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RESEARCH ARTICLE

Handling the hype: Implications of AI hype for public interest tech projects

Theresa Züger*¹ , Freia Kuper¹ , Judith Fassbender¹ , Anna Katzy-Reinshagen² , Irina Kühnlein¹

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Abstract • Based on theories of expectations of technology and empirical data from expert interviews and case studies, this research article explores how actors in the field of public interest technologies relate to and within the dynamics of AI hype. On an affirmative note, practitioners and experts see the potential that AI hype can serve their own purposes, e.g., through improved funding and support structures. At the same time, public interest tech actors distance themselves from the dynamics of AI hype and criticize it explicitly. Finally, the article discusses how engagement with AI hype and its impact affects society as a whole and, more specifically, society's ability to develop and use technologies in response to societal problems.

Umgang mit dem Hype: Auswirkungen des KI-Hypes auf gemeinwohlorientierte KI-Projekte

Zusammenfassung • Auf der Grundlage von Theorien über Erwartungen an Technologien und anhand empirischer Daten aus Expert*innen-interviews und Fallstudien untersucht dieser Forschungsartikel, wie sich Akteur*innen im Bereich der Public-Interest-Technologien im und zum KI-Hype verhalten. Praktiker*innen und Expert*innen sehen einerseits, dass der KI-Hype ihren eigenen Interessen dienen kann, z. B. durch verbesserte Finanzierungs- und Förderstrukturen. Gleichzeitig distanzieren sich Public-Interest-Tech-Akteur*innen von der Dynamik des KI-Hypes und kritisieren ihn ausdrücklich. Abschließend wird im Artikel diskutiert, wie sich die Auseinandersetzung mit dem KI-Hype und dessen Wirkung auf die Gesellschaft insgesamt auswirkt und speziell auf die Fähigkeit der Gesellschaft, Technologien zur Lösung gesellschaftlicher Probleme zu entwickeln und einzusetzen.

Keywords • public interest tech, AI, hype, sociotechnical change

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Introduction

The strong presence of artificial intelligence (AI) technologies is driven by substantial advancements in the performance of machine and deep learning, currently the main technique behind what is called artificial intelligence (Toosi et al. 2021), as well as by the public availability of more tools based on these techniques. However, the discussion of AI is also driven by imaginaries and narratives of AI, and AI hype dynamics, involving a multitude of actors.

Public interest tech as a field of technology production has emerged in the past decades and includes state, civic, non-commercial as well as actors in the field of social entrepreneurship aiming to produce technology serving a societal benefit (Abbas et al. 2021). Despite extensive research on theories and case studies on hype dynamics, the field is lacking insights on actors' perception of their involvement with those dynamics, specifically with regards to non-industry actors.

The first part of this research article provides a theoretical background on the hype around AI based on theories of hype and technology expectations (Van Lente et al. 2013; Dedehayir and Steinert 2016), which sets the stage for the second empirical part. Drawing on case studies and qualitative interviews with practitioners and experts in the public interest technology sector, we focus on two research questions: Firstly, we want to answer how actors in the field of public interest tech relate themselves to and within AI hype dynamics. Secondly, we ask what societal implications build on the involvement of public interest tech actors in AI hype dynamics. We discuss how performing hype and at the same time relating to this hype affects the capability to put societal problems at the center of technology development.

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Theoretical background: the sociology of expectations and the temporality of hype

Hype is a term used to describe high expectations towards technology that manifest on different levels and follow specific dynamics over time. To theoretically frame our understanding of hype, we turn to the sociology of expectations, a theoretical strand within Science and Technology Studies that describes sociotechnical change (Borup et al. 2006; Sovacool and Hess 2017). Akin to theories of discourse and sociotechnical imaginaries, the sociology of expectations focuses on the systems of meaning that surround new technologies (Sovacool and Hess 2017). The sociology of expectations focuses on the involved actors and knowledge communities (Borup et al. 2006) as well as on different levels of expectations (research groups or firms, technological field, technology in society, Van Lente et al. 2013).

