

Global and local implications of programming languages

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Abstract

Programming languages are an essential component of digital technologies. As a mostly invisible interface between social users, material assemblages and industrial practices, they act as hybrid systems (Latour, 1993), while they nonetheless shape experiences and affordances of everyday life (Kitchin & Dodge, 2011). One on hand, programming languages have the specificity of abstracting away the local, material grounding of computation; on the hand, as they tend towards Turing-completeness, one might assume that all programming languages thus tend to computational globality, insofar as they can perform the same operation everywhere.

This contribution focuses on the concept of local and global when it comes to the operation of programming languages. Starting from a geographical definition of the terms, particularly through the perspective of scale(s) (Herod, 2008), we show that programming languages enable a different representation of space, one that abstracts away geography, and reshuffles conceptions of proximity and distance.

To do so, we will examine three cases of how programming languages redefine the concept of local and global spaces: Google's use of GoogleSQL for database work, Ink&Switch's use of JavaScript for real-time collaboration and Scuttlebutt's use of Rust for their social media. Through these, we will see how the languages and the ideas expressed through them influence each other to propose different worldviews, bringing in concepts of scales of community, synchronicity and infrastructure.

Ultimately, we intend to connect this discussion to the role of programming languages in the climate impact of information technologies. According to the french Ademe report, 21% of the carbon footprint of the IT sector is linked to uses of the digital (as opposed to 78% due to the production process) (Perasso et. al.,

2022); since programming languages define the application processes that users interact with by translating semantic work into voltage consumption, they are an essential component of such footprint. This contribution therefore suggests further research on the ecological implications of programming languages, both from a conceptual perspective of world-representation and the concrete perspective of infrastructural requirements and user practices.

References

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Biography

Pierre Depaz is an academic, developer and artist. Having graduated from the IEP de Lille and NYU Tisch School of the Arts, he is currently a Lecturer of Interactive Media at NYU Berlin and a guest Lecturer at Sciences Po Paris, as he completes his doctoral thesis on the role of aesthetics in the understandings of source code at Paris-3 Sorbonne-Nouvelle, under the direction of Alexandre Gefen (Paris-3) and Nick Montfort (MIT). His academic research revolves around how software systems create representational frameworks for inter- and intra-personal organization, and includes publications such as *Computer Simulations as Political*

Manifestos (Goethe Institute, 2016), *L'agit-prop à l'ère 2.0 : les campagnes du collectif Kazeboon dans l'Égypte en Révolution* ([CIRCAV vol. 27](#), 2018), *The Craft of Code: Practice and Knowledge in the Production of Software* (Kuckuck vol. 21, 2021) or *Discursive Strategies in Style Guides Negotiation on GitHub* (RESET, vol. 11).