



MASTERARBEIT | MASTER'S THESIS

Titel | Title

„Bringing Chaos to the Order“
The Hackerspace as Enacting a Counter-imaginary

verfasst von | submitted by
Maximilian Karge B.Sc.

angestrebter akademischer Grad | in partial fulfilment of the requirements for the degree of
Master of Arts (MA)

Wien | Vienna, 2025

Studienkennzahl lt. Studienblatt | Degree
programme code as it appears on the
student record sheet:

UA 066 906

Studienrichtung lt. Studienblatt | Degree
programme as it appears on the student
record sheet:

Masterstudium Science-Technology-Society

Betreut von | Supervisor:

Mag. Dr. Astrid Mager Privatdoz.

Abstract

English: Current debates in academia and policy about the ongoing digital transformation are often critically approaching the increasing capacities of surveillance enabled through the spread of digital and information technologies and the willingness by state and commercial actors to exploit them (Zuboff 2019). Specifically, the focus of this work is on the analysis of hacking culture (Coleman 2013) and a hackerspace as representing a *community of practice* (Wenger-Trayner 2005) that actively works on alternative ways to engage with technology that are inherently activist and aiming for social change. The formulation of visions of the future justifying action in the present is part and parcel of the discourse and the realization of current efforts of digitalization in the domains of policy and economy. Main concepts in this research will therefore be the STS based concepts of *sociotechnical imaginaries* (Jasanoff & Kim 2009), *counter-imaginaries* (Kazansky & Milan 2021, Mager 2023) and *vanguard visions* (Hilgartner 2015), which provide the framework to analyze how different imaginaries of the sociotechnical future compete and contribute to the implementation of actual technologies and infrastructure and thereby shape sociotechnical practice in the present.

Specifically, this work approaches the hackerspace as co-constructing a counter-imaginary to the more dominant, hegemonic imaginaries enacted by a few powerful state and commercial actors and analyzes the potential of this counter-imaginary to effect social change. In order to do so, I ask three research questions: First, I ask, **‘What are the counter-imaginaries formed in a German hackerspace and how do they relate to broader hacking cultures?’** – in order to make explicit the specific, local counter-imaginary that is upheld in a single hackerspace. The second question goes, **‘How are these counter-imaginaries co-constituted in the daily activities and practices enacted in the hackerspace?’** – and shows how this counter-imaginary is grounded in, but also shapes the everyday practices taking place in the hackerspace. Lastly, I ask, **‘What are the ambivalences, tensions and challenges that arise in the hackerspace and how are they dealt with, rhetorically and practically?’** – in order to show how the community of the hackerspace copes with the ambivalences and tensions that arise between imagining a future and putting it into practice while remaining embedded in the broader constellations, frameworks and imaginaries that make up sociotechnical reality.

Answering these questions was enabled by the analysis of ethnographic and interview material, conducted at the *dezentrale e.V.*, a hackerspace in Leipzig, Germany. The results make visible how the hackerspace, as a community of practice, enacts a vision of the future that centers the empowerment and agency of individuals in their engagement with digital technologies and new media. Given the focus on mundane practices and interventions that

are pragmatic, rather than opting for large-scale change, the community puts its counter-imaginary into effect, while coping with its own embeddedness into the broader sociotechnical constellations.

German: Ein großer Teil des aktuellen Diskurses in Politik und Wissenschaft über den fortschreitenden digitalen Wandel setzt kritisch mit dem, durch digitale und Informationstechnologien ermöglichten, Potenzial zur Überwachung, sowie mit der Bereitschaft staatlicher und kommerzieller Akteure, diese zu nutzen auseinander (Zuboff 2019). Konkret fokussiert sich diese Arbeit auf eine Analyse der 'Hackerkultur' (Coleman 2013) und eines sog. 'Hackerspace' als repräsentativ für eine 'Praxisgemeinschaft' (Wenger-Trayner 2005), die aktiv an alternativen Wegen arbeitet, sich mit Technologie auseinanderzusetzen, die inhärent aktivistisch sind und auf sozialen Wandel abzielen. Die Formulierung von Zukunftsvisionen, die das Handeln in der Gegenwart rechtfertigen, ist ein wesentlicher Bestandteil des akademischen Diskurses, sowie der Verwirklichung von Digitalisierungsbemühungen in Politik und Wirtschaft. Die Konzepte die in dieser Forschung hauptsächlich Anwendung finden, sind daher die STS-basierten Konzepte der '*sociotechnical imaginaries*' (Jasanoff & Kim 2009), '*counter-imaginaries*' (Kazansky & Milan 2021, Mager 2023) und '*vanguard visions*' (Hilgartner 2015). Sie bilden den Rahmen für die Analyse, wie verschiedene Vorstellungen von der soziotechnischen Zukunft miteinander konkurrieren, zur Umsetzung tatsächlicher Technologien und Infrastrukturen beitragen und damit die soziotechnische Praxis in der Gegenwart prägen.

Spezifisch betrachtet diese Arbeit den Hackerspace als Gestalter eines 'counter-imaginaries', welches im Kontrast zu den dominanteren, hegemonialen Vorstellungen, die von einigen wenigen mächtigen staatlichen und kommerziellen Akteuren vertreten werden und analysiert das Potenzial dieser Gegenvorstellung, sozialen Wandel zu bewirken. Dazu werden drei Forschungsfragen formuliert: Erstens frage ich, „**Welches 'counter-imaginary' existiert in einem deutschen Hackerspace und in welcher Beziehung steht es zu übergreifenden Hackerkulturen?**“ – um das spezifische, lokale 'counter-imaginary', welches im Hackerspace aufrechterhalten wird, zu verdeutlichen. Die zweite Frage lautet: „**Wie wird dieses 'counter-imaginary' in den täglichen Aktivitäten und Praktiken, die im Hackerspace ausgeübt werden, mitgestaltet?**“ – und zeigt, wie dieses 'counter-imaginary' in den alltäglichen Praktiken, die im Hackerspace stattfinden, verankert ist, diese aber auch prägt. Zuletzt frage ich: „**Welche Ambivalenzen, Spannungen und Herausforderungen entstehen im Hackerspace und wie wird damit rhetorisch und praktisch umgegangen?**“ – um zu zeigen, wie die Gemeinschaft des Hackerspaces mit den Ambivalenzen und Spannungen umgeht, die zwischen der Vorstellung einer Zukunft und ihrer Umsetzung entstehen, während sie gleichzeitig in die

umfassenderen Konstellationen, Rahmenbedingungen und Vorstellungswelten eingebettet bleibt, die die soziotechnische Realität ausmachen.

Die Beantwortung dieser Fragen wurde durch die Analyse von Interview- und ethnographischem Material ermöglicht, welches in der dezentrale e.V., einem Hackerspace in Leipzig, Deutschland, erhoben wurde. Die Ergebnisse zeigen, wie der Hackerspace als Praxisgemeinschaft eine Zukunftsvision verwirklicht, in deren Mittelpunkt die Befähigung und Handlungsfähigkeit des Einzelnen im Umgang mit digitalen Technologien und neuen Medien steht. Da der Fokus auf alltäglichen Praktiken und Interventionen liegt und nicht auf groß angelegten Veränderungen, ist die Praxisgemeinschaft in der Lage, ihre Gegenvorstellung in die Tat umzusetzen und schafft es gleichzeitig, mit ihrer eigenen Einbettung in die breiteren, hegemonialen soziotechnischen Konstellationen umzugehen.

Declaration of Authorship

I hereby declare that I have written this thesis independently and have used only the sources and aids indicated. Further, no machine learning tools were used to generate text for this work. All text passages and lines of thought taken verbatim or in spirit from other works are identified by precise indication of the source in the form of annotations or in-text citations. This also applies to sources from the Internet, where the URL and date of access are also given.

Acknowledgements

First and foremost, I would like to thank my supervisor, Astrid Mager, for her valuable guidance and constant support throughout my work on this thesis. Her expertise and feedback helped me immensely to focus my research. I would also like to thank Josefine, Ingo and Susanne for their detailed feedback and careful proofreading of this thesis. Lastly, I thank my friends, study colleagues and teachers for the valuable and helpful discussions and input we had over the course of working on this thesis.

Table of Contents

1 Introduction.....	1
2 State of the Art Hacking - Cultures.....	6
2.1 Surveillance Capitalism.....	6
2.2 Hacking.....	9
2.2 German Hacking Culture and the CCC.....	13
2.3 The Hackerspace.....	20
3 Research Questions & Sensitizing Concepts.....	23
3.1 Research Questions.....	23
3.2 Sociotechnical Imaginaries.....	24
3.3 Counter-imaginaries.....	26
3.4 Vanguard Visions.....	31
3.5 Communities of Practice.....	32
4 Case, Methods & Positionality.....	35
4.1 Case.....	35
4.2 Methods.....	36
4.3 Empirical Organization.....	39
4.4 Positionality.....	41
5 Empirical Chapter - Chaos as a Form of Organization.....	42
5.1 Introducing the 'dezentrale e.V.'.....	42
5.2 Counter-Imaginaries, Values & Ideals.....	47
5.2.1 Hacking, Open Source Software & Empowerment.....	47
5.2.2 Chaotic Forms of Organization & Practice.....	49
5.2.3. Impact & Achievements.....	52
5.2.4 Summary.....	55
5.3 Practices & Activities.....	57
5.3.1 'Hardware for Future' - Enabling Access.....	57
5.3.2 'Techniksprechstunde' - Empowering for Autonomy.....	59
5.3.3 'Chaostreff' - Sustaining Engagement.....	61
5.3.4 Co-Creating Alternative Spaces and Lived Practice.....	63
5.3.5 Summary.....	66
5.4 Friction & Stabilization.....	69
5.4.1 Accessibility/Publicity.....	69
5.4.2 Friction of Values & Contestation in the Imaginary.....	71
5.4.3 Maintaining the Hackerspace.....	73
5.4.4 Summary.....	76
6 Discussion.....	78
6.1 The Imaginary of the Hackerspace.....	79
6.2 Practicing Hacktivism.....	83
6.3 Embracing Ambivalence.....	86
6.4 Findings.....	88
7 Conclusion.....	92
Bibliography.....	96

1 Introduction

– ‘Data is the new oil’ (Clive Humby 2006)

The above quote by mathematician Clive Humby in 2006 is an allegory to the industrial revolution during the 18th century that was driven by the exploitation of crude oil. The phrase points to a transformation of the global economy: Rather than extracting value from processing long-decomposed organic matter into fuel, this alludes to emphasizing the intellectual and affective assets of the labor force in the global production of value (Vercellone 2007). Revisiting the quote in the year 2025 only proves Humby's point, given the continuing digital transformation (cf. Schrape 2021, Plekhanov 2023) and increasing technical capacities to collect and analyze large amounts of data (Lyon 2014). Since the rise of ‘the platform’ (Van Dijck 2021) a select few tech-companies (e.g. Alphabet, Meta, Amazon) seem to have formed monopolies in their respective digital domains and are now representative for an emerging, new mode of capitalist logic as a *cognitive-cultural economy* (Boutang 2011). A good example for the subversive power that lies in instrumentalizing the large-scale collection of data is that of the *Cambridge Analytica* controversy, in which profiles of roughly 50 million Americans were created using their data about their online behavior to deploy individually tailored advertisements and ultimately sway them in their decision of whom to vote for in the presidential election of 2016 (Chan 2020). Even before that, in 2013 the leaks from the then NSA-employee Edward Snowden revealed the global scale of private data collection by US-American state agencies (Greenwald 2013). In short, both state and corporate actors in cooperation, but also independently of each other, increasingly implement and exploit digital technologies and infrastructures to surveil, govern and shape the behavior of individuals and populations (Aradau & Blanke 2022).