Two elements of the sociology of expectations are important to our study: the temporality of expectations and their performative character. The first element, the ‘temporal patterning’ (Borup et al. 2006) of expectations, describes how expectations towards the value of one technology evolve over time. Looking at such a timeline, expectations towards technology often pass a promise-disappointment cycle. For example, in the archetypical form of the Gartner hype cycle, a peak of inflated expectations is followed by a trough of disillusionment, after which a slope of enlightenment leads to a plateau of productivity (Fenn and Raschko 2008; Dedehayir and Steinert 2016). Even though empirical findings on hypes have shown variations in hype cycles and rather complex patterns (Dedehayir and Steinert 2016), the idea of a succession of phases after the emergence of a new technology is helpful to our understanding of the AI hype.

The second central element for our research is the performative character of these expectations. Performativity implies that expectations do not stay on a rhetorical level but result in material consequences and that the phenomenon of hype is construed by its performance. As Borup et al. (2006, p. 292) put it: “[...] In what way do they [narratives and views] become ‘inscribed’ in texts, actions, bodies, materials, objects and machines [...]?” This performative character of high rising expectations depends on how visions of the future shape the present: “[T]he promises of the future that make up a hype, have a performative capacity in the present as they attract resources, coordinate activities, and spur competition” (Van Lente et al. 2013, p. 12).

Seasons come and go: laying out the case for the AI hype

Regarding AI technology, these high expectations manifest in narratives that focus on the effects of AI that give agency to technology (Vicsek 2021), framing it as a key technology of our time in an ‘age of AI’ or even speaking of an ‘AI revolution’ (Köstler

and Ossewaarde 2022). On the other hand, many narratives are marked by anxieties and dystopian visions, for example in the debate on the future of work (Vicsek 2021), without even mentioning ideological debates on the dangers of AI (Stieler 2023). This charged discourse on AI overall can be described as a mismatch between the expectations and the realities of AI systems, which we want to explain in further detail.

AI hype and mismatched expectations

In comparison to other hyped technologies, AI can be seen as a ‘long fuse technology’ (Dedehayir and Steinert, 2016), which progresses slowly through a series of highs and lows. AI raises expectations on a societal macro level, addressing technology in society (Van Lente et al. 2013), and triggers ubiquitous promises and rather generic expectations. The potential and power attributed to AI as a technology with general capabilities, whether advancing or detrimental, appear as recurring themes in the discourse on AI. In parallel to these polarized positions regarding AI effects, AI systems in practice have recently sparked a more empirically driven critical debate around AI, pointing to problems of discrimination, security issues as well as false promises and promises of AI solutions (Buolamwini and Gebru 2018; Kaltheuner and Amironesei 2021; Bender et al. 2021). The discourse of these past months demonstrates an entanglement of different stages of AI hype: AI polarization and overpromising as a sign of hype flourishing and the critical discourse on present AI practices as a sign of disillusionment.

The adaptiveness and general capabilities that are inherent in the imaginaries of AI discourse are at a mismatch to the concrete applications scenarios of AI. One could even regard the term ‘artificial intelligence’ as a symptom of this mismatch as it is being used unspecifically for many different applications and methods. This generalism guides the attention to assumed capabilities and an often-personified idea of AI, and away from a specific use case with clear technical properties and limitations, thus creating a tension between broad rhetorical visions and attempts to discuss application specifics (Sovacool and Hess 2017).

AI hype and multi-actor assemblage

The many actors involved in the AI hype include the AI industry, governments, research institutions, media and diverse AI funders as well as civil society actors. In the past decade, investment in AI increased 18 times (Maslej et al. 2023). Governments and policy makers take up the narrative of AI being a groundbreaking technology in their national AI strategies (Bareis and Katzenbach 2022) but also contribute to shaping the future by implementing funding for AI. This also becomes visible on the European level, where the integration of AI systems is in many funding initiatives a necessary condition to be eligible for funding (European Commission 2020). This corroborates the finding that “once a technology begins to hype, decision makers in organizations may follow the trend rather than carefully as-

sessing the technology's potential themselves" (Dedehayir and Steinert 2016, p. 29).

In this multi-layered scenario of actors contributing to the AI hype, hype dynamics can start in different public realms or specific communities at different times and follow different patterns. Different stages of AI hype cycles are happening all at once and as argued, they may collide or overlap in public discourse.

