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ORIGINAL ARTICLES

Designing Postdigital Futures—The Case of Hackathons

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Abstract

Used in the context of innovation-driven economies and civil society, hackathons are a good example of collaborative postdigital design processes and their focus on futures and the realization of new ideas. Hackathons are a widespread organizational form of designing the future in which digital solutions (such as apps, websites) are preferred. What becomes questionable in the process of designing, however, is the social form of the future. In our case study, we ask *which futures are being designed and by whom*. While empirically, these questions are often answered together, we disentangle them in our analysis of online announcements of hackathons. We show how a feasible, designable, and achievable future is imagined through practices of problematization and scaling. We demonstrate corresponding models of subjects that are preferred for designing the future. With our praxeological analysis, we aim to contribute to an understanding of the micropowers of designing postdigital futures. While in principle, 'everyone' is invited to participate in the design process at hackathons, the announcements already show that only certain participants are desired, and only certain kinds of futures are imaginable through hackathons.

Keywords Future · Sociology of the future · Discourse · Creative work · Digital work · Scaling · Problematization · Qualitative online research · Practice theory · Temporary organization

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Introduction

> Team up and shape the future (AH 130)[1]
> We are inviting hackers, engineers and business enthusiasts to join us on a 2-day tech-adventure. Let's build the future together! (AH 88)

Hackathons are events with an appetite for the future. They are considered an organizational technique of invention in the special blend of innovation and entrepreneurship, and are also used as a corresponding procedure by companies. Participants are asked to work in teams on solutions to 'challenges' in a limited time span, creating ideas and prototypes which did not exist before. But their orientation toward the future transcends mere individualized prototypes; as apparent in the quotes from their announcements above, hackathons are repeatedly related to a general future—of society, sometimes even of the entire planet. Here, the future of contemporary societies appears as an open and shapeable horizon. But how will these futures be shaped concretely? Which social contexts, situations, and sociotechnical imaginaries are at work here?

To explore the ways in which hackathons design futures, in this paper, we ask which futures are being created and by whom. Used in the environment of innovation-driven economies and civil society, hackathons are good examples of collaborative postdigital design processes and their focus on futures and ideas. Designing prototypes, as a pivotal focus at hackathons, is an important form of producing the future. At hackathons, digital solutions (such as apps, websites) are preferred to the design of ideas for the future. Yet, as an organizational technique, the events combine technological and non-technological elements of practice. Both a technology-based approach to the challenges posed by hackathon organizers and the challenges themselves are taken for granted in the design practices at hackathons. What becomes questionable in the process of designing, however, is the social form of the future.

With our analysis of hackathon announcements, we want to contribute to the understanding of the micropowers of designing postdigital futures. These announcements are not only about designing the future, but announcing itself is a practice (like promising, prototyping, planning) in which the future is shaped in the present. Looking at the sheer number of hackathons announced for Germany alone, designing postdigital futures appears as a distributed practice. In general, 'everyone' is invited to participate in this design process, but it becomes clear that already before the events, only certain participants are desired. Also, only certain kinds of futures are imaginable through hackathons.

[1] This is an anonymized reference to our dataset (announcement/hackathon/number); see section 'Methodology: Methods and Case'.

'Hacking the Future': Hackathons and Future

Hackathons aim at designing the future: originating from an IT background, the event format is used to generate solutions to problems of different scales and characters, including—and often combining—technological and societal issues. Today, a wide range of contemporary organizations host hackathons internationally[2]: their relevance as an organizational technique is based on the claim to develop new (and marketable) ideas in a collaborative design regime under conditions of scarcity (time, people, labor, knowledge, money), as well as to facilitate networking opportunities in the New Economy.

Designing is an important form of producing the future, which means that novel artifacts—in the case of hackathons 'prototypes' (Dickel 2019), mostly for apps— are being produced in this process, as well as practices, ideas, technologies, people, relations, etc., which take part, may be changed, appear along the way, or are affected by these processes. Hackathons appear as organized routines of bringing 'present futures' (Luhmann 1976) into life and can be considered as 'future-making practices' or 'future practices' (Krämer 2019; Wenzel et al. 2020).

Similar to hackerspaces (Murillo 2020), hackathons prefigure technopolitical futures. While a sociology of the future initially focused on the historical shifts in the imaginations of the coming (Beck 1992; Koselleck 2004; Luhmann 1976) and the broad brush of societal developments, it now also focuses on the inherent modes and power relations in the production of the future. This places the practices, discourses, and objects that are part of 'future imaginaries' (Beckert and Bronk 2018; Mager and Katzenbach 2021) at the center of research on future making and—similar to what has been pointed out in the context of postdigital (Macgilchrist 2021)—sensitizes to the sociomaterial muddiness of the engagement with the future as well as the fundamental embeddedness of practices, discourses, and objects within the ecologies of the future (Krämer 2022; Michael 2017). It also indicates the simultaneity of different temporal and spatial reference dimensions (Bachmann 2021), the importance of narrative and communicative processes for the production of futures (Gibson 2011; Leyland 2016), and the future as a resource (Esposito 2018).

