

Science Education and History of Science with a Focus on Social Justice

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Introduction

Debates on the Anthropocene have highlighted the consequences of environmental emergencies and the widening social inequalities worldwide, particularly in the Global South. Recognizing that Science Education (SE) is an integral part of education, we argue that our research should be grounded in Social Justice (SJ) and oriented toward alleviating human suffering (Kincheloe, 2004; Sensoy & DiAngelo, 2017).

For this, we believe that HS can provide pathways for reflecting on knowledge and contribute to building an SE committed to SJ. To this end, we will draw on some authors from Critical Pedagogy (CP), especially Paulo Freire, to guide us on this journey.

So, our objective in this study is to specifically focus on scientific knowledge through the lens of History of Science (HS), investigating its implications for an SE committed to SJ. To this end, we pose the following research question: How can CP, particularly Paulo Freire’s work, help us to reposition the intersection of HS and SE, contributing to an SE oriented toward SJ?

Theoretical Framework

In research at the intersection of HS and EC, Freirean thought is not new (Gandolfi, 2023). These works advance the discussion by emphasizing, respectively, the importance of a critical and reflective stance in students and the recognition of frequently neglected knowledge.

From a historical perspective, we consider that Freirean concepts such as *hope*, *conscientization*, and *praxis* (Freire, 1987; 1992) help us reflect on an SE and HS committed to imagining different possibilities for the future, as summarized in Figure 1.

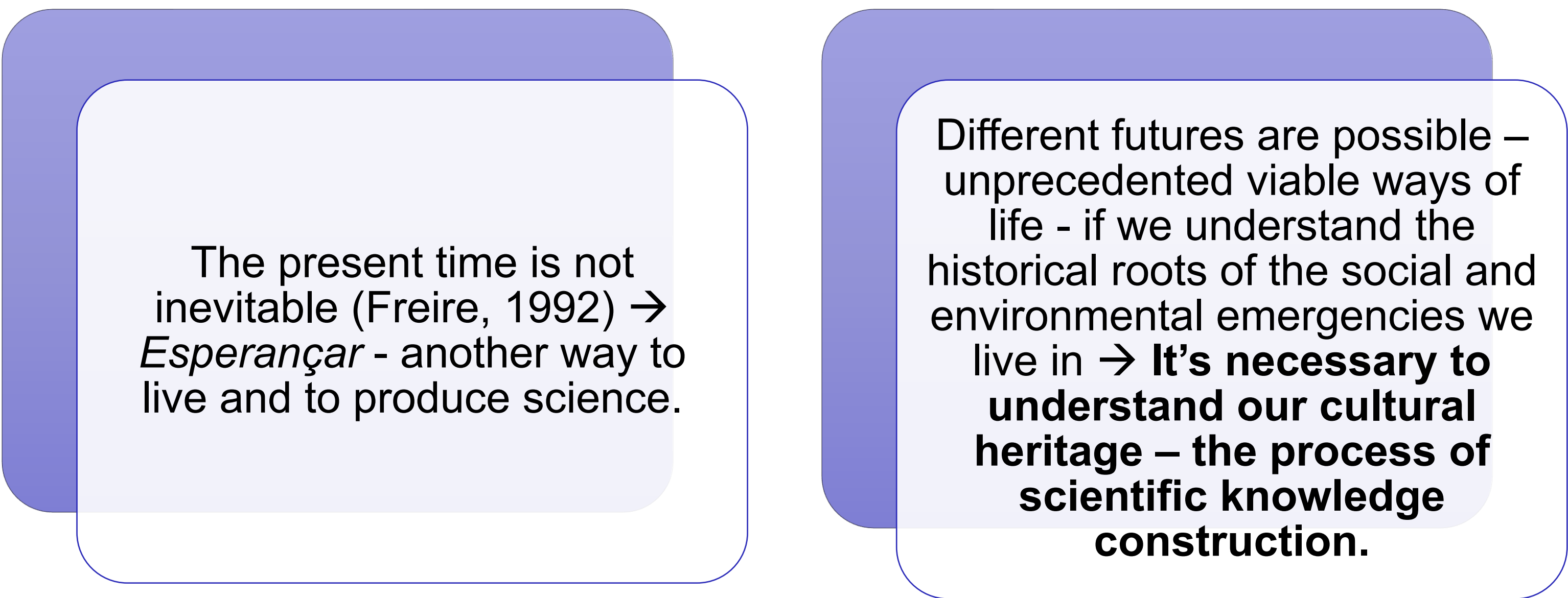


Figure 1 – SE and HS diagram with Paulo Freire, by the authors.

Freirean concepts help us think about another way of constructing science, and we believe that, together with ideas developed by authors in the field of history, these concepts are strengthened. Nyhart (2017) advocates for a history that brings to light those who have been made invisible, helping us understand that science is also constructed by different social authors. However, the non-hegemonic groups, oppressed people, are absent from grand narratives. Chang (2021), in defending a complementary science, offers us the hope of, through this work, rediscovering what has been lost within mainstream science.

Discussion

We have identified three main points to be explored in this section, which we believe support what we are advocating. These points are shown in Figure 2.

New questions for other historical narratives – Knowledge circulation the various social actors involved in this production; the conditions under which they participated.

The construction of other historical narratives within our field.

Researchers must engage in a process of conscientization and praxis.

Figure 2 – Summary of ideas, by the authors.

Final Considerations

In advocating for an engagement with new narratives and a praxis aligned with our theoretical foundations, we do not intend to standardize the field or define rigid and definitive directions. On the contrary, by questioning for whom and for what purpose science is developed, and understanding the historical process as complex, we support a non-reductive praxis that avoids promises of a final goal in a constantly shifting landscape.

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Acknowledgments

This work was supported by UFJF through the first author, and by CNPq and FAPERJ through the second author.

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