Shoshana Zuboff coins this transformation *The Age of Surveillance Capitalism* (2019), where she comprehensively describes the collection and commodification of personal information by large tech-companies, the subsequent mechanisms of determining — but also shaping — behavior, as well as an analysis of how both capitalist and government surveillance practices reinforce each other mutually. These developments only intensify with the increasing implementation of machine learning (ML) technologies, for example in personalized advertising (Boerman et al. 2017), predictive policing (Shapiro 2019) or the security sector (Chan & Moses 2017). In response, these developments have been the concern and topic of academic discourse over the last years, broadly criticizing and problematizing the erosion of individual privacy (Cohen 2013), the exploitation of private, personal data (Wright & Kakalik 1997), the active design of specific, intended behavior in the form of ‘dark patterns’ (Yeung 2017), and the marginalization of groups that seems to be inherent to the algorithmic forms

of sense-making (Kitchin 2014). Yet, this extensive, ongoing problematization of algorithmic culture in scientific but also in public, private and political discourse does not appear to lead to an effective response or pragmatic mode of action to resist or subvert this regime of surveillance. On the contrary — and despite the collective outrage at scandals like those of Cambridge Analytica and the Snowden leaks — public action against this regime falls short of being an actual, large-scale, organized effort. Instead, the dominant experience of surveillance through digital media is one of being powerless in its wake, leading to a sort of resignation. Digital infrastructures have become critical for the sustained operation of a globally connected economy and life, with the actors controlling them positioning themselves as obligatory passage points (Callon, M. 1986) for the participation in this economy. As a result, common responses to the reality of this regime of surveillance mostly refer to either having nothing to hide, or simply not having the capacity, ability or power to do anything against this surveillance. While there is a rather large body of research and critical discourse on these aspects of digital environments (cf. Iliadis & Russo 2016, Lyon et al. 2019, Pickren 2018), the amount of research that actively engages with the creation and sustenance of alternative imaginaries, is much smaller. Nevertheless, with the increasing importance of digital technologies in the practices and lives in globalizing societies, creating and making visible such alternatives is paramount to work toward a digital world that is participatory and democratically enacted (cf. Hilgartner 2015, Kazansky & Milan 2021, Mager 2023), as critically engaging with the problematic aspects of contemporary digital culture remains essential in democratizing digital environments.

Thus, I propose that there is a need for more attention to the possibilities, as well as existing realities of lived and practiced alternatives to the hegemonic imaginaries of a digital world. One example of such an alternative vision of a future is that found in *hacking cultures* described by Gabriella Coleman (2013). *Hacking culture* and the *free and open-source software (F/OSS)* movement envision, practice and ultimately try to enact realities that are in stark contrast to the dominant and hegemonic visions of the few actors that own the platforms of new media (Gillespie 2010). One of the most striking differences therein lies in the liberal values that guide hacking culture, for example, the idea of the general freedom of information and a subsequent invalidation of intellectual property and patent laws. Hacking cultures, as Coleman suggests, are multiple and heterogeneous. Coleman also acknowledges the heterogeneity of locally situated forms of hacking culture, which also serves to situate this work as engaging with a locally situated community and specific form of sociotechnical practices and culture. Following Coleman's (2008) analysis of multiple, partially overlapping '*genres*' of hacker ethics, this work will explore hacking culture, as it is practiced in a German hackerspace. Of special interest here is Germany as there is a long

history and globally influential culture of hacking in the country and in Europe, probably best represented by the *Chaos Computer Club* (CCC)¹, one of the few officially registered hacker organizations that exist (Middleton 2017). The CCC itself, its structures, practices, and influence on European net-politics are the topic of several studies from the social sciences, which provide a valuable ground in conceptualizing activist action in digital structures. Given the complex, decentralized organizational structure of the CCC, as well as the autonomy and heterogeneity of their local representations, what is yet missing from this picture is a study of how hacking culture is lived, practiced and exchanged on an interpersonal, everyday, local level. In this work, I will study how hacking culture — in the spirit of the CCC but yet situated in an autonomous, local subculture — is practiced in a so-called hackerspace, as the smallest, official organizational unit of the CCC but simultaneously as its own, embedded microcosms of hacking culture. Essentially, I will explore and study the practices, knowledge, and exchanges emerging in and around the hackerspace, embodying a lived alternative to the hegemonic digital imaginaries of big-tech companies and governing actors (Richterich 2018).

For this purpose, I joined the community of a hackerspace over the course of roughly four months, starting from April to the end of July 2024. I worked ethnographically and joined the *dezentrale e.V.*, a hackerspace and the local representative of the CCC in the city of Leipzig. Importantly, looking at a small local community showed how individuals practice and enact alternative visions, how they develop, maintain and distribute these visions, how they organize into broader networks and engage with other actors, but also how they become contested or subverted (Kim 2015). I argue that it is in the small, everyday actions, interactions and social practices in which valuable knowledge about the conceptualization of activist- and/or subversive action can be found. The guiding questions I ask in this work aim at three dimensions: (1) To make explicit the counter-imaginaries to be found in the ongoing of everyday hacking practices, (2) to analyze the reciprocal relation between the imaginaries and the practices present in the hackerspace and (3) to make visible the ambiguities and tensions that emerge along the co-production of lived practice and the construction of imaginaries.

This work engages with individual autonomy, privacy and freedom while living in a world that is becoming increasingly digital. Specifically, I investigate modes of action that enable individuals to not only develop sensibilities for the critical implications of digital economies, cultures and forms of governance (Arrieta-Ibarra et al. 2018), but also to conceptualize ways to participate in determining how these sociotechnical entanglements unfold (Baack 2015).

¹ <https://www.ccc.de/en/home>

Coming from the discipline of Science-Technology-Society (STS), the angle taken here will emphasize the co-productive character of social practices, scientific developments and technological materializations (Jasanoff 2004). As such, rather than constructing an argument based on technological determinism, the work will be grounded in an empirical investigation of how specific forms of lived, social practice shape – and are shaped – by the technologies that are part of this practice.

The second chapter of this work *State of the Art - Hacking Cultures* outlines the current discourse in the contemporary, scholarly discourses concerning the critical assessment of digital structures as addressed in this work. This includes a critical investigation of contemporary, digital sociotechnical structures of surveillance and their implications for governance, individual privacy and personal autonomy. The second part of the chapter will be the introduction of *hacking* as a form of counter-culture (Turner 2006), politicizing and critically engaging with digital technologies and infrastructures (Gutierrez & Milan 2017). The chapter also brings a more specific focus on hacking culture in Germany and the context of the *Chaos Computer Club* (CCC), before concluding with the introduction of the hackerspace as the empirical case study that is examined in this work.

The third chapter, *Research Questions & Theoretical Approach*, introduces the research questions guiding this work. Specifically, I aim at making explicit the counter-imaginaries held in the hackerspace and their relation with the practices taking place in it from day to day. The chapter also introduces a range of sensibilities from the field of *Science and Technology Studies* (STS) that will guide the analysis and discussion of the empirical material used to answer these research questions, namely those of *Sociotechnical imaginaries* (Jasanoff & Kim 2009), *counter-imaginaries* (Kazansky & Milan 2021, Mager 2023) and *vanguard visions* (Hilgartner 2015). Contributing to and instrumentalizing these concepts, the research questions I pose ask first, how the counter-imaginary of the hackerspace can be described. Secondly, I ask how the everyday practice in the hackerspace unfolds. The third question aims to uncover the ambivalences and tensions in the counter-imaginaries of the hackerspace that emerge in these everyday, often mundane practices.

Following these sensitizing concepts, chapter four – *Case, Methods & Positionality* – introduces the specific case of this work in more detail. Grounding this work is an ethnography conducted together with the members of the *dezentrale e.V.* in Leipzig. I additionally conducted two open-ended interviews with two members of the *dezentrale e.V.* in order to contextualize the experiences I made in the community. Following the introduction of the specific field of study will be a description of the methods used to analyze and

interpret the data collected in the field and the interviews in order to conclude the chapter with a short reflection on my positionality doing ethnographic work.

The fifth chapter, *Empirical Chapter - Chaos as a Form of Organization*, represents the empirical body of this work. Here, I provide a description of several of my experiences during the fieldwork, juxtaposed with passages from the interviews I conducted. The chapter is organized into three subchapters, each corresponding to one of the sub-questions formulated in chapter 3. These amount to: 1.) the explicit *values and ideals* forming the imaginary that is upheld in the hackerspace, 2.) the specific *practices* enacted by its community from day to day and 3.) the *ambivalences and tensions* arising between these explicit values and everyday practices.

In the sixth chapter, the *Discussion*, the empirical part is further analyzed and explicitly put into relation with the sensitizing concepts of sociotechnical imaginaries, counter-imaginaries and vanguard visions. Just as the previous chapters, the discussion is clustered into three domains (ideals & values, practices, tensions & ambivalences) such that both, the empirical part and its discussion are positioned in dialogue with the research questions. The main findings in this show that: 1.) The hackerspace – although on a spatiotemporally small scale – is a space in which visions of an alternative future are not only imaginative but also enacted in everyday practice. 2.) These everyday, often mundane practices in turn co-constitute the hackerspace in its materiality and hence the imaginary it embodies. 3.) Given the embeddedness of the hackerspace into broader society, as well as broader sociotechnical practices and infrastructures, developing, upholding and distributing the counter-imaginary of the hackerspace is not without friction and at times the different visions of how to imagine and practice an alternative digital future become contested, ambivalent or even subverted.