Not only are hackathons aimed at social causes, but they also evoke a civil society (Johnson and Robinson 2014). It is the collaborative design process that is at the root of the success of hackathons as what has been called 'the smallest cell of the innovation complex' (Zukin 2020: 29). Creating prototypes and creating communities are thereby intertwined. In this context, Zukin and Papadantonakis (2017) describe the ritualistic character of the events, Endrissat and Islam also emphasize the 'provisional, relational, and affect-rich form of association characteristic of contemporary forms of organizing' and the potential of hackathons to create a 'desire for community' (2022: 1021). Participants in hackathons can be seen as practicing participation in digital culture, or more precisely practicing 'entrepreneurial citizenship' (Irani

[2] In this process of proliferation of hackathons, or their 'mainstreaming' (Taylor and Clarke 2018), a lot of evaluative research is concerned with how to organize innovation processes. For a recent literature review, see Heller et al. (2023).

2015). The related processes of subjectification have also been analyzed in related organizational forms, including events such as bar camps as well as the physical installation of specialized 'hackerspaces,' 'hacklabs,' 'makerspaces,' or 'fablabs' (Mersand 2021). The latter have been highlighted as educational contexts (Barton et al. 2017; Bettinger et al. 2020) and particularly in hackathons organized by educational institutions, participation is linked not only to idea generation and networking, but also to peer-based, collaborative (and more informal) modes of learning, (Lara and Lockwood 2016; Nandi and Mandernach 2016).

Yet, a mostly feminist critique of hacking practices, spaces, events, and subjectification points to inequalities related to gender (Paganini and Gama 2020; Richterich 2019), age (Kopeć et al. 2018), disability (bell et al. 2020), and their intersections (Sanford 2020), as well as addressing racism and drawing attention to hacking in the Global South (Beltrán 2020; Nguyen 2016) and non-Western contexts (Ames et al. 2018; Murillo and Kelty 2017). Critique also takes the practical form of feminist hacking (Dunbar-Hester 2022), hackspaces (Toupin 2014; Wuschitz 2022) and hackathons (Richterich 2022).

To sum up, there is a growing body of research on hackathons in terms of innovation as well as participation in designing the future. Our analysis of how hackathons taking place in Germany are announced contributes to this: with our study, we show how already at this 'entry point' to the sites where the future is collaboratively designed, it is already (pre-)formatted *which future is being designed by whom*.

Methodology: Methods and Case

In this paper, we look at hackathons as a case of designing postdigital futures. Our praxeological approach to hackathons reconstructs members' perspectives and practices of designing the future. We aim to show the multiple and practical entanglements between ideas, technology, and people in the production of the future. In this paper, we focus on the online announcements of public hackathons.[3] Looking for the future at hackathons, it becomes clear that it is a, if not *the*, recurring theme in their different practices, media, and modalities: in the opening presentations, the team formation, the team work, or the closing pitches, even during the lunch breaks, there is a background 'murmur' about what is to come—and how what happens at hackathons contributes to this. Still, there are also particular instances in which the future is directly addressed, such as the final presentations and the hackathon announcements; in this paper, we focus on the latter.

We consider announcements as performative, since they, among other things, recruit participants, shape expectations, promote the hackathon format, introduce the organizers, etc. These mostly short texts usually appear on digital event platforms, some of which specialize in hackathons, in part also on video platforms and

[3] The data derives from a collaborative research project based on different kinds of data from different hackathons in Germany (such as ethnographic research, interviews, or document analyses). The authors thank their collaborators in the research network which was funded by the German Research Foundation (DFG).

on the organizers' websites.[4] They display a title, an announcement text, often links or hashtags, and sometimes visual material (like logos). They form part of designing the future at hackathons; as documents, the announcements provide information about the organized social practices from which they originate or to which they refer (Garfinkel 1984: 192): 'Reporting procedures, their results, and the uses of these results are integral features of the same social orders they describe.' Events such as hackathons rely on the formation of functional ad hoc groups (Jones et al. 2015). Thus, their announcement plays a central role in recruiting participants. We are particularly interested in their 'recipient design' (Sacks et al. 1974: 727), referring to the methods by which they anticipate, address—and ideally recruit—certain individuals as potential participants.

There are three levels on which postdigital futures are designed in these documents. First, announcements discursively create a shared timeframe, e.g., by referring to a future event, inviting participants, and making a 'promise' to hold the event in the future. In this sense, an announcement already performatively designs a shared (near) future. Second, the announcements already contain ideas *about* postdigital futures and their design at hackathons in a condensed form: as researchers, we are not the only ones asking *which futures are being designed by whom*, these questions structure the announcements, too. For example, hackathons have names that advertise them as distinct events to potential participants: 'she.codes Hackathon Berlin 2019' (AH 12), 'E-Mobility Hackathon Munich' (AH 10), 'Connect The #Pott' (AH 9), 'KIT AI Minihack' (AH 5), 'Coding Leipzig Summer Hack' (AH 2), 'CGI Meetup #4-Data Science Learnathon' (AH 18). Typical references in the titles include a location, a topic ('e-mobility,' 'AI'), a host organization ('KIT'), or a series of events (#4), which are elaborated on in the announcement texts. Third, announcements structure expectations: they prepare and (pre-)format the events in a practical way. As part of a social sequence of events, they help to shape what will be done and who will participate in the announced hackathon: while they do not determine who will participate or with what expectations, who is addressed in the announcement and how *can* make a difference in who shows up at the hackathon. From an organizational practice perspective, participants as well as hosts will connect to practices leading up to the event, but they will do so in different ways empirically. Thus, in line with the research on the postdigital, we do not want to oppose on-site practice and discourse: online activities such as announcements are a part of the field, but they occupy a special position within it—because hackathons are all about bringing participants together in the here and now.

