 “had a strong visual affinity with the American suburban mailbox” (Chong 2004, 299). Yahoo! redesigned the mailbox icon to fit the expectations of what a mailbox would look like for different markets until it eventually settled on a more universal version that did not involve a “box” but simply an image of an envelope. Yet despite Chong officially defining cultural factors as part of the localization process in global business models, two decades later in the security questions examined here, the discourse of the American suburb stubbornly persists.

### 3.2 The multicultural user in the immigration context

The reason security questions continue to speak to users as if they all came of age in the same North American suburb is due to the original – and narrow – definition and application of ‘localization’ towards ‘foreign’ locales, ‘foreign’ languages, and ‘foreign’ markets or, in more neutral terms, what is deemed ‘international’. This conceptualization of localization eludes what is decidedly ‘foreign’ *within* domestic borders; it overlooks the fact that in societies with growing immigrant populations, evolving lifestyles and beliefs, changing demographics and economic makeup, the heteronormative middle-class white-suburban North American narrative is foreign to many populations and increasingly a fictional ideology. The user may be highly proficient in the English language, currently live in an English-speaking country, and be able to nominally comprehend the English questions; but the signified values in the questions *do not translate* into anything that is “easy” to remember because they no longer speak to the user’s cultural experience. In other words, the act of ‘translation’ is not merely conversion between different national or ethnic scripts. It is a cognitive task the user must perform to process what is foreign unto them, even within the same language,

which is not at all farfetched considering Jakobson's (1959) positing of "intralingual translation" six decades ago.

The methodological approach of positioning the author as user to suggest that the security questions are heteronormative and exclusionary does beg the question: Could the author perceive bias because she is a statistical anomaly? Could these questions be meant for 'the majority' of users in Canada who may not be immigrants from less privileged countries, societies, or cultures? According to the Canadian Government (2021), the trend in social and economic demographics suggests that users who resemble the author in cultural identity are the growing majority. They are the population the Canadian government would like to attract:

Canada needs immigration to drive our economy, enrich our society and support our aging population. [...] Business, labour market experts and economists all agree that immigration creates jobs, spurs innovation and helps address labour shortages.

Immigration, Refugees and Citizenship Canada provides further statistics to illustrate this point (Canadian Government 2021, emphasis added):

- In 2019, Canada welcomed more than 341,000 permanent residents. Despite the challenges resulting from the COVID-19 pandemic, Canada also admitted over 184,500 new permanent residents over the course of 2020.
- *Immigration accounts for almost 100% of Canada's labour force growth. Roughly 75% of Canada's population growth comes from immigration, mostly in the economic category. By 2036, immigrants will represent up to 30% of Canada's population, compared with 20.7% in 2011.*
- *Immigration addresses labour shortages in key sectors such as health care. Immigrants make up 37% of pharmacists, 36% of physicians, 39% of dentists, 23% of registered nurses, and 35% of nurse aides and related occupations.*

Research statistics based on the US Census Bureau's population survey also indicate significant growth trends in line with Canada's projections: "the total foreign-born or immigrant population (legal and illegal) in the U.S. hit 47.9 million in September 2022 – a record high in American history – and an increase of 2.9 million since January 2021" (Camarota and Zeigler 2022). According to the same report: "If present trends continue, the foreign-born share of the population will reach 14.9 percent of the U.S. population in August next year, surpassing the all-time highs reached in 1910 (14.7 percent) and 1890 (14.8 percent)." Statistics from the Pew Research Center (Natarajan, Moslimani, and Lopez 2022) based on analysis of the UN Department of Economic and Social Affairs 2020 International Migrant Stock data also highlight that international migrants reached close to 51 million in the US in 2020, making it the country with the most international

migrants (the runner-up is Germany, while Canada ranks eighth). Moreover, the top five birthplaces of immigrants in the US are Mexico, China (including Taiwan and Hong Kong), India, Philippines, and El Salvador (Budiman 2020). This suggests the high probability of similar website navigation issues as experienced by the author, who was raised in a household where cultural practices were strongly influenced by the parents' country of birth.