Lastly, the seventh, final chapter and *Conclusion* shortly summarizes the main argument made over the course of the work, before providing a short outlook on the findings made. Considering both, the co-production of a counter-imaginary and corresponding practices and routines, but also the instances in which this counter-imaginary and the daily practices in the hackerspace are misaligned or even in conflict, is not to invalidate the – most of the time – lived alternative reality of the hackerspace. Instead, and despite its shortcomings, the counter-imaginary of the hackerspace – on the local, interpersonal scale it operates on – can be very effective in enabling individuals to conceptualize more democratic and participatory ways of engaging with digital technologies throughout their daily lives.

2 State of the Art Hacking - Cultures

Digital spaces and the infrastructures affording them are an inherent part of contemporary global societies. As such, they shape our experience, and daily lives. As digital environments become more embedded in the ways we engage with the world and our surroundings, they not only open up new ways of organizing, knowing, communicating and expressing, but also pose profound challenges, for example, to existing understandings of democratic participation, privacy, and individual agency: While they increasingly become part of how we experience, the specific technologies through which they are realized often stay opaque and inaccessible to the individuals engaging with them, voluntarily as well as involuntarily. In today's societies, reality is increasingly entangled with 'the digital', shaping the experience and enactment of everyday life. Such digital dimensions are supposed to provide numerous opportunities and practices to improve and extend possibilities to act and express ourselves. As digital environments become embedded in the ways we engage with the world, they also pose profound challenges to democratic participation, privacy, and individual agency: While they increasingly become part of how we experience our surroundings and interaction with others, the specific technologies through which they are realized stay opaque and inaccessible to individuals engaging with them voluntarily, as well as involuntarily.

2.1 Surveillance Capitalism

The point of departure for this study is a critical analysis of the economy and condition of today's landscape of media and information technology. While we spend an increasing amount of our lives online and connected to the internet, the infrastructures and technologies that enable today's global exchange of information are predominantly owned and shaped by a monopoly of a few corporate actors (Mager 2023). Closely related to this digital transformation and the increasing 'datafication' of life and societies (Ruckenstein & Pantzar 2015) is the emergence of a new form of capitalist logic, termed *Surveillance Capitalism* by Shoshana Zuboff (2015). Zuboff argues, the datafication of life, together with the technical know-how and capacity to algorithmically operate over large datasets also led to a fundamental transformation of labour and the generation and accumulation of value (2015).

As such, the digital transformation is characterized by a shift in the global, capitalist mode of accumulation and extraction of value that is not only enabled by information technologies but also shapes them. In today's '*cognitive-cultural economy*', the primary mode of production and generating value is in cognitive and cultural forms of labor enabled and augmented through digital technologies. This also gives rise to a new division of labor (cf. Levy & Murnane 2004, Moulier-Boutang 2011), in which the process of production itself becomes

globally distributed, compartmentalized and detached from the ultimate product at the end of this distributed process (Anders 1980). Zuboff makes the argument that in surveillance capitalism, this global complex of digital labor extends into the private lives of individuals in order to extract value from the everyday experiences of consumers (Zuboff 2019). This amounts to the exploitation of digital technologies and infrastructures to collect information about the activities of end-users of these technologies, by the few – often collaborating (Fuchs 2017) – companies and state actors that govern them. Essentially, in a capitalist mode of economy, the capacity to collect and analyze massive amounts of data leads to a new ‘logic of accumulation’ (Zuboff 2019, p. 31), in which information about technology users behavior is not merely used to improve the service provided through the technology itself, but to use this behavioral raw data in order to improve the effectiveness of personalized advertisement. As a consequence of the profitability of the ‘behavioral surplus’ (ibid., p. 45) in the analysis of personal data of end-users, surveillance and the commodification of behavior becomes the core of value extraction in surveillance capitalism (Lyon 2019). In the economy of surveillance capitalism, personal, behavioral information (as digitized data) is therefore at the core of value generation and production. One of many instances of this can be found in General Motors collecting and selling data on individual driving behavior to insurance companies, which in turn adapted the pricing for individuals insured under them (FTC 2025). Zuboff argues that in the regime of analyzing personal data to predict individual behavior with the goal enable an effective placement of advertising ultimately not only predicts, but works to modify behavior such that it might eventually correspond with the prediction, as for example in the practice of ‘microtargeting’ (Zuboff 2022, p.36).

It is often the case in such environments that the transfer of knowledge is largely unidirectional (as in, from end-users of a digital service or technology, to the provider of that service/technology) and deliberately made opaque to end-users. This is also reflected in the design of today’s digital technologies and digital infrastructures forego and undermine a meaningful form of consent of end-user, as information on data-use is often hidden behind incomprehensible ‘Privacy Agreements’, or ‘Terms of Service’ (Zuboff 2019, p. 29). Beyond such a blurring of the legality of data-collection itself, Zuboff argues that surveillance capitalism ultimately challenges individual autonomy and the capacity for self-determination itself, concentrating rights in the surveillance regime (for example the attempts of the current US government in de-regulating the use of artificial intelligence (cf. Steakin 2025), ‘planned obsolescence’ (Cox 2020), ‘Digital Rights Management’ (cf. Purchase 2014, McSerry 2014), ‘dark patterns’ (Kim et al. 2023), and obstructing individuals rights to repair their bought technical devices (Koebler 2024)) and creating technical systems that not only spy on, but condition their users into learned helplessness, inattention and the avoidance of

inconvenience. Following Zuboff (2019), this makes for an environment in which citizens, individuals and consumers of digital media are increasingly excluded and disabled from participating in how and to what purpose digital technologies and systems are developed. The few corporate actors dominating the digital domain try to ensure to design and develop technical systems in a way that the users navigating these spaces know as little as possible about how they are structured and how they function, at the same time also ensuring an effortless experience for these users.

I argue that it is difficult (by design) for communities of users to critically engage with these structures in more autonomous, possibly anti-authoritarian ways – i.e. in forms of activism, comparable to the civil disobedience (Habermas, 1985) enacted by contemporary protest movements, such as ‘*Ende Gelände*²’, ‘*Extinction Rebellion*³’, ‘*Last Generation*⁴’ or ‘*Fridays for Future*⁵’. There are of course existing forms of such activism (e.g. ‘hacktivism’) which, however, presupposes a sufficient amount of (often difficult to acquire) expertise and know-how regarding digital infrastructures, as well as the motivation to engage with them in the first place. Thus, the goal of this proposal would be to find ways to engage in activism – specifically regarding participation in the shaping of digital environments – without necessarily being able to code, or build complex computing technology, enabling more agency in moving and acting (against structures and environments perceived as oppressive) in a digital world. In this work, I address a continuing and intensifying tension and conflict of interests between actors that can shape the specific ways digital environments are to be enacted and actors that experience themselves as merely situated in these environments (Pötzsch, 2016, p. 6). In this work I explore the emergence of agency in digital environments, enabling individuals to engage with and shape them in more sustainable ways. Considering the often invisible, manipulative and authoritative dynamics present in contemporary digital environments makes subversive, activist action therein a very appropriate form of engagement, but also less easily conceptualized. Acknowledging the necessity of a continued critique and practice of making visible oppressive tendencies, I intend to explore forms of action that might enable individuals to perceive, escape, subvert and act against these tendencies.

² <https://web.archive.org/web/20190713115505/https://www.ende-gelaende.org/de/> archived from original, retrieved 29.09.2025

³ <https://xrebellion.at/>

⁴ <https://letztegeneration.org/>

⁵ <https://fridaysforfuture.at/>

2.2 Hacking

Despite this large amount of critical engagement and discourse around the oppressive, exploitative use of personal data, the general uptake of this seems to result in a sort of resignation in face of a surveillance regime that seems impossible to overcome. While this work will also engage critically with the contemporary practices and policies of governing digital spaces, primary aim will be to explore, contribute to and envision communities that enact practices and spaces that represent alternative visions to the culture of surveillance that otherwise appears as a hegemonic imaginary in the ongoing digital transformation. While these communities often go under the radar in public, as well as academic discourse, they nevertheless embody an important strand of activism that escapes and even subverts these narratives. Inherent part of such communities is not only the questioning of digital governance as it is but also that they are actively creating and contributing to alternative technologies and practices (Friesinger et al., 2014).

There is a range of organizations, initiatives, and practices aiming to enable more agency for users of digital infrastructures, as well as to empower them to partake in the construction and enactment of the continuously shifting nature of these environments. Most of the time, these are grassroots movements started by communities dealing directly (e.g. through their profession) with the issues that emerge through, mirror and reify contemporary imaginaries of global, digital transformations. These groups actively imagine and construct artifacts in and around digital spaces that embody alternative values, ideals and practices. Examples for this would be search engines providing alternatives to the – globally still dominant – one by Google, thereby emphasizing values such as ecological sustainability (e.g. Ecosia⁶), or individual privacy (e.g. duckduckgo⁷), as well as other forms of activism to create platforms and initiatives aiming at a different, more ‘human-centric’ engagement with personal data, such as the ‘MyData3’ initiative (cf. Mager, 2023).

Introducing alternative visions, often being contested themselves, contributes to a more pluralistic landscape of ideas, values and imaginaries of how digital realities should unfold and what they should enable, under which conditions, for their users. On the one hand, this makes for a more diverse range of visions regarding the use, benefits and possibilities that can constitute alternatives to hegemonic algorithmic imaginaries, as for example in the cases of alternative search engines such as Ecosia and duckduckgo (Mager, 2023). On the other hand, such reconfigurations of the dominant imaginaries of datafication can also empower users to actively take part in policymaking and to aim for political change more

⁶ <https://www.ecosia.org>

⁷ <https://duckduckgo.com/>

effectively (Tseng, 2022). Thus, they show how the digital transformation can also contribute to more democratic and participatory societies, which would not be as easily possible without already existing digital infrastructures (Turner 2006). Fundamental in this is the concept of open-source software, as well as the closely related practice of hacking, whereby the notion of hacking, in this case must be differentiated from what I will call a cliché-, or Hollywood notion of the 'hacker' here. Hacking, as it is practiced by its own community, at its core describes a general view and mindset through which technology, its artifacts and the practices around them are engaged with – in short, the digital dimensions of society. In popular culture, hackers are often negatively depicted as young, unhealthy men, locked in a room only illuminated by the computer they sit in front of, indulging in their internet-addiction, being involved in activities of cybercrime, deception and hacking into proprietary digital infrastructure (see for example Borsook 2001, Shimomura & Markoff 1996). Other views of the archetypical hacker seem to open up a binary by going into the opposite direction and glorifying them as pioneers in 'freeing information' (Wark 2006), 'inquisitive tinkering' (Levy 2001) and the goal of creatively engaging with digital technology in order to emancipate from oppressive, capitalist societal structures (Wark 2004).