Analyzing Hackathons: Designing Which Futures?

What are the futures that are envisioned, and what are the 'future imaginaries' (Mager and Katzenbach 2021) at hackathons? Looking through the announcements, it is striking that hackathons treat their challenges as solvable problems. This came as a

[4] For the year 2019, we counted 142 hackathons in Germany on the main platforms (eventbrite.com, devpost.com, hackathon.com). Some announcements are published in English, some in German, possibly indicating which languages are spoken (primarily) at the event.

surprise to us, as the hackathons we looked at tackle problems like 'climate change,' 'refugee crises,' and 'the challenges of digital transformation.' But they treat them not so much as catastrophic scenarios, but rather as a realm of opportunities—as problems that can be tackled to change the future—and it is always a change for the better. This pragmatic and saliently optimistic approach is typical of the hacker and maker scenes from which hackathons emerge. They work with a notion of technology as an opportunity (more than a resource) for problem-solving (Richterich 2019: 1004). Now, in addition to the start-up scene, other actors, coming from civil society, business, and even the state are addressing futures as shapeable entities in their hackathons.

Feasible, Designable, and Achievable Futures

A closer look at the announcements reveals different dimensions of this optimism. First, hackathons operate with a *feasibility of the future*. Problems at hackathons are treated as puzzles for which resources seem endlessly available. In the rare cases where they are lacking, the hackathon itself compensates by making them the very subject of the hacking. Because hackathons work with prototypes and are mostly about ideas, practical limits on resources such as people, money, data, technology, and so on are mentioned, but placed on the backstage. An example: 'Use our lab automation and synthetic biology toolset to prototype tomorrows clinical processes to solve the antibiotic crisis with personalisable therapy and clinical hygiene concepts' (AH 104).[5] Second, a glance of aesthetics comes into play by stressing the general *designability of the future*. At hackathons, it is usually not questioned whether an intelligible and usable form can be found. The link between an idea and its form (as a prototype) is taken for granted, although it is worked on, and this applies to the backend as well as the frontend of the designed prototypes. For example, '[o]ur hackathon will gather a thriving community of people who shape the future of AI' (AH 1). This focus on form can be witnessed on several levels: in the ways 'narratives' (Richterich 2019: 1020) are built around the project or the prototype's frontends, as well as in the way pitch presentations are already imagined in the announcements, the solutions are almost self-evidently linked to a form. Third, hackathons imagine their results in relation to time. The solutions that hackathons focus on are not there yet, but they are close, just a period of intensive hacking away. Such an *achievability of the future* focuses on the transformative aspects of the event. It is the intensive involvement that converts problems into solutions: 'Let's hack during an entire week-end … to help and solve … problems [that] will have a real impact for our planet' (AH 83). The intersection of these three future dimensions imbues the events with a fundamental design optimism. At the level of linguistic practice, this corresponds to a semantics of possibility and change that emerges at hackathons. The announcements speak of 'opportunities' or 'development paths'

[5] Spelling mistakes are not the result of our inattention in copying the data, but appear in the data, and as such are a symptom of language use that can be considered typical of online communication.

of social and personal changes brought about by the event. At the same time, the futures that appear here are related to broader social issues and debates. Especially the so-called focus-centered (Briscoe and Mulligan 2014) hackathons refer to futures *for everybody*.

As the announcements make clear, hackathons are presented as a form of organizational practice: the future does not emerge exclusively by chance, but can be influenced by means of organizational routines, actors, and media. Working on the future is interpreted as innovative, daring, and difficult—it needs support: 'Does your idea seem too crazy? Is the challenge too intimidating? You don't have enough expertise? Don't worry' (AH 1). The future (of AI in this example) appears manageable through group-based, supported work on it, which takes place in the community of the best and is methodologically controlled. Hackathons recommend themselves as a 'future practice' (Wenzel et al. 2020), a technique of future making. In this sense, they can also be understood as a 'promise' (Bachmann 2021) of a better time that can be achieved by conducting hackathons. In the following, we discuss two ways in which hackathons address the task of bringing feasible, designable, and achievable futures to life: first, by bringing together problems and solutions; second, by scaling work.

