



# Learning to code on the Open Source Platform GitHub

— The Digital Mindset and its contextualized re-framing on GitHub

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*Prometheus Brings Fire to Mankind* (1817) by Heinrich Füger



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2. THE DIGITAL MINDSET
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# Mangrove Society (Florida 2018)



Satellite imagery of a mangrove region  
(picture was removed due to for reasons of data protection)

## The Need for a Digital Mindset in the Mangrove Society

- The digital world “needs [...] the right people with the right skills, the right methodology and attitude [...] and a corporate culture that reacts flexibly to change. A culture that is curious, courageous and agile in its actions. [...] We call this corporate culture the 'digital mindset'” (Kirsch 2022).
- “The main characteristics of a digital mindset are: abundance, growth, agility, comfort with ambiguity, explorer’s mind, collaboration, and embracing diversity” (Chattopadhyay 2015).
- The “Digital Mindset” as an individual and/or collective, but pro-active or reactive concept to live competently in a digitalised world

## Creators of the Digital and where to find them?

Who better embodies and understands a potential “Digital Mindset” than those who actively participate in the creation of the digital disposition and infrastructure (the brackish water) daily?

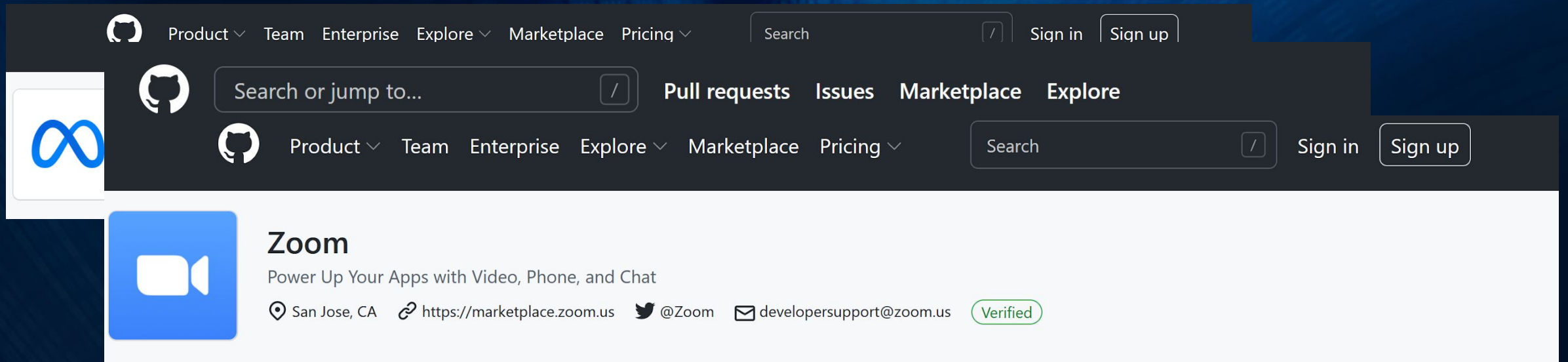
The technology and its fabrication remain “somewhat of a modern myth” (Barocas et al. 2013:1) and “[...] not a black box that can be simply opened” (Seaver 2017:7).

Where and by whom are algorithms produced?



# All Codes Lead to GitHub

- Trace ethnography (Geiger / Ribes 2011) □ **Follow the code** (Marcus 1995)