Providing an alternative to this binary popular image, Gabriella Coleman conceptualizes a much more diverse and dynamic range of hacker identities, moral values, and codes of ethics. Coleman conceptualizes hacking culture as a field of multiple, overlapping genres that also change over time. Despite this diversity of views and moral genres that make up hacking culture, this culture also converges together with broader sociotechnical and political processes around liberal ideas (Coleman 2008, p. 256). These values, next to others, concern 'selfhood, property, privacy, labor, and creativity' (Coleman & Golub 2008, p. 267). Throughout different, yet overlapping hacking communities, these are continuously engaged with, criticized and reconfigured, not only in the political discourse taking place, but first and foremost embodied in the very purpose that constitute and practices that take place in these communities. Essentially, when it comes to the notion of freedom and autonomy in the context of digital environments, different cultures of hacking, in their daily lives, as well as in the artifacts they produce, constitute a site at which liberal principles are taken up, critiqued and reconfigured through lived practice: Hackers and their communities put an emphasis on applying these liberal values in the context of their engagement with technical systems (i.e. the internet, computers and other devices enabling access to and navigation of it), to the point of constituting their identity as hackers in this expression of and identification (as hackers) with these liberal ideals and their critical reconfiguration. Coleman also traces the archetypical, personal histories of technological engagement of 'the hacker', which are surprisingly consistent between accounts: The personal life of the self-identified hacker is

characterized by an early and ever-increasing draw, first toward the ins- and outs of electronic devices in general, later toward a more specific interest in personal computers (PC). With access to the internet and to the networked world, this interest becomes an obsession as it opens up a whole new reality and world to the aspiring hacker, to acquire knowledge in, download diverse forms of software and to practice social exchange with like-minded peers. Engaging with others having the same interests in the technical architectures of this digital world, and beginning to understand the impossibility of understanding cyberspace in its totality and ongoing evolution, they inevitably would come to the view of the necessity of sharing knowledge in this space in order to produce new things.

In taking up this view, they would also become part of a technical, but also political movement (Coleman 2013, p.25-26): By coming to believe that sharing the source code of software is a foundation of the development of new digital technologies – and by experiencing the detrimental effect of proprietary software on their own capacities of producing new technology – they also put forth that most, if not all software should be freely available on the level of source-code. Although the primary motivation in this might be rather personal, almost any hacker would subscribe to the idea that free- and open source-software are the superior way of engaging with digital properties than a legislature which enforces these proprietary, closed-off digital systems and environments. In their analysis of three US-American forms of hacking communities, Coleman & Golub (2008) center the dialectic between individualism, the expression of their own identity and the concept and role of intellectual property therein. This dialectic in its specific expression in hacking communities also grounds the fundamental activist aspect of creating and contributing to free- and open-source knowledge, infrastructures and technological artifacts (although for differing reasons and not necessarily to disrupt hegemonic political regimes). Further, this is done with the specific intention to circumvent the neoliberal concept of intellectual property as a means to restrict and control the access to information and technical artifacts.

Hacking culture in the US critically engages with, reconfigures and even transgresses regulations like licensing, trademarks and copyright in order to ‘free’ the information and a potential that they constrain and make it available for use and further reconfiguration by broader publics: ‘[...] Property is intellectual and the use and enjoyment is enabled through sharing [...] Free and open source software practice thus [...] provides an alternative template for the rearticulation of long-standing ideals of liberal freedom, [...] but in a technocultural mode distinct from previous property regimes’ (Coleman & Golub 2008, p. 268). For hackers, free software makes up a significant aspect of the exchanges and technical processes that constitute navigating the internet since its early history. As such, it also stands for the potential to enable individual freedom that is – in imaginaries that

describe it – attributed to the internet as whole. Specifically, this concerns the introduction of Unix based operating systems and software in the 1990s, being some of the first privately available operating systems (including their source code) for personal computers. Naturally, for programmers the availability of such software was a ‘treasure trove’ of possibilities, most notably with the open-source Linux operating system, which was one of the first non-proprietary and modifiable operating system released as a sort of public, shared good – one that is still pioneering in today's open-source economy. At the time of its initial releases, getting the system itself (through someone privately sharing it), as well as installing it on the own PC, was no easy task and required a lot of expertise and finally, running it required even more proficiency in programming and – due to the hardware limitations of the time – could take a week in total (Coleman 2013, p. 33-34).

Thus, the process of installing Linux on a PC, for most of the time, was somewhat of a – sometimes grueling – initiation rite and the actual entry point into the activity of hacking and modifying existing code, in order to make it work in a specific way. In getting and installing Linux, one had to already have a specific level of know-how beforehand, but in actually doing it, one had to intimately engage with and get to know the system. Knowing a system on this intimate grounds, also enables us to modify it further and according to the individual preferences. Comparing this to the Windows operating system makes visible a crucial difference: While Windows is accessible and easy to use, it nevertheless confines its user to exactly the ways of engagement that are intended by the systems design. Running Linux on the other hand, was (and often is) a tedious, complicated and messy process, but the constraints on action that the system enacts are only bound to the individual technical skills of the user (Coleman 2013, p. 33-34). This is also one of the main arguments that is brought forth by hackers in their loathing of the proprietary, closed-off operating systems that are dominant today. In essence, Coleman conceptualizes the hacker identity as inherently multiple and heterogeneous. Yet, the diversity of hacking cultures generally shares an emphasis on liberal values (cf. Coleman 2013). When it comes to the activity of hacking and going beyond the dominant popular media representations of the hacker, the term denotes much more than just ‘breaking into’ digital property: Instead of an individual doing damage for personal gain, out of vandalism or mere unvented criminal energy (although this also happens), hacking denotes the critical, creative and artistic engagement with the sociotechnical systems and artefacts that interest them. The definition of hacking as a practice describes the exploration of new ways to think about, and engage with these systems and in the process, to add to or create something new from them (Schrutzki 1989). This creative engagement, very often takes form as a ‘playing around’ with a given technological artefact, sometimes even without a purpose beyond this play and sometimes

this also leads to criminal activity as well. As such, one of the strong tensions that concern computer professionals is that of an ethical use of digital technologies and software. Contrary to viewing the intrusion into proprietary software and infrastructure as illegal, many hackers and proponents of F/OSS thus see the intentional search for vulnerabilities in information systems as a necessity in order to make them safer and better (Levy 2010, p. 139).

Cementing this more nuanced approach to hacking culture, Steven Levy in his book '*Hackers*' (cf. Levy 2010), wrote down a comprehensive analysis of several ethical assessments of ethical action in digital environments. Just as hackers and hacking communities are constituted in plurality, the hacker ethics are not a static, finalised set of ethics, but are subject to contestation, interpretation and modification between the diverse subcultures and communities in the hacking world. In short, there is no universally accepted, explicated and shared version of the hacker ethics. Essentially Levy's (2010) formulation encompasses six proposals which are supposed to guide not only hacking practices in an ethically appropriate framework, but one that should guide engagement with computing- and digital technologies globally and for everyone. In Levy's first formulation these are the propositions that computers and generally all information should be free and available to everyone (however, it should not necessarily be *for free*). Centralised organization and authority should generally be distrusted. Hackers should be judged only by their actions, not by racial, gender or class standards and *computers* should be seen as something to *create art and beauty*. Finally, *equally accessible technologies* for everyone will *make the world a better place* (Levy 2010, p. 27). While this set of imperatives is still very relevant today, in its first explication it also situates the beginning of a conscious, political identity in the hacker scene and in the form of active reference to these imperatives (Coleman 2013, p. 18). Of course, this identity would be in no form a homogeneous one, given the previously mentioned multiplicity of genres in hacking culture (cf. Coleman & Golub 2008). While very diverse in its actual enactment, the hacker ethics are therefore also a conscious politicization of hacking as a practice that is characterized by a distinctly anti authoritarian stance that fundamentally resists the state of surveillance that is firmly established today.

2.2 German Hacking Culture and the CCC

While these interpretations of hacking culture and their moral values are locally and historically situated in a specifically US-American context, it nevertheless provides a valuable lens to approach hacking culture in other geographical and cultural contexts than US-American liberalism. As Coleman and Golub (p. 271, 2008) state, their analysis

encompasses only an incomplete section of a multitude and plurality of subgenres that make up hacking culture in the US. I propose therefore, that this analysis will benefit from a further exploration of how hacking culture is practiced in other places of the world. As the digital environments in which hackers spend a lot of their time in, transgress national boundaries already, hacking culture can be further situated as constituted by a multiplicity and plurality of subcultures also on a global scale. This work will therefore explore more specifically how hacking culture is practiced in Germany and in how far it can be traced as an autonomous 'hacking subculture'. As it happens, one of the oldest and biggest public hacker organizations stems from and is active in Germany, namely the Chaos Computer Club (CCC)⁸. On their website, the CCC describes itself as a 'mediator in the field of tension between social and technical developments'⁹. Historically the foundation of the organization is in the 1980s, actually predating the existence of the world wide web. Generally, the CCC advocates for the education of society, as well as individual with regards to contemporary technologies, culture and arts¹⁰. Today, the CCC is institutionalized in the form of a registered association (e.V. in German), has roughly 8000 members and allows everyone that aligns with the aims defined in their constitution to become a member. Getting together the first time on the 12th September 1981 in West Berlin at the table of the famous *Kommune I* (Enzensberger 2004) at the *Tageszeitung (taz)*¹¹, a few German hackers sat together to exchange and discuss the impact of – at that time emerging – networking and information technologies (Wagenknecht & Korn 2016). Three years later, in 1984 the *Chaos Communication Congress*, Europe's largest hacker convention, was held for the first time in Hamburg. In the same year, the first issue of the *Datenschleuder*, a magazine about hacking published by the CCC, was released. In order to evade juridical misunderstandings the CCC officially registered as an association in 1986. Since then, the organization established itself as an influential political actor, speaking publicly, mediating as policy advisor, and conducting hacks in order to generate public- and media-attention on specific sociotechnical topics (Kubitschko 2018).