Naming Problems, Focusing Solutions

Principally, hackathons address the future by looking for solutions. This means identifying existing problems which can be solved as challenges. These problems are already stated in the announcements, in general but urgent terms. Strikingly, the texts often begin with an outline of the problem. The very first lines sketch out a pressing challenge for society or sub-sectors: 'Students, doctoral candidates and young professionals in and around Berlin! If you believe that a sustainable energy world is possible, then you're invited to participate in the Future Energies Hackathon 2019 in Berlin' (AH 22). This is a good example of how complex problems are shaped to make them applicable for hackathons. Problems are first formulated in general terms, here in the possibility of 'a sustainable energy world' (AH 22), suggesting a non-sustainable counterpart as an existing problem. This generality makes it possible to present the object of scrutiny in a positive manner. That means problems are neither presented in their details, nor with their unknown or uncertain aspects, but rather as an identifiable, albeit very general, object. So, the huge complex of sustainable energy production is reduced to 'a sustainable energy world' (AH 22) (whatever that may be). In the same direction of generality, problems are presented as self-evident or fact-driven, e.g., the claim that '50.000 people die every year' (AH 104, see below) underlines the problem with a supposedly factual figure, closely linked to the world of science.

Also, hackathons are presented with an urgency that highlights the challenges hacked at the events as problems that need to be addressed *now*. Problems at hackathons are presented as contemporary issues, as shared and highly current problems. Whether presented as factual or personal ('if you believe,' see above), the issues typically addressed at hackathons are familiar to people who are witnessing the now. For this reason, the announcements can simply start with a call to everybody within broad (professional or biographical) groups (such as students or young

professionals), and then jump directly to the topic: 'if you believe that…' (AH 22) or 'in times of…' Such a phrasing points to a shared body of knowledge. Also, the announcements are filled with up-to-date concepts like 'innovation,' 'solution,' and 'digitalization' which indicate the topicality of the hackathon's concerns. Through this generality and urgency, a shared present is established in which the future is imagined as a form to be designed. The generality and their contemporary status display a claim to the legitimacy of the announced event: to contribute to broad questions, the answers to which will influence the future.

Thus, problems are closely linked to solutions: 'And find a solution to (almost) every problem' (AH 4, translated). It is not just a matter of 'knowing about problems' but of 'solving problems.' Often, problems are explicitly linked to personal investments in solving them. The announcements state that the problems require personal involvement, using inviting formulations like 'join us,' 'if you believe [too]' (AH 22), 'you have an idea that could shape the … future' (AH 121). At the same time, the involvement in hackathon topics effectuates successful solutions: 'to help and solves problems and will have a real impact for our planet' (AH 83). Typically, these temporal 'problem-solution-constructions' are subsequently transformed into concrete work tasks, the so-called challenges which are worked on at hackathons. This transformation can already take place in the announcements. One example:

> Challenge 1: Hacking Antibiotic Resistance: 50 000 people die every year from multidrug resistant bacterial pathogens. Antibiotics are failing as the one-drug-fits-all concept was outsmarted by evolution. Today, diagnose and treatments can be tailored individually for every patient needs. Use our lab automation and synthetic biology toolset to prototype tomorrows clinical processes to solve the antibiotic crisis with personalisable therapy and clinical hygiene concepts. (AH 104).

'Challenges' are a first step in more precisely addressing problem definitions and positioning hackathons as a solution technique (Lodato and DiSalvo 2016). In the example above, the direct pairing of existing problems ('multidrug resistance') and solution approaches ('prototype') is particularly striking. Through the direct prompt 'use,' the previously stated problem is brought together with a virtual (since potentialist) solution and subsequently its scope is marked as a future solution ('to prototype tomorrows clinical processes to solve the antibiotic crisis,' AH 104). Hackathons aim at the development of solutions—or in the words of an organizer: 'Nobody builds a product … for the sake of the product. Rather it is always the solution to some problem' (translated interview transcript, IW-Hack-05).

Scaling Work as Collaborative Future Practice

As hackathon challenges and their problematization in designing futures show, hackathons are concerned with problems which transcend the local event. One of the achievements of hackathons is to treat future solutions as solutions to a problem and to focus complex constellations on this problem. However, generally in line with Michaels' (2017) 'little and big futures,' each event simultaneously processes local and (more) global futures. We understand this practical connection as scaling work.

In the announcements, we see futures on different scales. Hackathons' often work with problems of a grand scale. For example:

> Humanity has come far, but there remain many issues and injustices in society. We believe that, leveraging technology, we can solve many of these issues and use it for social good. We want to provide a place for creative ideas which will make our planet a better place to live for everyone. (AH 100)

In this example, the future of 'our planet' is addressed, linking it (and 'us') to 'humanity' as a whole, as well as to 'society' and 'everyone.' This collection of nouns forms an (anthropocentric) idea of a whole, but problematizes 'injustices'—and, more vaguely, 'many issues.' While this extreme case of scaling is not atypical for hackathon announcements, there are also grand but smaller scales which address the future of a problem field, such as 'the future of AI' (AH 1) or the 'home of the future' (AH 120). It seems that problem fields are scaled up and valorized *through* their rhetoric link to 'the future.'

