



SERRC
Social Epistemology
Review & Reply Collective

<http://social-epistemology.com>
ISSN: 2471-9560

Do Scientists Need Mitigating Agents and Who is Responsible for Providing Them?
Musings on Vučković and Sikimić's "How to Fight Linguistic Injustice in Science"

Vitaly Pronskikh, Fermi National Accelerator Laboratory, vpronskikh@gmail.com

Pronskikh, Vitaly. 2023 "Do Scientists Need Mitigating Agents and Who is Responsible for Providing Them? Musings on Vučković and Sikimić's 'How to Fight Linguistic Injustice in Science?'" *Social Epistemology Review and Reply Collective* 12 (2): 45–52. <https://wp.me/p1Bfg0-7Cp>.

The recent paper by Aleksandra Vučković and Vlasta Sikimić (2023) delves into an important issue for modern science and humanities fields:¹ the linguistic privileges of native English speakers and perceived injustice toward non-native speakers when publishing research and participating in scientific events as well as the approaches to relieve the issue by introducing mitigating agents—scientists who will volunteer (or be assigned) to take on the task of solving the language problems of their colleagues. The authors touched upon a sensitive issue that resonates with numerous people far beyond the scientific context.

On Linguistic Privilege

Over the last decades, the problem of linguistic privilege of native speakers relative to non-native ones has received attention at length in both philosophical and specialized scientific literature (e.g., Gallagher-Geurtsen 2007). The limitations of expressing one’s thoughts in a non-native language, the associated discomfort due to the language’s unwilling inaccuracies, and the commonplace perception of non-native speakers as simple-minded people have become familiar issues. Throughout history, it has been common that language-related issues, whether in distribution or usage, have contributed to the outbreak or escalation of armed conflicts. This is due to the close association between language and personality, as well as its role in maintaining one’s historical legacy and cultural and ancestral ties.

Another crucial aspect pertains to the cognitive process. When individuals are compelled to speak a language that differs from their language of thought, they expend mental energy on the laborious task of translating, which detracts from their ability to focus on scientific research, leading to tedious routines. Even the relatively egalitarian scientific community has not been able to avoid these problems. In recent decades, a significant amount of research has been conducted in the field of anthropology, sociology, linguistics, and philosophy, analyzing various aspects of using a non-native language. These issues have become a crucial topic, and the injustices experienced by non-native speakers in the scientific community have gained considerable attention.

Because science is essentially an epistemic enterprise, the challenges faced by researchers who are prompted to express their thoughts and results in a second language with all its constraints have been unambiguously identified as a problem of epistemic injustice, closely linked to general philosophical (including applied) ethics. Having intercepted the palm of the lingua franca of scientific communication (the role played earlier by Latin and French) from the German language, English became the context within which the main debates about the use and perception of non-native speech in science are formulated. Recently, the issue has become so acute that it extends beyond the traditional literature and community that discusses humanitarian problems, and it is now common for even those in fields far distant from philosophy and linguistics to express their personal feelings about using a second language, and the associated difficulties and injustices in science journals, in a form more characteristic of a heartfelt appeal than conventional scholarship (e.g., Müller 2021).

¹ The authors have shown great promise in their field, with a prolific publication record that is impressive for their career stage.

Nevertheless, despite the popularity and abundance of literature on the topic, few researchers have consistently worked methodologically to formulate proposals relevant to science policy aimed at minimizing the issue. In this regard, the paper this reply focuses on seems to have formulated methodological proposals that could contribute to the development of science policy.

Recognizing Reception

In their article, Vučković and Sikimić contend for the recognition of the processes that speakers go through to make their scientific results visible to a broad audience. This recognition should take into account both the privileges enjoyed by native speakers and the extra efforts made by non-native ones. The authors stress that such an impartial apprehension is essential for promoting transparency in science, as it allows the scientific community to evaluate the quality of the research itself, rather than the linguistic abilities of the researchers. To achieve this appreciation, the authors propose the introduction of mitigating agents or individuals and groups responsible for the translation and interpretation of scientific texts and speech from non-native speakers.