Throughout its time since the founding, the CCC established itself as a known actor by a series of hacks and cyberactivist action with large-scale public visibility and attention. One of the first hacks like this – and also one that actually became world famous – was the so-called 'btx-hack', making the public aware of the vulnerabilities and security shortcomings in the system of the *Bildschirmtext (Btx)*¹², owned by the *Deutsche Bundespost* and back

⁸ <https://www.ccc.de/de/>

⁹ my translation

¹⁰ <https://www.ccc.de/de/satzung#paragraph2>

¹¹ <https://taz.de/>

¹² Btx was an integrative online service combining telephone and TV into one single platform.

then a monopoly in the just emerging, online- and networking-economy in Germany. Prior to the hack itself, the CCC notified the company about the security flaws, upon which it publicly emphasized the security of its system. In reaction, the CCC managed to book a credit of 140.000DM (75.000€) onto a bank account of their own exploiting the Bildschirmtext online system. The CCC staged the hack publicly, as well as under supervision of data protection officers and instantly cancelled and reversed the transfer of the money afterwards. While the action was the first sensibilization of german publics and governance of the problematic of cybersecurity, the members that did the hack did not experience any legal prosecution afterwards, since there were no laws in place regulating criminality in cyberspace (Middleton 2017, p. 19). More infamously, in 1987 the CCC was also involved – if only marginally – in an action by the famous german hacker Karl Koch, that breached official US-governmental and -corporate computer systems and subsequently sold the data to the Russian *KGB*. This hack in particular should prove rather controversial for the CCC itself, as it became the globally first, major cyber-espionage case that was held in court (Middleton 2017, p. 20). The aftermath of the CCCs involvement in the case – being much more serious transgression of digital property – also led to serious discussion inside the club about the values and ideals it is supposed to represent, not least, because the KGB – being an intelligence agency – stands in contrast to the ideal of freedom of information and should therefore not be cooperated with. As a result, this also led to a modification and addition to the hacker ethics by Levy (2010), to which the CCC already pledged allegiance. These additions were the principles of 1. ‘Mülle nicht in den Daten anderer Leute.’ (‘Do not ‘trash’ around in other people’s data’), and 2. ‘Öffentlich Daten nützen, private Daten schützen.’ (Use public data, protect private data)¹³. In 2008 the CCC publicized and analyzed the illegal existence and use of the ‘*Staatstrojaner*’¹⁴ by the German police (Middleton 2017, p. 21). Besides that, there are several actions installations that are situated between artistic and activist action, such as the *Project Blinkenlights*¹⁵ using the interior lighting of buildings to display images on the front of a building –, or the artificial reproduction of the fingerprints of German politicians as a critical response to the capture of biometric data to identify citizens¹⁶.

Recent studies on the characteristics and dimensions of contemporary hacking culture – next to an attention to technical artefacts themselves – emphasize that especially the access to media technology, that is for example their source codes, but also underlying infrastructure

¹³ <https://www.ccc.de/de/hacker-ethics>

¹⁴ malicious software used by german state actors and governing institutions, allowing third parties access and control over private, personal computers

¹⁵ <http://blinkenlights.net/>

¹⁶

<https://venturebeat.com/security/chaos-computer-club-claims-it-can-reproduce-fingerprints-from-peoples-public-photos/>

such as deep-sea cable- and satellite networks, or data centers and servers, become the focus political and activist contestation (Milan & Hintz 2013). From its early conception to today, the CCC developed from a rather underground and only loosely connected group of like-minded hackers into a large and multinational NGO. The CCC not only executed and partook in a range of major hacks, but – with an increasing reputation of having expertise in the field of cybersecurity – also took several advisory roles for political, legislative and juridical concerns in Germany¹⁷. Tracing this historical development and establishment of the CCC as a political actor in middle Europe, is a valuable and rich source for research that emphasizes the impact of single actors out of the hacking culture, instead of approaching ‘hacktivism’ as a globally networked phenomenon only. Sebastian Kubitschek investigates the CCC as an actor that is more tangible and defined than such a global networked culture, and thus provides an exemplary picture of how hacker practices can gain legitimacy in technopolitical discourse and partake in the construction of technology as political categories. Following Kubitschek, the CCC effectively politicizes technological developments and at the same time establishes itself as an actor with expertise in these developments (Kubitschek 2018 p. 82).

Tracing the history of the CCC then, allows to explicate its development from a very small circle of enthusiasts and almost no formal structures where communication was often mouth-to-mouth (given most members lived in Hamburg) and required no further organization on a broader scale. With the fast increase of personal computers in German households and the digital infrastructure for communication that came with it, connecting with other people across Germany, having a similar interest in a subversive engagement with information technology became much easier. Generally, the recognition of the ability to connect and exchange with like-minded people, not only in their direct vicinity, but nationwide, was one of the first steps by the CCC to form an organization of politically motivated tech-enthusiasts that would not only engage critically with technology on an interpersonal level, but also collectively and on a national one. Importantly, the organization of interaction and the nation-wide network that came to constitute the CCC took a decentralized shape which remains to be a defining aspect of the club until today. Made possible by the personal interest and expertise in the emerging information technologies, next to face-to-face communication members often use self-coded web protocols in order to exchange expertise and information. With a growth in size and presence even in countries neighbouring Germany, the CCC became also much more heterogeneous in its expertise and perspectives, such that a core-team that coordinated the clubs knowledge exchange and activity was established, while the overall structure remains decentralized until today.

¹⁷ <https://www.ccc.de/de/club>

This not only allowed for a coordination of these pluralities into collective action as such, but also for the ability to safekeep information about the – potentially sensitive – ongoing inside the CCC. In essence, this led to a form of internal communication which almost never involves the club as a whole, but only project-specific sub-communities and individuals (Kubitschek 2018 p. 86-87).

Together with establishing an effective mode of internal communication that allows for an effective exchange of knowledge and expertise inside the CCC, while sustaining a secure environment in which sensitive information could be shared, the club also enacts an organized mode of outward communication and action. Starting with its first actions, the club always enhanced its hacks with a visibility to broader publics, such as for example in the Btx-hack, which otherwise would not have been publicly discussed as much without staging it publicly. At the same time, this communication itself gains traction and validity through activist action – such as the Btx-hack – in the first place. Further, the outward communication of the CCC also takes place with more specific actors, than just publics that are as broad as possible: From taking an advisory role for several newspapers, enterprises and even political parties, the CCC communicates with and provides expertise for a variety of different actors. The club also established several media channels of their own, from journals to radio shows and even a media platform on which many of the previous projects of groups and individual members are archived and openly accessible. While the CCC does rely on public media in order to extend its reach beyond just individuals that are invested in its topics, it chooses the specific channels to do so very carefully and not by any means necessary, as it avoids platforms and services – such as facebook and other mainstream media platforms – that are perceived as problematic by the club. By basing its outward communication on an ensemble of different channels, that are aimed at different audiences, but also by remaining true to its ideals in choosing these specific channels of communication, the CCC effectively manages to establish itself as an impactful public actor (Kubitschek 2018 p. 90-92). Importantly, next to communication through information technology, this communication also takes place in analogue form: Individual members travel and speak at public hearings, in committees and in face-to-face interactions with legislative and governing actors.

The club's internal and external communication and action forms an arrangement of co-constituting practices that constitute each other and make up the legitimacy of the CCC as a political, public actor. Given the particular field of concern the CCC engages with, and through which it engages with publics – being new media technologies and their political implications – the way it represents itself on these media channels fundamentally defines this legitimacy (Koopmans 2014). Presence in contemporary media environments works twofold in this: On the one hand it serves as an indicator for legitimacy in public discourse,

on the other hand, these media environments are themselves politicised by the CCC, which also contributes to its legitimacy in public discourse (Deephouse & Suchman 2008). As the societal and political role of media technology increasingly becomes a topic of public discourse, as well as the realm in which this discourse takes place, the demand to access these technologies, but also the need to devise appropriate policy and governance over them increases. The CCC manages to navigate this discourse and establish itself as an important actor by a *spiral of legitimation* (Kubitschek 2018, p. 94) that is constituted in a politicisation of new media technologies on the one hand, and taking the role of a mediating actor in governing these media on the other hand. This spiral of legitimation takes place on a temporally rather large scale, that is the CCC didn't attain its legitimacy with singular actions or overnight. It was in the continuously and publicly voicing concerns and engaging with the politicization of media infrastructures over space and time, by which the CCC managed to obtain today's status as a reliable opinion and impactful actor – not only when it comes to the politicization of new media, but also in the specific policies that are created to govern them.

Having looked at the broad-scale practices and action of the CCC on an organizational level gives an overview over the general approach of the club, in its engagement with the social and political issues that manifest with the emergence of new media infrastructure. Looking at the level of organization only, however, makes it difficult to conceptualize how the many, decentrally existing sub-groups of the CCC actually enact and communicate their vision on a local, spatially more limited level. In its totality, the CCC gains relevance through an effective coordination of a multiplicity of different expertises, knowledge and action. In order to get a better understanding how the CCC acts on an everyday basis however, it is necessary to look into the specific projects that are done by its many sub-communities. A potential entry point to the CCC's action 'on the ground' (that is, its direct interpersonal engagement with publics). Next to the publicly covered, somewhat sensational hacks and the collaboration with industrial, governing and policy-making actors, the CCC also engages in several projects that aim for action on a much smaller scale. These projects are often enacted by the CCC's local communities that represent the club in their specific city or town and in collaboration with other, relatively small, local communities. One particularly successful project like this is 'Chaos macht Schule', in which members of the club visit school classes and hold workshops teaching *digital literacy*, or *-maturity*. While the term of digital literacy is a contested one, it might be described as the general ability to 'access, analyse, and evaluate media [and to] communicate competently' in them (Bulger 2012: 84). Looking at the specific ways members of the CCC engage in educational work in school settings then, provides valuable insights into how the values and ideals under which the CCC forms a

coherent organization are put into practice by individuals in specific localities. In 2007 the CCC started to engage in volunteering work in educating school classes in digital literacy following the initiative of teachers who brought the request to the hacking community. Since then, the CCC's teaching activity has increased, such that 'Chaos macht Schule' is now a project done in several cities. Mostly, the local communities of the CCC do these workshops independently and upon the initiative and request of teachers or students themselves.