In the layered network of actors, the state is often expected to promote a responsible use of AI. Ulmiche et al. (2021, p. 171) diagnose a current "governance frame [that] assigns more active and collaborative roles to the state and society", which is also a way of trying to counterbalance the oligopoly of few companies and increasingly acknowledged risks and ambiguities of AI systems.

AI hype and public interest tech

The current hype around artificial intelligence amplifies prevalent questions of responsibility and accountability in the development of AI applications. "Hype pushes the discourse of ML/AI towards unrealistic questions, and popular representations in the media might relocate responsibility to those with less control of the outcomes" (Slota et al. 2020, p. 7). The hype goes along with a high policy priority in which political actors at least discursively try to counterbalance the power of big tech: Ethical debates are ever-present, and high expectations are allocated to public engagement. Designing artificial intelligence in the public interest, despite most often very limited resources, therefore comes with an extended set of ambiguous but high expectations.

In contrast to the rather few commercial drivers of the AI industry that heavily dominate the public discourse as well as the economic landscape around artificial intelligence, public interest technology projects do not fit into a logic of maximiz-

Methods

The underlying study employed a mixed-methods approach, consisting of ten case studies, based on document analysis and semi-structured interviews, and 17 additional semi-structured expert interviews to investigate public interest tech projects developing AI applications. The interviews gathered data on the experts' understanding of public interest AI, the potentials, risks and challenges these actors identify as well as their views on support and funding that is needed. For the case studies, a purposive sampling technique was employed to select public interest tech actors that represented a diverse range of initiatives in the fields of sustainability, consumer protection, social issues such as equity and gender equality, labor issues and work-related applications. Conditions for this sampling were the advanced stage of the project, and the feasibility of analysis of the case in the timeframe of the study. For the expert interviews, again a purposive sampling method was utilized to identify 17 experts with significant experience and expertise in the public interest tech field, particularly in Germany.

Overall, 20 semi-structured interviews were conducted with a selection of the case studies and the selected 17 experts. Interviews were conducted following a responsive interviewing approach (Rubin and Rubin 2012), the interview guide was developed following Helfferich (2019) and consisted of narrative prompts for each section as well as optional follow-up questions.

For the purpose of this research article, the collected data, including interview transcripts and documents, were re-analyzed and subjected to qualitative content analysis. The analysis process followed an extractive and structured approach (Gläser and Laudel 2010; Kuckartz 2018). AI hype emerged as a theme from our data: Although the phenomenon of AI hype was not the original focus of our interview question, many interview partners proactively started to use the term 'hype' and directly or in-

One could even regard the term 'artificial intelligence' as a symptom of the mismatch as it is being used unspecifically for many different applications and methods.

ing profits. Public interest technology in general can be defined as "the application of design, data, and delivery to advance the public interest and promote the public good in the digital age" (McGuinness and Schank 2021, p. ix). Actors from the public interest tech sector implementing AI systems often share the goal to not only use AI systems for a societal benefit, but also procedurally reflect the public interest in the development technology. This can be done for instance by following data ethics, having a higher level of transparency and entry points for deliberation, or inclusive problem-solving and openness (Züger et al. 2022).

directly explained in their statements how they relate to it. The codes were organized based on this emerging theme and categories were developed that capture different themes of relation to AI hype of public interest tech projects according to our focus of research. This analysis method allowed a systematic examination of the data. By employing this mixed-methods approach, combining case studies and expert interviews, the study aimed to provide a comprehensive understanding of how actors in the field of public interest tech relate themselves to AI hype dynamics and how performing hype and at the same time engaging with this hype affects society overall.

Empirical findings

Looking at the empirical data from the interviews and case studies, we used the aforementioned theoretical background and research on AI hype as a lens to describe the occurrence of hype in our data and how actors perform or describe their relation to the phenomenon. The descriptions of their positions towards the hype and how their perception influences their decisions, is what we see as the mentioned performative nature of the AI hype. We will introduce this in examples in the following sections and draw attention to a specific act of hype performativity, namely the claim of resisting the hype, which was evident in our findings.

Performativity of AI hype

Firstly, AI hype contributes to certain beneficial conditions for public interest tech projects. In our case studies and interviews, two concrete beneficial aspects resulting from hype were mentioned several times: the emergence of support structures and community-building.