This proposal, while potentially creating additional expenses for the scientific community, is rather appealing because, despite many undertaken efforts, the scientific community is still searching for plausible solutions to the problem. The authors' proposal is not only relevant to the epistemic integrity of science but also raises important ethical considerations. By recognizing and addressing the difficulties non-native speakers face, the scientific community can work toward relieving epistemic injustice and promoting a more inclusive and diverse community. Additionally, the introduction of such mitigating agents would not only benefit non-native speakers but also promote a more comprehensive understanding of scientific research by the broader public, including individuals who may not be native speakers of English.

However, the practicality and effectiveness of such a proposal need to be critically examined. The role of mitigating agents would require a significant amount of resources and would need to be executed efficiently to ensure that the benefits of such a system outweigh the costs. Additionally, the creation of such a system raises questions about the responsibility of the scientific community to promote diversity and inclusivity and how far it should go in providing resources to support such goals. Despite these potential challenges, the authors' proposal highlights the importance of recognizing and addressing the difficulties that non-native speakers face in the scientific community in general. It is only through such recognition and proactive measures that the scientific community can work toward promoting a more transparent, diverse, and inclusive community, one in which linguistic abilities are not a barrier to scientific progress.

Harald zur Hausen's Research

Nevertheless, some of the author's arguments seem to me deserving of additional scrutiny. While I concede with Vučković and Sikimić that Harald zur Hausen's biomedical research

team in their example experienced hermeneutical injustice due to their poor understanding of the questions asked at a conference, I believe that this situation could have been avoided if the team had access to even minimal translation resources, such as a fluent English-speaking team member or an interpreter (personally, I have witnessed scientists who were not confident in their English and brought interpreters to international conferences). This would have prevented the team from experiencing hermeneutic injustice, which occurs when research findings are not accepted due to language barriers. This is where the question arises as to who exactly should be accountable for the provision of these resources.

However, it is important to note that exceptions to the pattern of linguistic injustice can occur. For instance, while it is true that zur Hausen was awarded the Nobel Prize in 2008 without having perfect English skills, it is also important to acknowledge that this is a rare exception rather than the norm. Overall, instances where scientists who publish and present their work in a non-native language are unnoticed and unrecognized by their peers seem to occur more frequently (although I rely on anecdotal evidence and do not possess the representative statistics).

As mentioned before, the issue of language barriers in scientific discourse is closely linked with the concerns of the fair distribution of knowledge and understanding. Specifically, hermeneutical injustice occurs when someone is prevented from fully understanding or (especially) expressing themselves due to structural or cultural barriers, whereas testimonial injustice occurs when someone is not taken seriously or believed due to similar barriers (e.g., a lack of trust). With this in mind, I think that the author's policy recommendation to assign scientists to help others with English translation and interpretation is a sound one. By providing scientists with the resources they need to communicate effectively in international contexts, we can help to address certain discomforts felt by scientists. Indeed, investing in second language training and retraining of scientists, especially adults who are prone to mental rigidity due to age and are extremely busy with their main work, is burdensome and inefficient.

The idea to apply Quine's indeterminacy in translation thesis to zur Hausen's vaccine discovery, which was initially dismissed, is noteworthy. However, as the authors correctly mention, a Quinean solution to the problem relies on empirical evidence, which has a deeper implication for the case of natural sciences. To be correctly understood by an expert reader, scientists in fields such as biology must clearly describe the instruments, procedures, and pharmaceuticals they used and provide their observations and explain their statistical significance. Moreover, procedures and equipment are usually described through standard terms that tend to be homogeneous (Romanized) in most European languages.

Why was zur Hausen initially misunderstood? The Quinean explanation of indeterminacy deals with differences in context, whereas biological laboratories typically make use of standardized equipment and, thus, similar contexts. On the one hand, I believe the provision of raw data, which is generally helpful for readers to better understand an author's narrative, would really make a difference in knowledge transfer between native and non-native scientists (in natural sciences). On the other hand, it is when a scientist is aiming to be a

disseminator and communicator of meanings and interpretations (and not only a technical data provider) that their linguistic (and hence social) status comes to the fore.

Expanding Editing and Translation Practices

Vučković and Sikimić recommend that a few scientists at a foreign research center learn a common language to help with translation, language editing, and interpretation for others, which they argue would be more cost-efficient than having many scientists learn the language. I find this recommendation to be rather controversial because most scientists learn English to increase their own linguistic independence, rather than to translate for others. Additionally, I question whether these few scientists would have sufficient incentives to sacrifice their own research efficiency by spending significant time and effort interpreting research results for their colleagues.