Product ▾ Team Enterprise Explore ▾ Marketplace Pricing ▾

Search GitHub



Sign in

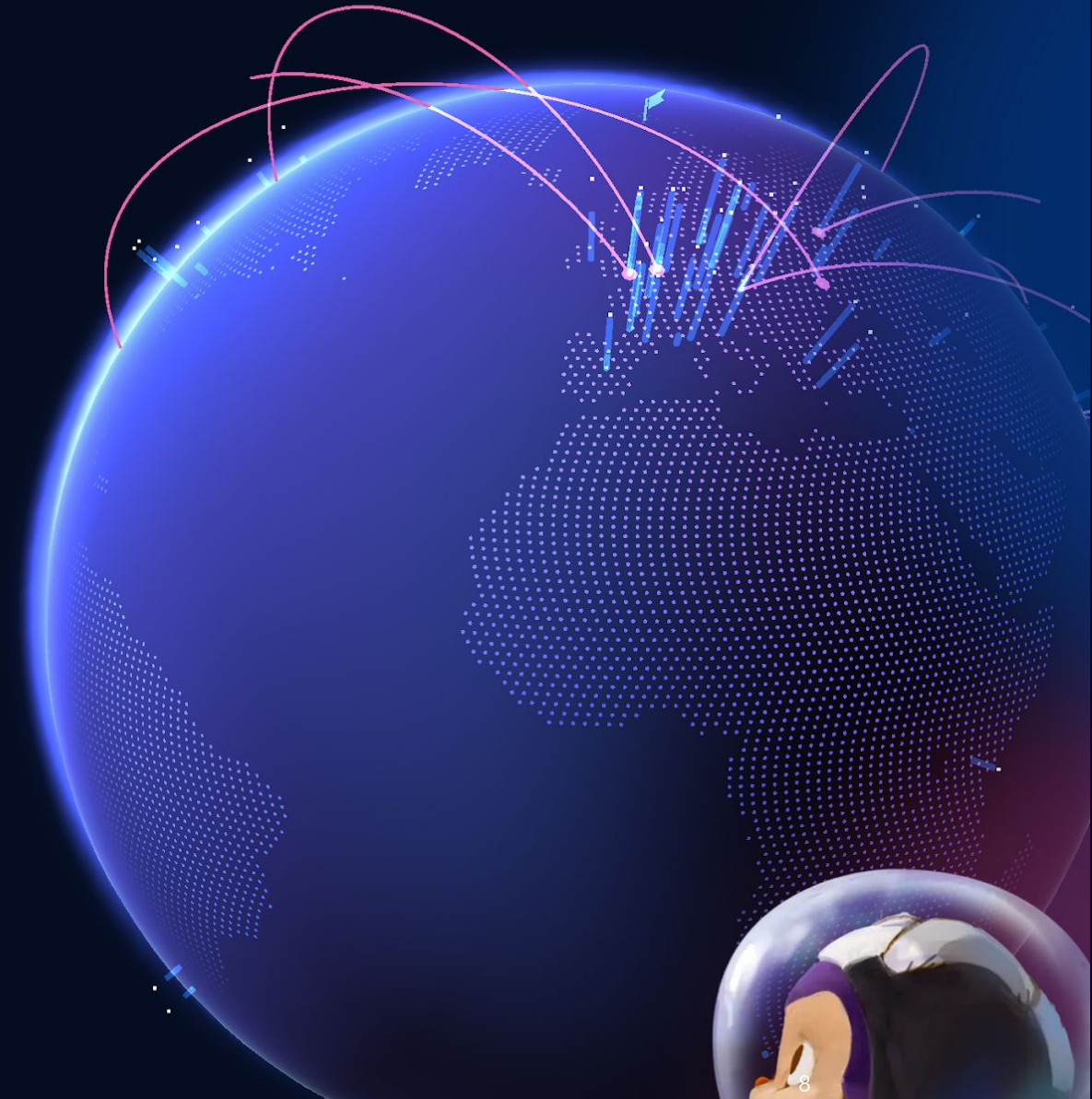
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# What is GitHub?

- GitHub is the new “Maschinenraum” (Engine room) of algorithm factories (Daum 2020).
- On GitHub code-systems are developed, tested and distributed – thousands a day, by people from all over the world.
- Whatever “algorithmic society” there will be, it probably will be “forked” (Daum 2020) and produced on or with help from GitHub.

# Methodology: Digital Ethnography and Narrative Interviews

- Virtual or digital (Hine 2007, 2015) and multi-sited ethnography (Murthy 2008)
- I found the nine interviewees via the GitHub internal search function and the “Trending Developers” (Github 2021a) list.
- Narrative interviews along a guideline via Zoom
- Guideline: questions regarding their work (the coding) on GitHub but also how they perceive the „GitHub culture“ and what it takes to participate on GitHub in the first place?

Alex from Northern England, working for a Chinese AI company.

Dotan, learned coding all by himself in India and “got into a military program in Israel for developers”.