The support structures described by the experts included funding possibilities as well as immaterial competence training, coaching or networking events. One common aspect that can be found in our data is that public interest tech initiatives are aware of AI-focussed funding possibilities, one expert describing that “here is of course a very classic promotion of hype”, allocating “several hundred million for AI” (Expert Interview (in the following EI) 15). The study participants acknowledge that implementing AI technologies in public interest tech projects is helpful for them to access funding. The founders of a tool aiming to automate gender sensitive writing in documents described AI as a “hot topic” that helped gain support for their idea. Another project which dealt with estimating the irrigation needs of trees was actively looking for calls with a focus on urban development, climate and AI. The increasingly critical public discussion on risks of AI technologies led to an increased willingness of public or philanthropic funders to support projects that aim to compensate for flaws of AI, which is the case for one of our case studies, in which the project team aimed to build a non-discriminatory dataset.

A second aspect beneficial to public interest tech organizations is community building through visibility of public interest tech. Publicly visible public interest AI projects have a signaling-effect for other projects and potentially lead to stronger networks of public interest tech, increasing the chances to “have a community of people who can also support each other” (EI06).

Because of more public interest oriented initiatives working on AI and sharing their work there is a higher availability of open source and free AI-related resources such as training data or software building blocks. Many projects build on open-source resources, like one of our cases that built on and extended open streetmap data (EI19). According to the founders of an AI system for more accessibility of mobile devices, their project could

never have come this far “if there hadn’t been so many other free projects that we could have used in our systems” (EI20).

The participation of volunteers, that a number of public interest tech projects deeply rely on, is increased by the current hype on AI. This can be illustrated by a project that relies on voice data donations, which currently many volunteers contribute to: “Most communities are very excited about the idea of key technology products being offered in their language for the first time” (EI18).

Positioning within the hype

Aside from these descriptions of hype benefits, the main mention of the AI hype was from a critical perspective. For example, one expert describes the use of the AI terminology in the public funding context as being

“[...] mainly used on the political level, [as] totally blurred, where everyone is allowed to interpret what they think they mean. And these are more projection surfaces than concrete terms, and that also makes the discussion very difficult, because [...] everyone means something completely different.” (EI05)

This broad use of the term ‘AI’ was identified as a major problem by many of the experts, who perceive it as a “massive buzzword” (EI06) and report that the innovative aura of the technology has also reached the public interest tech scene admitting that “actually it’s always totally unclear what we’re talking about” (EI06).

Aside from this general critique towards an unspecified use of the term, our findings showed in many statements a clear critique of AI hype. Interestingly, this critique has the effect of the speaker distancing themselves from the hype, implying that the speaker is rather an observer confronted with a hype they need to deal with, rather than an active part in the hype dynamic. One key point of the critique is that the aforementioned benefits (and funding opportunities) were dependent on the use of AI techniques, e.g. machine learning, thus limited to a specific technology, which the participants of our study saw as problematic, since it limited their ability to adjust and choose technologies for their projects freely. The experts described this system as being exploitable too, mentioning that they used the term AI to apply for funding, even if their project does not or only partly use AI technologies. “Of course, we sometimes write AI on our applications, [...] even though we know that it is actually data, that we simply visualize data, make explorative analyses, reports, and so on.” (EI06)

This dynamic, that the term AI can be (mis-)used to gain funding, was discussed with different sentiments: While some openly admitted using the term strategically, others described this practice critically. Their criticism was focused on the funding system itself, embedding and enforcing an exclusive focus on AI technology. More specifically, study participants criticized that this deterministic focus on AI in funding calls shifted

the focus of interest away from actual problems and towards the technology, explaining that data driven projects should only be adopted if the technology supports their goals: “And if we realize, our impact logic has nothing to do with AI, then we don’t need it. [...] We always need to see how it actually helps us to improve our work.” (E106)

From the interviews we understand that actors try to actively distance themselves from being a part of the hype, and describe their intent to resist it because the values driving their projects are partly in conflict with the temporality and side effects of

addressing them or reforming the current economic systems which might be the root cause of some of [the] concerns about AI development and use” (Ulinicane et al. 2021, p. 171).