It seems more practical if the scientific community provided linguistic infrastructure at conferences, including professional interpreters. In my view, this would be more efficient than relying on a few scientists to act as mitigating agents. Every interpreter can assist many scientists, and this would enable all scientists to participate fully in the conference without language barriers. Still, although the authors' recommendation has certain merits, it may not be the most practical solution to the remaining issue of status inequality in scientific discourse. However, providing professional interpretational frameworks at conferences would be a more efficient and equitable way to ensure that all scientists can communicate effectively without sacrificing the research efficiency of a select few.

The authors also believe that this situation can be amended by, for example, allocating more funds to language editing and interpreting platforms and increasing linguistic tolerance toward the work of non-native researchers. I completely agree that linguistic tolerance is highly demanded in the scientific community, and its implementation would help partly overcome the testimonial injustice to non-native speakers. However, what is more important is testimonial injustice such as the mistrust of accented speakers. Merely introducing mitigating agents is not sufficient to overcome testimonial injustice. This is because, even with an agent-assisted presentation, the non-native status of the presenter can still be perceived as a marker of testimonial injustice, which may be evident from the person's non-Anglophone name or accent (Pronskikh 2018). Therefore, we must also address the deeper cultural and social biases that underlie linguistic injustice. This requires a broader shift toward more inclusive and equitable attitudes within the scientific community.

One more important point I would like to stress is that the choice of a lingua franca is by no means arbitrary. On occasion, literary sources may provide an extensive inventory of languages, including pidgins, that were employed for interethnic interaction and may be considered a lingua franca. However, I would like to narrow the scope of this discussion to languages that are widely used for scientific and educational communication. The term lingua franca could be applied in the past to Latin, French, and German and is now applied to English. It comes as no surprise that not any language can become accepted as a lingua franca. If, formally, most developed languages could be used in this capacity (having a

sufficiently developed grammar and vocabulary), then in fact this choice is determined not only by the structure of the language. Latin became the first universal language, during the time of the omnipotent Roman Empire, of which it was the official language, and then spread as the global language of science and education in Western Europe by the Middle Ages.

The relative problemlessness of such a (historically justified) choice was subsequently supported by the fact that this language was already dead at that time. This created the unique situation that, due to the absence of living speakers of this language, the problem of linguistic privilege, namely that someone would have a higher status due to a better command of this language, did not arise. As Europe evolved culturally, scientifically, and politically during the 17th and 18th centuries, French became the dominant language of communication and later extended to African colonies during colonization. By the 20th century, also in the course of the rapid development of science, technology, philosophy, literature, and statehood in Germany, German became the language of science in which the most important scientific journals were published. The German language lost its leading position only after the Second World War, giving way to the English language. During this era, the Russian language played a role in international communication within Eastern Bloc countries. However, its significance in this capacity substantially declined following the dissolution of the Soviet Union in the early 1990s. Since then, English has emerged as the sole and rarely disputed lingua franca.

Despite the formal appropriateness and potential subjectivity involved in selecting a lingua franca for scientific communication, this role is typically established through a protracted historical process influenced by various factors, such as economic, scientific, cultural, military and political accomplishments of the countries where the language is spoken natively. However, it also often necessitates deliberate efforts by these countries, indicating a constructive element in the selection process. For all these reasons, the process of choosing a lingua franca cannot be considered random or arbitrary.

Additionally, I want to emphasize a particular point that I hope the authors will pay attention to in their future research. It is precisely because of the non-randomness of the choice of the lingua franca and the efforts historically undertaken by countries and institutions to promote their languages in the world (including the distribution of scientific journals and the maintenance of language standards in them) that I would venture to suggest that it is the community of native speakers and language proponents that bears the lion's share of the responsibility for ensuring non-native speakers of the convenience of communication with native speakers.

Many countries have undertaken (and are undertaking) targeted efforts to promote their native languages as the languages of international communication. Furthermore, it is important to consider that the adoption of a lingua franca comes with a certain responsibility for its backers. National institutions historically have played an essential role in propagating their languages for international (including scientific) communication, which includes the distribution of scientific journals and the maintenance of language standards. As such, it is

reasonable to suggest that these institutions bear some responsibility for ensuring that non-native speakers can communicate conveniently with native speakers and between themselves. This responsibility in my view arises from the intentional actions and targeted efforts to promote languages.