In the announcements, different scalings of the future get connected. As Lodato and DiSalvo (2016) argue, announced problems can change in the course of a hackathon; indeed, even more, this kind of simplification to exactly one problem also holds pitfalls, since the multiple problem references in the addressed major problems (climate, mobility, antibiotic resistance, etc.) are difficult to keep under control. For one, hackathon problems can be of a medium scale from the get-go (like above: AI, hearing, living). Second, sometimes problems are scaled down by challenges in the announcements (as shown in example AH 104). Here, the problem—defined by its prevalence, inevitability, and fatality—is scaled down immediately by the reference to medical practices ('diagnosis and treatment') as well as to material arrangements ('the lab') and practices ('prototyping') for designing the future ('tomorrow's clinical processes'). Third, the announcements also mention various practices which are relevant to hackathons on smaller scales. They include, for instance, 'coming together,' 'hacking,' 'competing,' 'devoting oneself,' 'seeking mentorship,' and 'judging.'[6] These organizational practices also imply a scaling work that is central to hackathons: by scaling *down* to the level of practices, work on the future becomes manageable. Similarly, Meilvang et al. (2022: 498) discuss a rescaling between the global and the local (in their case, jurisdiction) as important for 'inter-professional coordination over trans-local and not yet fully codified jurisdictions,' which seems relevant to the field of hackathons where participants come together temporarily.[7]

Scaling work is a collaborative practice. Generally, the practices typically mentioned in the announcements showcase a directionality that 'binds' participants together, which can be demonstrated with this quote:

[6] We also observed these practices in our research at hackathons. While the ethnographic approach allows us to reconstruct how these practices actually take place, the analysis of the announcements helps us to understand how this scaling work is understood in relation to the design of the future.

[7] Researchers are also concerned with their own scaling work (Nicolini 2009; Ribes 2014).

> Hack along that story, no matter your grade of experience or your favourite tech stack. This hackathon is purely member-oriented, it's about having a good time, to add some functionality to the hub, come up with a great frontend, to discuss your ideas, the architecture and their potential. There'll be no external "judging", the crowd chooses who'll get most karma points for finishing their project. Coding Earth team members and technology evangelists will be around to get you onboarded. (AH 2)

Participants are asked to 'hack along that story,' (AH 2) 'come up with,' 'add,' 'discuss,' and 'judge' each other. By 'coming together' (to work), they transcend individual talent (which is still expected, see below) or creativity. Based on individual ideas, 'hacking along' is conceptualized as a communal and progressive process. It includes a 'trial and error' mode, which has been widely discussed in research on creative work and innovation (Janda 2018; Krämer 2012; Trischler 2021), and embeds it in an organized process. This includes collaboration and competition (to varying degrees), which we will discuss further down. Also, this work is supported by the hackathon's organizational structure or designated staff ('get you onboarded'). The presention, discussion, and evaluation of ideas is also central. In this sense, hackathon organizers and participants are 'practice theorists': they display a belief in practices and their potential to bring participants together and facilitate their designing.

Plus, the different scaling practices for working on the future share—what we call—a 'playful methodicity.' This means that on the one hand, as methods they imply an intentional use, rule-based, or at least regular in the realization of expected outcomes. On the other hand, these methods are characterized by a certain openness (also in the sense of possibly being transformative—up to subversive or rule-bending) and partly leisure-oriented.[8] With these forms of scaling work, futures become 'hackable.' In a similar way, Yaneva (2005) shows for architectural design that different practices of scaling are relevant in the designing of future buildings: they imply jumping between scales in different 'rhythms,' in order to engage with different materials. To sum up, the announcements connect smaller and larger futures by focusing on specific practices and solutions to problems. This scaling work is not exclusive to the announcements; it can also be observed, for instance, at the final pitches of hackathons (Krämer forthcoming). But what we can see here are the numerous ways in which large topics are connected to small ones, technology-based practices are intertwined with other community-based, directed practices: postdigital futures are scaled down with the help of postdigital practices.

Analyzing Hackathons: Who Designs the Future?

We now focus on the question of who participates in the design of postdigital futures at hackathons. Following Irani's (2015: 800, original emphasis) note that 'hackathons *sometimes* produce technologies, and they always, however, produce

[8] This juxtaposition, or rather opposition, can also be found in the definition of games (cf. Johnson 2022: 3).

subjects,' we look at practices of subject invocation in hackathon announcements. Here, in principle, a general public is addressed; however, the placement and wording of the announcements (pre-)format suitable participants: as members of a community and as everyday problem solvers. These aspects define the shared project of organizers *and* participants, in creating digital futures as futures *for* the community—which can be scaled to different levels.

Playing a Part: Participation and Community

Potential participants of hackathons are addressed as part of a pre-existing community which will materialize at the advertised hackathon. This relational subjectification combines an idea of *connecting with others* as well as *contributing to a shared project*. This is exemplified in an announcement that asks: 'Which part will you play?' (AH 45). In general, this community is composed of both: a 'you,' participants who are invited to contribute *and* who are already part of a particular community, and a 'we,' the organizers who are also part of this community. While participants and organizers, particularly in less 'member-oriented' cases, may definitely not 'be the same,' in terms of the hackathon they are part of the same project.