Jian, working from Germany and the “only Chinese maintainer” of a big GitHub repository.

Martin, doing his PhD in a research project on GitHub – a “typical geek”.

Natalia speaks a lot about OS at conferences. She “can recognize pretty well when [she sees] an issue created by a fellow Eastern European”.

Phan, Vietnamese OS developer and “Vice President of Engineering” in his own company.

Tracy uses GitHub at work for a Danish company and with her friends “to share cool stuff”.

Georg, born in Lübeck, describes coding on GitHub as a form of relaxation.

**Manu: AI Entrepreneur**

## Findings from my research: The digital and the global

- " That means I always had co-workers [and contributors] who came from India. Pakistan. London. And [they] had somehow, the majority [...], already lived abroad and somehow had a very cosmopolitan mindset." (Manu)
- On GitHub are "people around the world" and coding is "universal" (Jian).
- „GitHub believes "deeply in the potential and the power of a diverse open source community" (GitHub 2022).



## Findings from my research: Functional Openness and Diversity

- **Openness and Diversity** gain significance through their function and value for code development, because "[t]he improvement level is practically unlimited, because every new contributor can bring something unique to the table" (Natalia).
- **"Free and transparent, and decentralized.** [T]hese are the key spirits that let me, let **smart people** to really building something from the ground up."

## Findings from my research: Learning to code on GitHub

### What does it take to participate on GitHub?

- „[E]verybody [can] use it“ (Jian).
- „All you need is a computer“ (Phan).
- Infrastructure & Knowledge (Programming Languages, Git)
  - „I don't think it [programming language] is necessary.“

## Findings from my research: Participating on GitHub

„In the beginning, it was a painful process, because I don't know everybody. When they started, they initially becoming [sic] very criticism about every contributor. So, who are you? Why are you contributing to the project? [...] Well, I doubt on why you have the ability on contributing to that! [...] So, a lot of criticism is there. So, apparently, people have to show their ability to learn over time.”(Martin)