Further, the project features no top-down agenda or curriculum, which is taught by the club's members in the workshops. Instead, there is only a shared set of aims or ideals which guide the workshops, shared between members and explicated on the official website of the CCC¹⁸. These aims, in their formulation follow the values that the CCC puts forth and itself behind. Thus, the general tenet is to teach a critical, confident, but also a curious form of engagement with the internet and related media technologies. Importantly, students are generally approached under the assumption that students can and should form their own experiences in and opinions of the digital environments they navigate. As such, rather than trying to restrict access to web-services, the workshops aim for enabling students to decide for themselves how they navigate the web, as well as how they decide to treat the information they leave in doing so. The goal is for students to develop a basic understanding of the digital world, including not only dimensions of access, usage and technical function of technologies, but also the political, ethical, societal and behavioral implications that arise out of the use of these technologies. Ideally, teaching such a general mindful perspective on digital technologies leads to populations that are able to not only engage critically with digital media, but who are able to contribute to and transform the infrastructures of these media (Fleischhack 2018, pp. 253-254). Essentially, in their workshops the CCC conveys the pressing issues and problems of surveillance capitalism in an approachable way that makes visible its traces in everyday, individual engagements with and through digital media. They explicitly explain the tools, methods and function of the algorithmic culture underlying the applications that students use daily (e.g. social media) and thereby convey rather abstract societal issues as they may arise for individuals in their everyday life. This is done partly, by pointing out the deeply social and often private characteristics of personal data, for oneself, as well as for others.

Privacy and the security in the handling of the own and others personal data thus become related to very personal, individual decisions that exist beyond the mere idealistic and technical assessment of surveillance, but are present in most of the personal decisions and actions taken online (Fleischhack 2018, pp. 255-256). At the same time, the CCC also

¹⁸ <https://www.ccc.de/schule>

educates on the limits of subversion to digital infrastructures and where one might have to make compromises, even with an awareness of problematic aspects of these infrastructures. As such, the idea of the workshops is to enable students to go beyond being mere 'end-users', but to craft their own sense and understanding of the internet, including its promises, as well as problems. This also entails refraining from conveying any moral or ethical undertones in the workshop, instead only making aware of – not condemning – digital infrastructure that may exploit their users.

2.3 The Hackerspace

Most of the research on digital activism focuses on a level of societal (e.g. Coleman's hacking culture) and national actors (for example the CCC and some of its public activities). While there are valuable academic contributions on hacking culture on a global scale, on the organization and impact of the CCC as a supranational actor, but also on some of the engagements of the club with external actors; there is less attention on how hacking culture itself, as practiced internally to the CCC, manifests in small-scale, locally situated communities and how it is enacted in an interpersonal, everyday context between its members. My aim in writing this work then, is to explore this neglected context and make visible the processes that constitute the structure of the CCC on a local level. This should provide valuable insight into the forms of activism that are practiced on an everyday basis and which necessarily also ground the activity of the CCC as a whole. Exploring how the sub-communities of the CCC act autonomously and on a local level, should therefore provide further valuable insight into the potential and capacities for, as well as forms of subversion and activist action that can be found in hacking culture. It also might prove valuable in order to analyze, at which points the practices that are actually enacted might be in tension with the ideals of the CCC, or even break down. One of the smallest units of the formal organization in the CCC are the so-called *Erfas*¹⁹. As mentioned, the CCC is organized decentrally, with sub-communities acting relatively autonomous but with only a small core group of members that coordinate the activity and exchange of these sub-communities. The sub-communities that make up the CCC are organized in independent groups, which are often registered associations in their own right and which act independently of the CCC in many aspects. Given their autonomy, the *Erfas* are relatively free to act following their own agenda, which however, will usually be oriented along the proposals of the CCC's hacker ethics.

¹⁹ German for 'Erfahrungsaustauschkreis' (roughly experience-exchange-circle)

Usually, if there is a community of hackers in a location that fulfills certain conditions (next to others, partaking in the national activities of the CCC, being a registered organization, regularly holding events, being open to interested outsiders, having a sufficiently informative website)²⁰ they can become the Erfa for that location, given there doesn't exist one already. As the Erfas can otherwise mostly act independently, as long as there is no need for large-scale coordination, it should be expected that the practices taking place in the Erfas – while remaining embedded in the broader lifeworld of the CCC – differ in scale and purpose from those of the CCC as a whole. Generally, the conditions for becoming an Erfa presuppose a certain size, institutionalization and publicity such that it is usually already established organizations in their own right (with members and established infrastructures for communication in- and outward) that get the Erfa status²¹.

As one of the most prominent, explicit interests of the CCC is the practice of hacking, it is unsurprising that most Erfas come in the form of so-called *hackerspaces*. A hackerspace is an environment, mostly some form of physical space, e.g. a clubhouse, in which people interested in hacking come together and share materials and knowledge in order to engage with technology, art and politics (Becker et al. 2023). In Germany, these hackerspaces are often in the form of a registered organization, with members that contribute a regular, communal fee (Martins & Albagli 2020). While hackerspaces first emerged in Germany in the 1990s, and deeply embedded in the same communities as the CCC, they are not necessarily the same as Erfas (i.e., probably every Erfa is a hackerspace, but not every hackerspace is also an Erfa).

In order to make visible the impact of hacking culture as it is practiced on an everyday, individual and interpersonal basis, it makes sense to center the analysis on the internal processes of such an Erfa. I will therefore explore the relations of members of an Erfa with each other, as well as with the publics they engage with as an autonomous unit, which also can function independently from the CCC itself, while also acknowledging the dependencies between the two organizational structures (Hildreth & Kimble 2005). In order to do so, I will approach the hackerspace as a so-called *community of practice* which is 'formed by people who engage in a process of collective learning in a shared domain of human endeavor' (Wenger-Trayner 2005, p. 1). Relating the concept of CoPs back to the particular communities that come together in the hackerspaces that constitute the CCC (cf. Kostakis et al. 2015, Williams & Hall 2015), will allow me to contrast the particular, locally situated culture that is present in the hackerspace against the backdrop and heterogeneity of hacking culture in general and as envisioned for example by Gabriella Coleman (2013). In the case

²⁰ <https://www.ccc.de/de/regional>

²¹ <https://www.ccc.de/de/club/erfas>

of the hackerspace, this also situates a way of enacting communities, that enables contrasting it with other types of hacking communities (for example in the US), but at the same time allows to integrate it into a broader understanding of a pluralistic complex of hacking cultures that nevertheless share many dimensions in their underlying values, worldviews. An exploration of how hacking culture is enacted in Germany, specifically in its instantiation as the hackerspace and understood as a CoP would therefore contribute to the discourse on conceptualizing visions and imaginaries that can subvert the dominant, hegemonic regimes of surveillance present in the digital transformation.

Conceptualizing single hackerspaces or Erfas as exemplary for hacking culture as it is practiced in Germany, on a level of local, everyday interaction between community members and approaching these hackerspaces as CoPs will enable their analysis as non-profit organizations that create spaces holding at least two functions: On the one hand, they stand in and work for a particular common good (as required by their status as registered, non-profit organization), on the other hand they also situate spaces for a somewhat exclusive community (distinguished by their expertise) to follow and share their interest with like-minded peers. The hackerspace is both a place for an expert community to share and exchange knowledge and resources, but also a place for other interested publics, communities and individuals to visit, exchange and learn. As such, the hackerspace is several things at once: A safe space for its members to creatively engage and hack technology, a place to learn about and get help with particular technological problems for the public and a lived, alternative vision of how a life with digital technologies can be enacted (Murillo 2020).

3 Research Questions & Sensitizing Concepts

My primary aim in this work will be to provide an account of how the hackerspace – as a genre of hacking culture, and as practiced in Germany – constructs and enacts a sociotechnical imaginary that is an explicit alternative to the general surveillance that seems to be underlying contemporary digital governance and the datafication coming along with it (Kazansky & Milan p. 364, 2021). Hacking culture in general emphasizes the use of computing technology for individual expression, education and emancipation, which stands in stark contrast and often conflict with this. Since hacking culture can be further seen as constituted out of a plurality of different subgenres, one can assume that the hackerspace as one such genre shows many similarities, but also differences to other genres of hacking culture (Coleman & Golub, 2008). I engage with the general question of how to create and enact digital environments that are more democratic, participative and plural than is currently the case with the globally dominant practices of surveillance by state and corporate actors in digital environments. A prominent example of a movement that works on – and often realizes – such alternative visions of a digital world, is embodied in so-called hacking cultures, worldwide. More specifically, hacking culture as it is practiced in Germany takes a rather distinct form, which can further be differentiated from hacking cultures as they are enacted elsewhere in the world (for example in the USA).

3.1 Research Questions

The argument of this work so far, engages with hacking cultures as a direct, critical response toward contemporary frameworks of developing, implementing and using digital technologies and infrastructure which often work to exploit and manipulate users (Kim et al. 2023) in order to generate and extract value from their experience in digital environments, with the effect of eroding personal privacy and individual autonomy (Zuboff 2019). The guiding question of this work therefore spells: ***What are the counter-imaginaries existing in and around the hackerspace and through which practices are they enacted?***

This guiding question will itself be approached through answering three sub-questions, the first of which asks: ***What are the counter-imaginaries formed in a German hackerspace and how do they relate to broader hacking cultures?*** With the first sub-question I will aim to explore the counter-imaginary as it is envisioned in the *dezentrale e.V.*, a hackerspace in Eastern Germany and being the Leipziger branch of the CCC. Considering broader discourses around hacking culture (for example in the United States, but also in Germany on a national – rather than local – level), I will situate the imaginaries of the *dezentrale e.V.* as

overlapping with, but not completely congruent with these broader imaginaries found in hacking culture.

Having established an idea of the imaginary and visions that exist in the hackerspace, the second sub-question – ***How are these counter-imaginaries co-constituted in the daily activities and practices enacted in the hackerspace?*** – will further explicate and emphasize the practices and visions that co-constitute this imaginary and the hackerspace itself. Specifically, approaching the members of the dezentrale e.V. as forming a *community of practice* described in the last section of this chapter and by Etienne Wenger (1998) in more detail). Doing so provides insight into how the imaginary established in the first research question is co-constituted with the everyday hacker practices and social interactions that take place in and make up the hackerspace.

Having an understanding of the counter-imaginary of the hackerspace, as well as how it is co-constituted with the everyday activity taking place inside and around it, the third and final sub-question I ask in this work goes: ***What are the ambivalences, tensions and challenges that arise in the hackerspace and how are they dealt with, rhetorically and practically?*** In answering this sub-question I will outline the shortcomings, frictions and ambivalences that emerge between these practices and visions, and how the community of the dezentrale e.V. addresses and responds to them.