English at CERN

Returning to the examples of scientific practices, Galison (2003) notes that in high-energy physics collaborations at CERN involving thousands of contributors, native English speakers are required to be included in the group responsible for finalizing the text of collaboration papers,² which often ultimately receive thousands of citations. This requirement serves as an indication of the deliberate efforts made to ensure that the language standards of the papers meet the expectations and aesthetic taste of native speakers.

The noteworthy aspect here, in my opinion, consists in the following. The vast majority of scientists working at CERN, as well as other major scientific institutions representing multiple countries, possess sufficient proficiency in English (i.e., its international version) to communicate with other physicists without difficulty, whether in written or oral form. Therefore, I believe that they can produce physics literature that is easily comprehensible to all members of the collaboration and to any physicist worldwide working in the same domain. One can argue it is likely that the language used in these papers must meet a high standard of clarity and precision, which may be impossible to achieve without the input of native speakers. Additionally, as with any language, there may be nuances or subtleties in the use of English that are not immediately apparent to non-native speakers, and the input of native speakers can help ensure that these are correctly addressed. However, my perspective on this is that difficulties in understanding physics articles are almost solely associated with the technical content rather than the intricacies or complexity of the natural language (English) used.

Although the English language used in these articles typically employs simple linguistic structures, critics argue (Flowerdew 2022) that even technical constructs are often intertwined with interpersonal and discursive elements, including in formulas and graphs. I concur with this statement but I maintain that although technical symbols, formulae, graphs, and tables allow us to view the mathematical language alongside natural language, they are not inherently more familiar to any particular group of participants in the technical discourse and, therefore, do not create a linguistic privilege for any group. That being the case, in terms of ethical discussion of inequality and privilege, technical language must be considered separately from natural language. It is for this reason that I often refer to natural languages as simply “languages.” In fact, technical languages are typically taught as second or additional languages to all those who use them, regardless of their native language. This refers to the idea that having these technical skills and knowledge does not give any discourse participants

² An extremely interesting and still unanswered question is who such a policy comes from and from what budget the work of native speakers on text proofreading is funded. It cannot be ruled out that it is funded equally with the work of other participants as a scientific one (i.e., considered on a par with, for example, measuring of the Higgs boson mass).

an inherent advantage over others, regardless of their background or language development during their critical period of language acquisition.

Hence, as non-native English physicists are able to produce a scientifically articulate text on par with native ones, the mandatory involvement of native English speakers in the writing process can only be necessary to ensure that the text is not only comprehensible but also in line with the predispositions of the native speakers who, therefore, become the intended audience. This highlights the English language's function in science, not just as a means of international communication, but also as the language serving the community that is its native speakers.

It is crucial to emphasize that promoting the learning of a lingua franca in other cultures is not enough to ensure responsible and respectful behavior in the field of science. Non-native speakers of the language may already be at a disadvantage in terms of language proficiency, and expecting them to adapt to a new language on their own is unfair. Instead of only providing resources such as dictionaries and training programs, scientific institutions with international participation operating in (and thus disseminating) the dominant (working) languages can provide actual aid with translation, interpretation, and other relevant infrastructure. This may include offering support for translating scientific papers and documents into different languages and providing professional interpreters to facilitate scientific meetings and discussions.

Furthermore, it is essential to respect non-native speakers' ways of speaking and avoid stigmatizing nonstandard forms of English. Creating a culture of inclusivity and respect for linguistic diversity is the key to ensuring that scientific communication is truly open, accessible, and equitable for all. The process of choosing a lingua franca is a complex interplay of historical, cultural, economic, and political factors, and it is essential to recognize the responsibility that comes with promoting a language for international communication. Therefore, the mitigating agents Vučković and Sikimić suggest, while unambiguously paramount to palliate the injustice and associated economic encumbrance on non-natively speaking scientists and researchers, require a careful assessment of whose stewardship it should fall under not to become an undue burden to the entire community to the benefit of a smaller group. Even the provision of interpretation and language platforms by the advocating of certain languages' social institutions would not be able to solve the global problem of inequality of the scientific and social statuses of speakers of different languages associated with certain social relations, historical processes, and language politics. The search for more universal solutions requires an integrated approach, awareness of the problem at all levels, and broad public debates. However, the close attention of philosophers and social scientists to the problem provides hope that more and more acceptable solutions will be proposed soon.

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