An additional reason for why the choice to focus solely on AI as a technology is problematic, can be explained by a concept that Slota et al. (2020, p. 7) call a “well-socialized technology”, which is based on a good understanding of who is responsible for what in regards to the technological use in society:

AI hype contributes to certain beneficial conditions for public interest tech projects.

hype. From these actors’ point of view, hype provides opportunities but also results in a dependency on changing and unreliable funding tides. Most public interest tech actors are committed to social and ecological sustainability, which implies a somewhat hype-adverse disposition in their work, as their work is built on long-term use and re-use. One conclusion an expert drew was that “the question how I can use AI for social good is the wrong question, because it is techno-centric. We need to learn to think [...] starting with the problem” (E117).

Discussion: public interest tech within the AI hype

Our findings show that public interest tech actors find themselves in a paradoxical relation to AI hype: They benefit from hype, but also have contrary values and needs. Limiting funding to AI technology neglects the less visible tasks and parts of a project that are often underfunded already: maintenance, capacity building, or foundational data structures. The public tech sector exemplifies how “hypes can [...] be considered as a resource as well as a pitfall” (Van Lente et al. 2013, p. 1626).

Especially in the context of public interest technology, hype dynamics are seen as problematic, because the needs and problems of society don’t follow hype cycles. The focus of funding on one technology encourages non-profit actors to focus on it, rather than on the societal problems they address – with which ever means best suited. Moreover, hype dynamics stand in contrast with sustainable funding, which is a huge problem for public interest tech projects to find. With a focus on AI, the needed infrastructure and resources are immense and hard to sustain. Addressing this issue of a focus on technology, Ulinicane et al. argue that this framing in a debate is a choice and not a necessity. They argue that

“alternative frames are possible, for example, prioritizing tackling societal problems where AI is one of [the] means

“A well-socialized technology is one [...] where sufficient implicit knowledge exists that misrepresentation is relatively visible, and misunderstandings can be more readily corrected. More specifically, the socialization of technology speaks to its visibility and in shared understandings of its role” (Slota et al. 2020, p. 7).

The authors claim that this is lacking for AI and see “a problem of the socialization of AI” (Slota et al. 2020, p. 7). Building on this idea, the expectations towards AI mismatching actual AI systems’ performance can be seen as a symptom of a badly-socialized technology. A better socialization of AI in Slota’s understanding would contribute to more nuanced expectations and could position AI amongst other technologies in a complex socio-technical scenario with societal issues at center.

Finally, our findings highlight the power imbalance that is inherent in the AI sector. Several actors profit from the hype around AI. Through its funding programs, the European Commission invests one billion euros per year in AI and additionally mobilizes investments from the private sector and its Member States to reach an annual investment of 20 billion euros over the course of this decade (EAIF 2021). However, the major part of these investments goes to for-profit companies, which creates a massive imbalance in the field of actors developing AI, since it is for-profit actors who hold the most data, infrastructure and financial resources.

Conclusion

Regarding our research question how actors in the field of public interest tech relate themselves to AI hype, our findings show that these actors are in a paradoxical position. On a smaller scale than commercial actors, those using AI in the public interest can benefit from the general AI hype but remarkably exhibit their critique and intent to resist the hype as well.

On a societal level, our results on public interest tech point to the need for a clearer societal understanding of the socio-technical systems of AI technologies as well as the responsibilities of involved actors. Public interest technology development is a resource beyond the technologies themselves: The sector is a political sphere, which involves civil society in the development of technology. Public interest technology includes an awareness of the sociotechnical conditions and contexts. Crucially, it aims to put societal needs at the core and gives citizens a stake in the discourse and the governance of technology. This approach involves a pluralistic and participatory governance of data and models as digital commons, it aims to challenge prevalent structures of power by being inclusive of volunteers and citizens and giving affected communities a say over their data. The hype around AI is a highly political issue, since not only is AI playing an increasingly important role in all aspects of life, but also the hype itself is impacting our societies extensively. The existence of public interest tech projects developing and implementing AI and their critical assessment of the AI hype is a reminder of how things could be otherwise. On a final note, as researchers writing about AI hype, and thereby identifying as the observers of the phenomenon, we, similar to our interview partners, are, by participating in this discourse, at the same time part of this puzzling hype phenomenon.

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