#### **4. Cultural ergonomics for user empowerment**

Translation studies has intersected with ergonomics such as in the interdisciplinary research project “Cognitive and Physical Ergonomics of Translation” at the Zurich University of Applied Sciences (ZHAW 2023). Yet the concept of ergonomics applied in the project pertains to the workplace environment and workflow processes in which the translator is situated (Ehrensberger-Dow and Heeb 2016). The concerns are more for the optimization of physical, cognitive, and organizational efficiencies traditionally associated with ergonomics (IEA 2000; Hedge 2017). To counter the overt emphasis on the optimization of tech and profit with the goal of creating more inclusive language for website navigation, means of user empowerment can be explored by way of cultural ergonomics.

##### **4.1 Own framing of questions and answers**

If it is crucial for the user interface to “mirror” the user’s self-image for an enjoyable experience (Brejcha 2015, 18), then it would be important to conceptualize that the user is no longer monoethnic or monolingual. A way for users to reflect their own experiences in the security questions is by empowering them to instead frame their own questions and answers. This method is by no means novel. It is already used by a North American banking site<sup>8</sup> (accessed in 2023) to allow users to send money within domestic borders. In the process of setting up the transfer, the user is asked to “create an effective question that cannot be guessed, and that only you and the recipient can answer correctly.” Users can then “type the answer to the security question you just created.”

According to Nielsen (2004), there are three contrasting ideological approaches to design: mastery (empowering), mystery (obfuscating), and misery (oppressing). The banking site example creates a user experience that is empowering rather than oppressive because it “makes individual users the masters of the content and lets them access and manipulate it,” which according to Nielsen

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8. Due to copyright terms, screenshots are not shown and the name of the bank is anonymized.

adheres to the original ideology of “hypertext” best exemplified by the search engine box. In contrast, the drop-down menus on the CRA and North American commercial airline websites can be seen as oppressive because they “offer users no real choices at all” (Nielsen 2004). Ostensibly, Jakob Nielsen’s approach is firmly rooted in engineering and human-computer interaction (HCI), not cultural activism. However, the lexicon deployed on behalf of the best interest of the user—to “empower” or “oppress”—firmly intersects with cultural studies discourse when it speaks of the subaltern and Other.

#### 4.2 Translation workflow and sensitivity reading

Empowering users to create their own security questions and answers is one way to operationalize cultural ergonomics. Another is to apply it in the production process – the translation workflow – in the form of ‘sensitivity reading.’

In the translation workflow (ISO 17100: 2015), under the very first phase, “Pre-production Processes and Activities (Section 4),” the component “source content language analysis (4.6.3.1)” is provided under “linguistic specifications (4.6.3).” This would be the very first checkpoint to apply critical discourse analysis to the security questions. If there was an initial failure to identify cultural bias, then theoretically, every stage specified under the next phase, “Production Processes (Section 5)” – translation (5.3.1), check (5.3.2), revision (5.3.3), review (5.3.4), proofreading (5.3.5), final verification and release (5.3.6) – should allow for intervention. If cultural bias still goes undetected, the last phase of “Post-production Processes (Section 6)” offers one last opportunity under “feedback” (6.1).

However, “source content language analysis (4.6.3.1)” for cultural bias should have been done when the source text was created for ‘original’ consumption. But as the security questions show, it was not. If detection was failed when the source text was initially created, the chances of it being detected during the translation workflow would arguably be even lower given the peripheral or second-status nature of the translation/translator in the production flow and in localization industry discourse – as evidenced by the relatively poor remuneration for the work being performed and the derogatory positioning of ‘translation’ or ‘translator.’ In practical terms, poor remuneration is not conducive to spending further time questioning the source text even if in theoretical terms the localization industry aims to ‘localize.’ This is why intervention on behalf of minoritized others cannot stem from the current tech-driven (speed) or profit-driven (money) discourse. To remedy this problem, cultural ergonomics can be operationalized by way of a discourse analysis method known as ‘sensitivity reading.’

The practice of editing a manuscript for given purposes or interests is not new. The term ‘sensitivity’ reading, or the labeling of a ‘sensitivity’ reader has,

however, gained currency in the last few years within the publishing industry, notably in literature, amid rising awareness of cultural bias stemming from ‘white privilege’ (see Burnett 2017). This makes it a functional approach to address bias in the source content for localization purposes.