Central in answering these questions will be the concept of *sociotechnical imaginaries* (Jasanoff & Kim 2009), which contributes a sensibility for the entanglement between an imagined future and the practices enacted in the present in order to make this imaginary reality. Further, the concept of *counter-imaginaries* (Kazansky & Milan 2021) specifies the ways in which SIs that otherwise seem homogeneous and stable, can become contested and subverted, by a variety of groups and actors. Lastly, the concepts of *vanguard visions* (Hilgartner 2015), as well as of *communities of practice* (Wenger 1998)

3.2 Sociotechnical Imaginaries

The concept of *sociotechnical imaginaries* (SIs), in the words of Jasanoff and Kim, are ‘collectively imagined forms of social life and social order reflected in the design and fulfillment of nationspecific scientific and/or technological projects’ (Jasanoff & Kim 2009, p. 120). It focuses less on explicit policies and technological artefacts themselves, but rather on the vision of the future with which these policies and technologies are brought forth. Following their argument, these visions – while they remain rather abstract – will also influence the materialities, practices and forms of production that are deemed valuable, but

which also contribute to the realization of the imaginary itself. They determine which futures are desirable and which are threatening and, per extension, how they shape political culture, ideology and ultimately action in the present. SIs encompass more than the visions of fantasies of individuals, but ground broader understandings of social reality and the future, shared between members of large communities (e.g. nations). In shaping biopolitics, standardization and the governing of bodies (Foucault 1979 [2019]), SIs also contribute to the construction of a shared identity in that community, as well as a distinction from those that do not share this identity. SIs – in imagining a good and desirable future – implicitly, they also determine what is good and desirable to work toward in the present. As such, SIs fundamentally shape the technoscientific landscape they reign over in that they pervade not only the values that are put forth in scientific production and innovation, but also the metrics to measure them: The allocation of funding, grants and the development of technical artefacts are all embedded not only with a specific instrumental purpose, but a societal vision of what this purpose is and the feasible future that it aims for (Jasanoff & Kim 2009, p. 122).

Jasanoff and Kim also distinguish SIs from concepts that solely concern the representations of science and technology in media and public discourse. While SIs certainly can include the involvement of public, discursive media representation of technoscientific trajectories, they primarily attempt to describe the consolidation of collectively shared ideas about the future into specific policy and governance that attempt to enact such an imagined future. In the context of Western democratic contexts, this also implies a plurality of – more or less – aligned SIs that make for a continuously contested field of different imaginaries in which some might be more, and some less dominant or hegemonic. Nevertheless, SIs are powerful tools – often, but not always in the hands of state actors – in shaping technoscientific practices of meaning-making, the selection of agendas and goals, the allocation of resources, thus not only shaping the understanding of specific events, artefacts or technologies, but also broader understandings of how the future is and should be going to look like and per extension also understandings about acting in the present, as well as the past (Jasanoff & Kim 2009, p. 124). Analyzing particular forms of imaginaries, or their contestation can therefore inform about differences in societies and communities (holding up different imaginaries), how imaginaries shape individual identity (Felt 2019), as well as how powerful visions spread and grow into imaginaries (Robinson 2021, Miller 2019).

The concept of SIs also makes visible the contingencies between projections of good futures and the action that is supposed to work toward these futures in the present. As such, it should be noted that formulating a particular sociotechnical imaginary is also never merely a description of a (future) reality, as it actually takes form in collective imagination. Especially, tracing imaginaries in increasingly smaller communities bears the danger for the concept of

SIs to lose its analytical power and value (Jasanoff 2019b, p. 339). It is therefore important in analyzing these smaller communities, to keep the focus on the processes by which imaginaries are enacted collectively and in institutionalized form. The concept of SIs allows for an understanding of contemporary trajectories of sociotechnological development and practice as embedded in – but also constitutive of – what the future ought to look like from a perspective of nation-state actors. In this initial conceptualization, SIs focused heavily on state actors as taking a dominant position in the constitution of SIs. In recent years however, this emphasis on state actors in enacting these visions has come under critique, as it often overlooks the role of other actors beside states – for example, corporate, civic and private actors – in how these imaginaries take shape, resulting in a much more complex conceptualization of how – and by whose practices – SIs are constituted and made productive (Felt & Öchsner, 2019).

Jasanoff and Kim reconsider and adapt their concept in their book *Dreamscapes of Modernity* (2019). Particularly, they open up to the idea of contestation in SIs: In their revision not only state actors shape SIs, but so do corporations, as well as smaller communities, organizations and sometimes even individual actors. Further, there can be multiple imaginaries that compete, function dialectically and change dynamically. Jasanoff and Kim also explore how imaginaries are taken up, enacted or contested on smaller scales (e.g. of local groups or communities) and travel from there to constitute SIs on a nation- and even global scale (Jasanoff 2019a, p. 28). For the purposes of this work then, the concept of SIs allows me to explore the relationship between the contemporarily dominant, hegemonic SIs of the digital future – primarily shaped by state- and corporate actors –, resulting in the erosion of traditional understandings of privacy (Silverman 2017, West 2019) and the autonomy of citizens (Wright et al. 2015, Susser et al. 2019). It also enables me to critically engage with these hegemonic SIs through the lens of a local form hacking culture working to establish their own, alternative SI.

3.3 Counter-imaginaries

Analyzing the SIs that exist around contemporary, digital cultures brings to light the actual multiplicity of SIs, as well as the heterogeneous field of actors that constitute these imaginaries. Next to nation-states, other actors instrumentalize collectively shared visions, values and norms in order to support the specific technical artifacts and infrastructure that embody and enact the imaginary they propagate. A particular sociotechnical future is not only imaginative, but it is constructed and becomes materially tangible in the specific design of and practices in the use of technology. Imaginaries of the future thus become performative

in the present through these everyday and often mundane practices, which in turn contribute to the realization of an imaginary (Lakoff 2019). Analyzing the specific processes by which SIs become productive and how they develop, change, travel and become powerful throughout time and space provides insight not only into the heterogeneous landscape of different SIs, but also how they compete, complement and struggle over dominance (Mager & Katzenbach 2021, p. 224). The importance of non-state actors in shaping the visions of sociotechnical futures also becomes apparent in the digital sector, where the visions of corporate actors are embodied in technological infrastructures and subsequently used and taken up by broader populations (ibid., p. 226). Looking at how imaginaries are shaped, not only by institutionalized and large-scale actors, such as nations, allows an exploration of the role of more bottom-up, civic- society and non-profit actors in shaping societal visions and imaginaries of sociotechnical futures (Lehtiniemi & Ruckenstein 2019)

The power to instrumentalize SIs in order to govern and shape the development of digital technology, rather than being only in the hand of state actors, is actually distributed over a broad heterogeneous landscape of different actors and collectives that practice an equally diverse range of sociotechnical imagination, whereby these imaginaries often also overlap. Mager & Katzenbach (2021) point out three dimensions along which this landscape takes shape, being the *multiplicity*, *commodification* and *contestation* of SIs. In this view, not only governments, but also corporate, influential individual actors, but also NGOs, researchers and activists participate in the ongoing negotiation of imaginaries, with an emphasis on the growing dominance of commercial actors in the making and shaping of SIs.

Showing how powerful these instrumentalizations of SIs by corporate actors can be, Annete Markham (2021) describes that even with a critical, or even activist approach to dominant, hegemonic and corporate SIs it remains incredibly difficult to subvert the behavioral prescriptions that constitute societal and individual engagement with and through digital technologies and platforms. Despite the often pessimistic outlooks on the possibility and effectivity of resisting corporate imaginaries, in situating SIs as *contested*, Mager & Katzenbach (2021, p. 230) also open up ways of conceptualizing the potential to meaningfully shape, subvert and counter dominant SIs that is held by partisan or activist communities and civil actors, which – although they consciously avoid to do so – yet remain embedded in the societal and cultural specifics of engagement with digital platforms and media. Counter-imaginaries are best seen as a practice of imagination that emerges in reaction to dominant SIs that can '[...] animate civil society's tactical responses to perceived threats to its values and ways of living' (Kazansky & Milan p. 366). They note that in broader

society – even after events like the Snowden leaks in 2013²² – the state of broad-scale surveillance through digital technologies is either met with ignorance (e.g. along the lines ‘I have nothing to hide anyways’), or with resignation in face of a sociotechnical apparatus that is perceived so powerful that escaping it would not be possible, even if one would abandon all use of and engagement with these technological infrastructures (Kazansky & Milan 2021, p. 364).

In short, given the dependency of virtually all aspects of contemporary societies on the use of digital (mostly corporate-owned) infrastructure, it becomes very difficult to imagine a future in which society can enjoy the benefits of such infrastructure without sacrificing individual privacy (Cohen 2013) and traditional concepts of autonomy (Rubel 2015). Despite the absence of broad-scale counter-imaginaries, Kazansky and Milan make visible the different ways in which these dominant forms of imagining life in a digital world by exploring the practices, tools and narratives that are used by civil society groups that consciously work on alternative SIs and relate these practices of resistance to the more general ways in which civic actors problematize the mainstream SIs of digital futures. Counter-imaginaries explicitly critique dominant and hegemonic imaginaries that are enacted by state and corporate actors. Technological artefacts, infrastructures and their usage form the basis of imagining digital futures. The technologies that embody dominant forms of such digital SIs are designed and built in order to obfuscate, or naturalize surveillance. Consequently, counter-imaginaries are enacted by actively building and implementing alternative technologies, infrastructures and imaginaries (Mager 2023). The visions and the practices underlying them, even if they do not create dominant imaginaries themselves, nevertheless contribute to a plurality of competing, co-constituted visions by an equally plural field of actors, and as such also hold the potential to contribute to the continuously changing landscape of SIs.

Primary concern of counter-imaginaries is therefore to make visible aspects that are perceived as a threat or as problematic in the first place, as these are often intentionally hidden in the design of digital technologies. They do so by not merely criticising these aspects, but by building and using alternative technological artefacts and infrastructures and with the aim to provide alternatives to the technologies they counter – technologies that point to different ways of living in digitally mediated reality not only by providing alternative technologies, but also different modes of mundane practice and interaction with these alternative technologies (Kazansky & Milan 2021, p. 366). As such, they allow users to ‘think

²² Greenwald, G., MacAskill, E., Poitras, L. (June 2013). *Edward Snowden: the whistleblower behind the NSA surveillance revelations*. In: *The Guardian*. , archived from [Original](#), January 2014; retrieved 08.09.2025

about what infrastructures are, where they are located, who controls them, and what they do' (Parks 2015, p. 355). Given that SIs are always changing and in flux, responses to dominant SIs are equally dynamic: As technological change is continuous, the practices and artefacts that are meant to counter dominant SIs will necessarily also continuously shift and change.