The announcements speak directly to potential participants: 'Does your idea seem too crazy? Is the challenge too intimidating? You don't have enough expertise? Don't worry.' (AH 1) In this example, the address takes the form of a question, we also often find requests, usually in the imperative: 'Compete with the best and hack your AI solution' (AH 1); 'If you have an idea, need support or want to chat about the future of media over a coffee: come by' (AH 4, translated). This direct address to readers, distinctive of hackathons, labels certain *subjects* as participants. A 'you' is constructed in relation to a group that is invited to become a part of a collaboration, competition, or support. Although this group will materialize as a unique ensemble of participants at each hackathon, the announcements aim to recruit its members from particular (imagined) preexisting social groups. Often, social groups are named outright, such as students or professionals from different technical fields ('We are looking for developers, data scientists, cyber security experts, machine learning experts and other IT experts' AH 49). Yet, these professional affiliations alone do not suffice to understand the community-oriented subjectivation of members. It is the combination and the references they appear alongside that are relevant. It is a community of competent members coming together, defined by a future-oriented project, for example 'a thriving community of people who shape the future of AI' (AH 1). This 'factual' statement of a present state addresses people who already are (or feel they are) part of a community which is defined by their common goal of designing the future. Even the names of hackathons divide their readers into those who can (at all) make sense of central concepts, both in terms of the event format and the central themes, and those who do not understand the corresponding classifications. Competent readers recognize references to specific social communities (such as certain programming languages or subject areas) or possible companies (of interest to participants) in the abbreviations, the numerous

anglicisms in the announcements in German, the composites, and the use of computer language characters.

Part of the announcement is an introduction of the organizers, in which they display a communal form, too. The self-descriptions have in common that they form a 'we': 'We love innovation' (AH 4, translated); 'we are looking for you' (AH 49); 'We also build a hub website' (AH 2). This formation of a narrator in the plural makes the announcement accountable and exhibits a certain informality of the context, defined—at least to some extent—*personally*. The organizers speak in unison in the announcements, often to express a shared interest in the topic of the hackathon. In accordance with the issued invitation, they are also defined through their capacity to gather the community of invitees: 'Our hackathon will gather a thriving community of people who shape the future of AI' (AH 1). Backing up this organizational capacity, the 'we' is usually combined with descriptions of the institutional affiliations and connections of the organizers, e.g., 'hackathon x is a cooperation between Hack and Söhne, museum x at the Badisches Landesmuseum, and Allard Pierson at the University of Amsterdam.' (AH 7); 'We are a team of innovation experts, media makers and event managers and work every day to bring more innovation to the media industry' (AH 4, translated). Sometimes (and in some announcements more than others), the 'we' completely disappears behind such organizational descriptions.[9] Our point is that these texts not only preformat imagined participants to understand the announcement, but also communicate a certain discursive expertise preferably to be demonstrated by the organizers. This is part of the solicitation of suitable participants. It is not just about professional or technical expertise: the organizers demonstrate their expertise in supporting the problem-solving process during the hackathon. This also includes the communication skills demonstrated in the announcements.

Finally, as sometimes invoked in the announcements through this direct invitation, hackathons imply temporarily coming together. Hackathons create a 'desire' for community (Endrissat and Islam 2022) and they do so through organizational means. According to the announcements, becoming a hackathon participant implies an interest in—or even participation in—civil society. The shared project transcends the local event. Organizationally, hackathons can be defined by their 'loose membership' (Endrissat and Islam 2022: 1020): a temporal form of coming together for the shared project. As we have argued, both 'you' and 'we' format organizers and participants as subjects in the hackathon announcements, and they do so as part of a community with a shared project. The local gathering of a community is embedded in broader ideas about civil society and commonwealth—as well as practical cooperation with public institutions. For example, the invitation to 'coders of planet earth' (AH 2) imagines a group unified by its global orientation. The activity of coding, but even more so the particular group of coders, is defined by its global appeal, not by its technicalities. In this example, however, the contribution to the larger scale is only implicitly framed as a social unit. In sum, following the announcements of hackathons, the work of designing shared futures is delegated to individuals and their individual interests in a shared project.

[9] Thus, varying in style, some of the announcements also make themselves recognizable as institutional communication (Atkinson 1982).

'Everyday Heroes': Coders, Makers, and Creative People

Hackathon participants are not only imagined as contributing to and connecting to a community and civil society, but they are also addressed as 'active subjects' such as 'coders,' 'makers,' or more generally 'creative people.' As we argue, this 'activeness' defines their relationship to the world more generally, in a sense of 'resonance' (Rosa 2019). While hackathons are the preferred site for designing postdigital futures, they can also be shaped in the mundane lifeworld by 'everyday heroes.' We think this term from one of the announcements (AH 45) is telling, as it concisely connects the exceptional (and big) with the mundane (and small). Hackathons, then, are imagined as a practice—and a rehearsal—of design through which the future can enter the everyday. Participants are central to this transformative process.