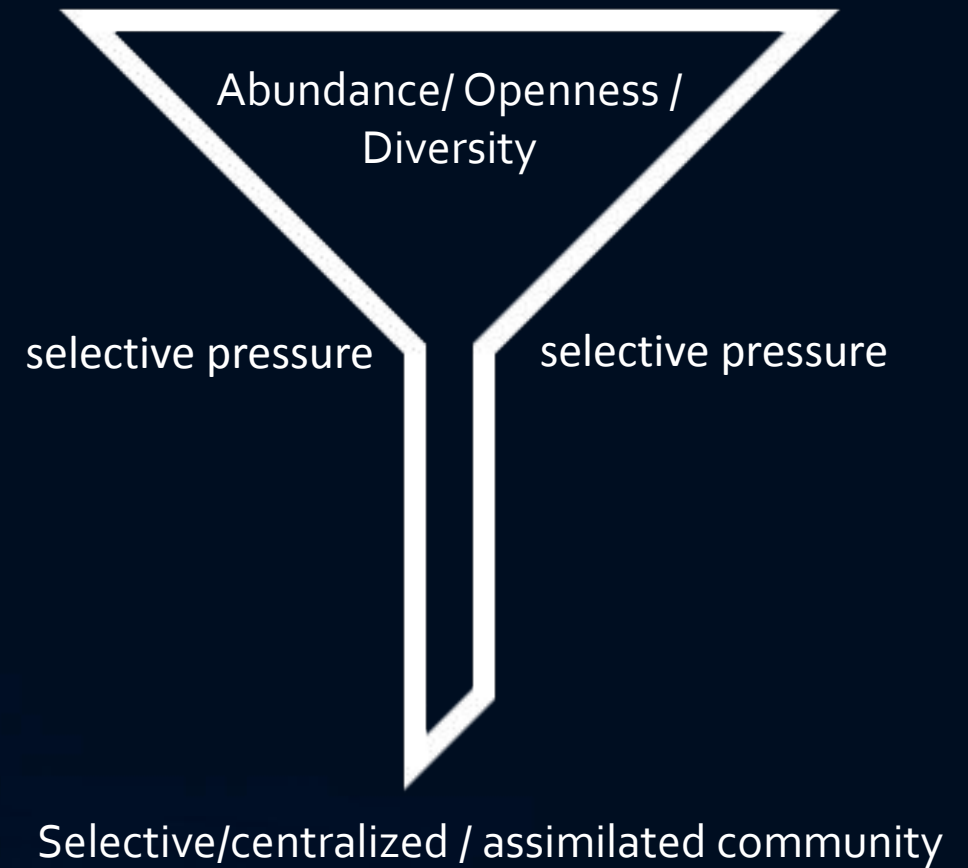


## Findings from my research: Learning to code on GitHub

- According to Natalia, programmers are "**not** necessarily [...] **the most empathetic people**" and the feedback given on GitHub can quickly "have a **demotivating effect**".
- To "**fight**" is part of the "**culture of programming software developers**" (Phan)
- "GitHub becomes a very **centralized community [or] platform** where only the **people who agree with each other will contribute on the same project**"

## Findings from my research: Pressure to assimilate?

After the **initial openness and accessibility**, fostering diversity, the individual is quickly confronted with a communication and coding practice that **exerts selective pressure**. The new programmers first must prove themselves in the project and “endure” a communicative context that the developers themselves describe as **extremely critical and “[s]ometimes even toxic”** (Natalia).



The “motor” or justification of the selection process:  
The constant “fight” or “competition” for the higher good

“Coding is competition” (Natalia)

“Competition always exists” (Martin)

“[F]ight for the good” (Jian)



## The greater good and the future

- The “greater good”-imaginary centers upon a quite simple extrapolation of the current state into the future – with just somewhat “better” technology (Natalia, Dotan, Tracy).
- This socio-technological imaginary, which emerges out of the data, is populated with narratives of clean, fast and easy futures: “Ready-made” (Bachmann 2020) utopias focusing on the greater good brought about by technology.

The constant „battle“ for the greater good calls for a „ultimate decision maker“

“[B]ecause at the end of the day it’s always very few who have the say, also necessarily, because things are complex [...] I think only the one who wrote [the code] really understands it completely.[...] Yes, that alone makes it actually necessary that he’s the ultimate decision-maker” (Georg)

## The emerging figure of the “Benevolent Dictator for Life”

- The term “Benevolent Dictator for Life” (BDFL) is an emic term emerging out of the field (Milinkovich 2015, Kelty 2008:212)
- It was originally used by Eric Raymond (2000) and then adapted by Guido von Rossum (author of the programming language Python) (Eghbal 2020:26)
- Since then, the figure or position of the “BDFL” is a stable part of OS culture and seems to contradict the idea of collective and open participation to a certain extent.

“It [GitHub] is pseudo-democratic” (Martin)



## Conclusion

- Hierarchical structures on GitHub, the complexity of Coding and the self-image as „smart creator“ lead to a **centralizing and selective dynamic**
- The ideals of „openness/abundance“ and „diversity“ find themselves reframed on the liberal coding-marketplace GitHub, which is characterized by competition and driven by the imaginary of a „battle for the good“
- A competitive coding practice goes hand in hand with the narrative of **natural conflict and battle**
- The developer takes on the role as **BDFL**
- The individual can either submit to the strong leadership of an BDFL, become a „dictator“ her/himself or leave GitHub

## The Digital Mindset and the contextualized re-framing on GitHub

Digital Mindset (Chattopadhyay 2015)	Critical re-framing on GitHub
Abundance and diversity	Functional openness for higher numbers of Developers
Growth and agility	Adaptation/Assimilation and Competition
Comfort with ambiguity	„Free“/unpaid Work
Explorer's mind	Self-reliance
Collaboration	„Fight“ and Hierarchy



## Towards a digital-autocratic Mindset?

The concept of the "digital mindset" re-emerges at the micro-sociological level of GitHub-projects and appears as a justifying narrative for an authoritarian programming culture and an Open-Source coding practice that relies on unpaid, highly motivated and resilient developers to produce the next "good" code against the "bad".

## Limitations

- Small number of interviews
- Position of the interviewed developers: all are established contributors, rewarded by an inherent trending algorithmic system, and located in projects that could be seen as traditional/mundane



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