Nina Moreno, assistant editor at Scholastic Press, a pioneer in publications for children and youth – and the American publisher of global bestsellers such as the *Harry Potter* and *Hunger Games* series – thus defined the value of a sensitivity reader:

It is important to have an outsider vetted perspective on stories that reference or involve *different cultures* or *marginalized characters*. Having someone look over a manuscript helps prevent miscommunications and *potential bias* that an author may have *unknowingly* put into the text. (Writerful 2023, emphasis added)

This framing allows the reviewer to apply the more conceptually tangible categories of “*different cultures*” and “*marginalized characters*” to ensure a more inclusive reading experience. Operationally speaking, it tasks the QA checker (at various stages in the translation workflow) to read the text as someone who is *not* cis, straight, white, male, abled, and/or Anglophone. As it rings true for literature, it rings true for non-literary work as well: “a reader of a particular background may pick up on subtle – or not-so-subtle – signs that this representation is part of a larger, stereotypical pattern at work within the broader narrative” (Jordan Brown, executive editor at Harper Collins, cited in Burnett 2017).

The words “*different*” and “*marginalized*” are important distinctions that go beyond reading the translation against the source for ‘accuracy’—the conventional (or normative) way of training that asks the reader/checker to assume a ‘native’ perspective, obscuring the fact that ‘native’ is an operationalization of dominant privileged perspectives (i.e. cis, straight, white, male, abled, Anglophone) that are taught as universal and objective. Calling for the act of reading as someone who is different or marginalized is important even for professionals with minority or marginalized backgrounds; too often, they may rise through corporate, industry, or academic ranks by (un)knowingly suppressing their differences and adopting what is deemed as a ‘professional’ voice. Tellingly, the author was only able to experience the navigational frustration of normative language in the security questions first as a ‘user,’ not as a ‘professional.’

Understandably, sensitivity reading is not without public controversy (see Alter 2017). The main criticism is that it is cultural bias coated in progressive rhetoric, a form of censorship that inhibits creativity, erases history, and contributes to cancel culture. But as Lawrence (2020) concluded in his analysis within the field of information science, ‘sensitivity reading’ may not be considered sufficiently censorious if it is “justified on aesthetic grounds” (40), when the aim is

to enhance the literary quality of the work by revising privileged discourse that takes away from the reading experience of a multicultural reader. This matches the goal of improving the navigational experience of non-literary language products for the multicultural user, which makes sensitivity reading justified on functional grounds.

## 5. Conclusion

By foregrounding the reading of gender, class, and ethnicity in language, a critical approach long present in translation studies (Robinson 2017), this paper argues that the resulting language product would fall more in line with the aspirations of “critical digital discourse” (Folaron 2020, 216) and sociological approaches towards translation technology (Olohan 2020). Cultural ergonomics is a prime vehicle to create inclusivity because the engineering factor combined with the human factor offers the translator/localizer the opportunity to see beyond the surface features (the script and processing technologies) of translation and localization. It provides a framework to readily consider the human at the center of the operations through the filter of culture – not soft cultural claims of ‘communication,’ but hard realities of structural power.

From a sociocultural perspective, this paper calls attention to heteronormative and ethnocentric class-based language practices on English websites originating from North America. From a socioeconomic perspective, it shifts the framing of the localization industry – a multimillion-dollar business driven by tech – to one where sociocultural needs drive the technology and business model, with heightened awareness towards the subordinated user should the intention of the corporation be to address inequalities with their products. From a training and assessment perspective, it suggests that industry may reconsider conventional source-target conversion based on an antiquated notion of fidelity where the source is privileged. Instead of playing catch-up to AI-driven machine translations that give little thought to the human dimension behind the algorithms, industry should engage the culturally-bound subjectivity of human experience in providing a better product. This is something the machine cannot do, because discrimination is something the machine cannot feel.

## Acknowledgements

The arguments in this paper were first orally presented, in part, under the title “Training for Cultural Ergonomics in Localization Programs to Counter Heteronormative and Western

Expectations in User Behavior” at the European Colloquium on Gender & Translation (5th edition): Gendering Agency and Activism in Translation and Interpreting, at the University of Ferrara, Ferrara, Italy, June 6–7, 2022. The author thanks the editors and anonymous reviewers whose inputs have since greatly strengthened the arguments presented, and Alaina Brandt, whose industry and training expertise led to insightful discussions in support of the aims and aspirations of this paper.

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## Publication history

Date received: 7 October 2023

Date accepted: 21 May 2024

Published online: 19 July 2024