The Skills of a FLOSS Developer and Why They Are Important in Open Research

Giuditta Parolini

Museum für Naturkunde Berlin, Germany

Funded by

DFG Deutsche Forschungsgemeinschaft

German Research Foundation

ABOUT ME

- Currently working as a data scientist. I previously worked as a science writer and an historian of science and technology.
- Employed by a German research museum to work on a project on the sustainability of data practices and infrastructures in biodiversity science.
- Python coder and teacher and contributor to FLOSS projects.

FLOSS' SUCCESS RECIPE

- FLOSS software is successful. It is adopted by businesses, non-profits, government agencies. Open-source software is often the preferred choice for what concerns cloud, containers, and data technologies.
- The success of closed-source software is capital-driven. Companies invest money to grow and maintain their software product, and to consolidate and expand their user base.
- The recipe for success in FLOSS projects lies in the humans, in how they work together, and whether they are able to grow a community of users and contributors (see K. Fogel, *Producing Open Source Software*)

MADE BY HUMANS FOR HUMANS

- Discussing in public

  "Making important decisions in private is like spraying contributor repellent on your project" (K. Fogel, Producing Open Source Software)

- Building inclusive communities

  You are welcome if you follow the code of conduct and want to contribute to the project.

- Setting up effective governance structures

  Managing software IPR, orchestrating the work of a random collection of developers, documentarians, and software evangelists, looking for money but not making money a discriminating factor in project participation, etc.

THE ACHES AND PAINS OF RESEARCH

- Performance metrics that privilege quantity over quality – Scarce recognition for outputs, like research software, that are not publications
- Academic publishers have transformed open access in a lucrative business model
- Replicability crisis (see C. Szabo, *Unreliable*)
- Unsatisfactory self-correcting mechanisms
- (Depending where you live) Politics limits research freedom
- …

TECHNOLOGY HYPE SOLD AS THE HOLY GRAIL OF RESEARCH

- Generative AI used to fabricate research data and images on a large scale and to generate academic publications without proper oversight.
- AI tools are even promoted as a replacement for the expertise of the human peer reviewer.
- Some research institutions have entered into commercial agreements with companies to make AI tools the technological backbone of their research and education.
- In the case of research software AI tools have contributed to de-skill rather than up-skill people.

BRINGING FLOSS SKILLS AND VALUES IN RESEARCH

- Create more opportunities for public discussion. The traditional peer-review system is showing its limits. Public discussions can rely on the expertise of the entire research community.
- Promote inclusion. Scientific communities should be communities of practice open to everyone.
- Address governance problems. Research should work out solutions for better managing intellectual property, long-term financing, etc. to avoid that valuable resources—code, data, models—disappear.

I HOPE I DID NOT COME ACROSS AS A LINKEDIN INFLUENCER...

- With AI technologies we have never really asked "Should we?" (see the AI Darwin Awards)
- Right of choice when technologies are unsustainable.
- FLOSS communities have not been shy to point out the risks posed by a misuse of technology ([Reddit] My new hobby: watching AI slowly drive Microsoft employees insane)

Giuditta Parolini — Museum für Naturkunde Berlin, Germany

Email: giuditta.parolini@mfn.berlin

LinkedIn: https://www.linkedin.com/in/giuditta-parolini/