While the invitations to hackathons are often formulated quite openly, addressing a lot of people, or even 'everyone,' their recipients are quickly narrowed down. For example, a hackathon on 'Android coding skills' writes:

> Who can participate? Everyone is welcomed to the event, from coders to graphical designers, from project managers to creative people, in general, anyone who is interested in helping create an Adroid App. You don't necesarily need any previous Android development experience, our main idea is to form teams where everybody cand fit in, and bring their own contribution. (AH 140)

This initially maximally inclusive invitation to 'everyone' is quickly put into perspective in the following sentence, when only a specific selection of professions, all from the technological fields and the creative and cultural industries, is invoked, and then a certain emotional orientation is desired ('is interested'). Apparently, not everyone is addressed in the same way. There are certain preferred forms of expertise, some of which can be categorized professionally ('Android development experience' or 'creative' skills), while other qualities such as being interested, the ability (or capacity) to 'help create,' 'fit in,' and 'contribute' are softer. Thus, perhaps surprisingly given the tech orientation of its practices outlined earlier, suitable hackathon participants are not exclusively defined by their tech skills—even at a hackathon specifically aimed at 'Android coding skills.' 'Little' or even the absence of (particular) tech skills and experience is even explicitly de-problematized (see also AH 2).[10] The 'softer' skills addressed and also point to preferred recipients who know their own strengths (and weaknesses). This is also evident in other announcements, where participants are usually invoked as 'the best' (e.g., 'Compete with the best and hack your AI solution,' AH 1).

Even more importantly, the address in the announcements also implies a shared knowledge of problems that hackathons tackle: 'Students, professionals, and startups! Come and face four exciting energy efficiency challenges and create sustainable solutions to fight climate change!' (AH 116) Here, being aware of problems in the context

[10] This de-problematization may be more common for educational hackathons and events focused on societal challenges, in contrast to hackathons used by companies to recruit new coders where (advanced) tech skills are required.

of hackathons also means acting on these problems. Thus, the subjectification draws on existing forms of subjects such as 'good hackers,' or, more broadly, hacking as a technical, aesthetic, *and* moral endeavor (cf. Coleman 2013): combining tech skills with social awareness. In each case, the participants are identified as active ('interested in helping to create,' AH 140) and self-motivated. As Irani (2015) argues on the basis of an ethnographic study, hackathons produce 'entrepreneurial subjects.' This relates to the broader discussion of the 'entrepreneurial self' (Bröckling 2015) as a form of neoliberal subjectification, implying subjects who are proactive in pursuing their own professional careers—and, more generally, economic production. In the case of hackathons, this can be seen in the invocation of an interested, self-determined (e.g., 'Feel free to'), capable, and active recipient. These subjects have ideas and are looking for ways to work on them and implement them. The basic competency of hackathon participation is an inner drive to create, which also resonates with self-employment in the creative industries (McRobbie 2018). What seems to be important here is not in what respect this creativity is present, but that it can be used with the aim of creating ideas and prototypes collaboratively. An atmosphere of co-production develops: 'work together with extraordinary people' (AH 110), 'form teams where everybody cand fit in, and bring their own contribution' (AH 140), redefining the active subject as a team player. Moreover, this invocation of entrepreneurial selves also includes emotional qualities such as a sense of belonging as well as emotional competencies already mentioned. Part of this is the 'facing' challenges, a kind of bravery in face of 'big' problems.

Hackathons, as a site to design the future together, are integrated into contexts that transcend the concrete situation in their announcements, possibly even the individual person (as an idea collaborator). What is produced is not just for oneself, but for the next 'big thing' (the big dream of innovation departments), in a larger thematic framework and in a network of people. A closer look at the announcements shows that even if hackathons appear to be inclusive forms, the bottom line is that not everyone who is addressed can participate equally. Here, this kind of 'aspirational labor' (Duffy 2017), i.e. labor that is self-entrepreneurial and at the same time aligned with highly affected structures of expectation, aims to commit subjects to the hope of producing something that has a higher shelf life than the hackathon. This orientation is a form of designing the future—to be part of the significant idea, of something greater. In this way, there seems to be a smooth transition from a 'good hacker' to entrepreneurial self which manifests itself through hackathons. To sum up, these discursive forms of subjectivation in hackathon announcements imply *active subjects who can design the future together* ('everyday heroes')—and thereby transform the designability and scalability of the future we suggested in the first part of the paper into a practical doing.

Conclusion: The Who and What of Designing the Future at Hackathons

At hackathons, the future seems feasible, achievable, and designable. In our paper, we have shown the semantics of possibility of hackathons, which is already at work before the events in the recruitment of suitable participants in online announcements.

As an organizational technique, hackathons offer organizable practices for designing the future for a broad group of people. They involve problematizing and scaling (up and down), bringing together members of the community to participate in designing what is to come. Hackathons provide opportunities to design the future 'in microcosm': this is precisely why scaling is at the heart of their 'challenges' and why they recruit teammates. And it is also why it is so important to look at who is recruited for this teamwork and the affective relations it provides. We have shown the logic of the discursive practices in which a designable and scalable future is imagined. Our intention was neither to fundamentally criticize the rhetorical grandeur of the announcements, nor to take them lightly as rhetoric. It is precisely the achievement of imagining and targeting the designability of the 'grand' future and scaling it to the level of a workable task that attracts potential participants of hackathons.

As the announcements make clear, hackathons are introduced as a form of organization: the future does not emerge exclusively by chance, but can be influenced by means of organizational practices. This relates to similar contemporary organizational methods characterized by intensity (such as scrum or data sprints), and, more broadly, to forms of management and rationalities (such as scalability) typical of the New Economy. However, as public events hosted by different types of organizations (not just companies), hackathons are announced and addressed to a broad public. Thus, while announcements provide only a glimpse into the practices and participants of hackathons, they distinctly outline a certain form of subjectification and the social adequacy of their public communication. As has been pointed out elsewhere, it is an entrepreneurial self—motivated, capable, and suitable for teamwork—which is recruited and learns to design in this organizational form.[11] These subjects are also uniquely positioned within and between private institutions, public authorities, and more informal initiatives alike—whose distinction is often circumvented in hackathon challenges and projects. The announcements formulate the goals of the hackathon as shared by participants and organizers: it is their *common* project to shape the future. This is a characteristic of the social form typical of hackathons.

The promise of hackathons lies not only on the level of technology (or technological solutions to problems), but also in coming together to develop those solutions. This is part of the postdigitality of hackathons: forming a team, networking, sharing a space and experiences. It is precisely this practice that goes beyond 'purely, smoothly digital' (Macgilchrist et al. 2023: 2) forms of production. Rather, hackathons consist of numerous collective activities that shape, rearrange and challenge its prototypes. Accordingly, throughout the different elements of the announcements (such as title, announcement, invitation, introduction), it is apparent that hackathons are advertised as *intensive* events: organizers 'love innovation' (AH 4, translated) and are 'technology evangelists' (AH 2), the participants have 'crazy ideas' (AH 1), become part of a 'thriving community' (AH 1) and at the hackathons, one is

[11] Looking at subjectivation practices is not meant to reproduce an ontological difference between human and non-human participants; rather, we aim to show the relations in which subjects appear. Thus, we can ask not only who is excluded in designing, but also which entities—such as 'natural' ones—are rarely featured at hackathons.

supposed to 'have a good time' (AH 2) or compete 'with the best' (AH 1). This represents the rhetorical affinity to methods of self-marketing found in the announcements which is typical of start-up-culture. Moreover, as we have shown, the articulation of a community working on a shared project is connected to specific ideas of shaping the future: if it is mostly apps that are developed at hackathons, one might also ask how these local cooperative productions (e.g., of 'personalisable therapy,' AH 104) relate or contribute to a broader algorithmic society (see Roberge and Seyfert 2016) defined by individualized technological solutions to social problems. In this respect, hackathons can serve as paradigmatic cases that demonstrate a way of approaching the challenges of contemporary societies. The articulated design optimism and the solution capacity on display at hackathons can be critically labeled as (technological) 'solutionism' (Morozov 2013) or a 'solutionist ethic of production' (Nachtwey and Seidl 2017) within digital capitalism. Although we agree with this label and with some of the findings in this line of research, we think that a board-brushed characterization does not do justice to the case of hackathons, nor to the idea of postdigital design, as it is developed in the opening of this special issue (Macgilchrist et al. 2023). Already in the announcements, but at the latest during the events themselves, it can be observed that technology is embedded in practices. It is this practical team play in which the problematizing and scaling takes place, that makes it a preferred organizational technique to address the future. Participants and organizers showcase an awareness of the limits of their power to act, too. This solution orientation can also be taken less literally and read as an expression of a general will to shape things. In his study on prototyping, Sascha Dickel interprets this orientation to solutions and future as an exercise in the basic shapeability of the future by means of technological fixes, which he locates in the belief in a 'technical dispositive' (2019: 97) that appears at hackathons. This relates to our reading of the hackathon announcements as more than mere event announcements, for they first mark an orientation—that of shaping future practice. This is not only a playful (free) pastime, but also an orientation towards dealing with the world and, to a certain extent, its problems. This shifts the future optimism to the beginning of the design process (not to the end). If hardly any of the hackathon's ideas are pursued further (McIntosh and Hardin 2021), the answer to the question of why one participates in this endeavor is most likely not to be found in the participants' conviction to change the world, but perhaps in a shared learning exercise on how to produce and think about creating new forms of coming together. Or possibly, as is maybe more often the case in business-oriented hackathons, in the individual socioeconomic participation in the postdigital future. This makes it all the more important to consider both the messy, contradictory practices in which participation is shaped and the prefiguration of who can participate. Since our research is mainly based on hackathons in Germany, our generalizations point to a German, perhaps even a European context. Referring to international literature, we tried to show possible connections to other cultural settings. In the future, it would be fruitful to continue these reflections, possibly with a more systematic comparative approach.

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