The aftermath of the uncovering of global mass-surveillance through the NSA in cooperation with corporate actors by Edward Snowden saw a rise in civic engagement against this exploitation of individual data. Activists, NGOs and other organizations out of civil society have engaged with these and other whistleblowings ever since, aiming to increase not just the awareness of matters of concern (Latour 2004), but also by designing specific technological interventions (e.g. in the form of alternative software projects), as well as coming up with ways and practices for individuals and civil society to counter the surveillance by state and commercial actors. As the name counter-imaginary suggests, these forms of sociotechnical imaginary react to and are specifically aimed at problematic aspects perceived in more dominant SIs. Kazansky and Milan (2021, p. 367) identify three phases of response to these matters of concern signifying different degrees of technical and institutional development, whereby these phases are permeable and not ordered in a consecutive way, as both the responses as well as the problems responded to are constantly shifting. The phases are termed *speculative*, *formative* and *stabilized* responses.

Speculative responses are best described as the formation and the conceptualization of a problem in the first place. The issue that the response aims at has yet to take a specific form in imagination and brought into a tangible form in order to be made sense of properly, in order to enable the creation of artefacts and practices that engage with it. **Formative** responses refer to issues that are already formulated and consolidated across an allied community which allows the development of concrete and specific technical and practical interventions. **Stabilized** responses correspond to sociotechnical issues that are thoroughly analyzed as a societal problem. They respond to issues that are thoroughly understood, engaged with and managed through a range of strategies, tools and practices which provide solutions developing 'fixes' that are developed and integrated into the practices of broader communities. In the context of surveillance by state and corporate actors, these responses aim at increasing, protecting and reclaiming individual autonomy, privacy and the capacity for a critical engagement with digital technologies. As such, they also enact an alternative understanding of digitality that stands in stark contrast to the dominant imaginaries of datafication which situate users of digital infrastructures as either co-producers or victims of surveillance (Kazansky & Milan 2021, p. 376).

The concept of counter-imaginaries has been further put into practice by Astrid Mager (2023), analyzing in detail how specific social values and identity give rise to the intertwined practices and imagination of actors attempting to counter dominant SIs in Europe in the specific context of alternative search engines. Importantly, Mager makes visible the existing tensions in practices of counter-imagining and challenging such hegemonic SIs (Mager 2023, p. 2). Specifically, these come to light in the trade-offs between ideological considerations and those of feasibility, practicability and – as the uptake and widespread use of technological artefacts is co-produced together with the imagination of futures – most importantly scalability. Mager argues that in the mundane practices of imagination, that is, the everyday engagement with specific issues through technological artefacts, the ideological values of developing actors are constantly renegotiated and change over time. They do so not only in response to broader, shifting imaginaries and sociotechnical realities, but also in a pragmatic approach to cater to communities beyond their own, encompassing larger societal groups (Mager 2023, p. 9). Given the technical, infrastructural complexity and scale of dominant SIs around digital futures it is difficult to subvert or counter on an equal level of effectiveness, both financially and temporally. Taking the example of hacking cultures, as embodied by hackerspaces, it becomes clear that many organizations that engage in counter-imaginary practices operate on very local, spatially limited spheres and further – unsurprisingly, given the general aim of counter-imaginary practice – outside of governmental and bureaucratic systems (such as formally applying for grants). In order to effectively enable the proliferation of counter-imaginaries, it is then necessary to create frameworks that cater to the pragmatism of these communities, but also to their individual situatedness in local, spatially limited contexts and in a temporally sustainable way (Haraway 1988). Not only do technical artefacts, infrastructures and the practices that correspond to them change continuously over time, concepts like privacy, freedom of speech and information, as well as openness themselves also change as they are contested, put into practice and adapted to the pragmatic demands of specific, local contexts.

Lastly, the instrumentalization and operationalization of digital data is at the core of not only information technology as a whole, but in the context of surveillance as well (specifically considering the contemporary demand for large sets of data to train AI). Subsequently and acknowledging the importance and usefulness of open data, countering the exploitation and abuse of personal and private data has to start with figuring out how to instrumentalize publicly available data, while retaining the privacy of individuals. Configuring such open data practices in a way that actually empowers citizens is no trivial matter and ultimately has to protect private data on the one hand, but also open up databases that remain proprietary and in the hands of a select few of powerful actors (Mager 2023, p. 10). The notion of SIs

helps to explicate a vision of the future, as it is held and made reality by the most powerful actors in the development and implementation of digital infrastructure and environments. Counter-imaginaries on the other hand provide an understanding of how other communities and actors take up upon these visions, in order to criticize, subvert and contest them by formulating and realizing their own, alternative visions of a digital future, that specifically respond to aspects of SIs that are perceived as problematic. In this work then, the specific form of hacking culture that co-constitutes the practices in the hackerspace will be approached as a form of counter-imaginative practice that responds to – and yet remains embedded into – the dominant, hegemonic imaginaries they contest.

3.4 Vanguard Visions

While sociotechnical imaginaries help in conceptualizing general visions of the future held by national and international actors that are embodied and reified in both, the policy and infrastructure these actors provide. Counter-Imaginaries on the other hand broaden the concept of sociotechnical imaginaries to include other actors, next to state- and nation-actors, in shaping them. This can include not only corporate actors bringing visions of new, profitable markets into the field, but also civic and activist ones trying to subvert hegemonic imaginaries. It is particularly helpful in the analysis of these – often rather small – activist communities to focus on the much smaller (and less institutionalized and shared on a national level) visions that exist on the level of very small communities or even individuals. Counter-imaginaries provide a lens into the constitution of SIs as a multiple and heterogeneous field of different imaginaries in continuous contestation with some being more, and some less powerful. In order to understand exactly how sociotechnical change, as well as imaginaries unfold over time however, it is equally important to locate their points of formation (Kazansky & Milan 2021) which start out as ideas that can also be held by individuals (themselves of course also shaped by the SIs they are situated in).

Stephen Hilgartner (2015) expands the concept of SIs by those of *sociotechnical vanguards* and *vanguard visions*. These vanguard visions can be held and enacted by very small communities, or even single persons, or *vanguards*. These ‘pioneers’ holding and implementing such vanguard visions, aim for the advancement of their visions, such that they eventually become a stable imaginary of a broader community. Such sociotechnical vanguards, following Hilgartner, ‘[...] designate relatively small collectives that formulate and act intentionally to realize particular sociotechnical visions of the future that have yet to be accepted by wider collectives, such as the nation [...] vanguards [...] assume a visionary role, performing the identity of one who possesses superior knowledge of emerging technologies

and aspires to realize their desirable potential.’ (Hilgartner 2015, p. 34). The particular way in which vanguard visions are made productive and travel into bigger communities – in the case of the hackerspace – is rooted in their everyday practices of developing and distributing alternative technologies and practices corresponding to them: Vanguard not only formulate and make explicit their visions of the future, they also actively build on their realization by creating technologies that correspond explicitly to their values (for example in the form of open-source software) (Hilgartner 2015, p. 35) – and thereby often oppose dominant SIs by subverting regimes of digital surveillance.

I approach the hackerspace – embodying a locally situated form of hacking culture – as a vanguard community, pioneering in building, practicing and advocating their own, alternative visions for a digital future, thereby shaping the imaginaries present in broader hacking culture and by extension the imaginaries held in broader society as well. While the visions and imaginative practices of sociotechnical vanguards do not necessarily scale up to broader collectives, they can still contribute to the ongoing reconfiguration of more dominant SIs, e.g. in the form of a more subtle influence on dominant and hegemonic SIs. Essentially, the concept of sociotechnical vanguards and their visions enables an analysis of very small communities that are active on a small locally limited level, while also acknowledging how the visions emerging from small communities such as the hackerspace are in mutual co-coproduction (Jasanoff 2004) with broader counter-imaginaries (e.g. with those of the Chaos Computer Club). The concept of vanguard visions therefore provides a useful lens in exploring the particular visions held in one of the smallest collective actors in hacking culture that operates on a spatially limited, local level in its daily practice, while it remains part of a globally and nationally shared form of counter-imaginary.

3.5 Communities of Practice

At the same time, the everyday practices taking place in the hackerspace are not only constituted in particular imagined realities, but in these practices such realities can also take tangible, even material form. *Communities of Practice* (CoP) is a concept that emphasizes forms of learning that take place in social interaction, outside of dedicated classrooms and in the everyday practices and engagement of individuals inside a community. Such a community can exist around virtually any phenomenon or activity, a group of work colleagues that work on similar topics or in the same company, a few enthusiastic hobby athletes practicing the same sport together, or a community of enthusiasts sharing a similar interest and mindset in engaging with technology (Wenger-Trayner 2005, p.1). While the process of learning is a characteristic aspect of the community, it is not necessarily the

intention of it coming together. In the same way, the individuals that form a CoP are not necessarily friends. Instead, they have a common identity that is based on a shared interest – and expertise – that distinguishes them from other individuals and communities. Being a member then, does also imply a certain level of commitment to engage in the activity or practice of choice in the community. While the community does not have to come together on a regular basis in order to practice their activity, it is characterized by a regular exchange and discourse with others from the community about the activity. Members of the community share a pool of resources (knowledge, resources, material, ...) which they all have access – and contribute – to (Wenger-Trayner 2005, p. 2). The learning that takes place in CoPs is of an implicit, situated and embodied form and unfolds mainly in the participation of individuals in the daily practices that are important to its respective community (Hildreth & Kimble, 2005). Building and sustaining a CoP is therefore also a long-term venture, as it can only emerge in a mode of interaction and engagement that is built and sustained over time and practicing the activity around which they organize themselves (Wenger-Trayner 2005, p. 3). If built successfully, a CoP will situate an environment, in which interested individuals have the resources they might need in order to engage in their practice at hand, access to materials, the expertise of other community-members, tools that are needed for the practice, etc. As they share a pool of knowledge and a history of production with the other members of the community, they will be able to allocate their own personal resources to practice their craft in more efficient and innovative ways. Essentially CoPs are learning environments that are in stark contrast to traditional educational environments, such as schools, classrooms and conventional teaching. Instead members engage with the practice purely out of their own volition and because they are genuinely motivated to do so.

There are seven characteristics that foster the sustainment of a successful CoP, following Wenger et al. (2005): First, the community should evolve naturally, that is the practice and outlook of exchange about it should attract the members of the community 'by itself', instead of starting with a community looking for an activity to share. Yet the activity itself should strike a balance between familiarity and excitement, i.e. it should always give room to improve or develop further, while valuing the knowledge that comes with familiarity with the practice. Even in the distinction through which the community forms an in-group, it should remain open for contribution from inside, as well as outside perspectives. In this, it is important to provide space for both, public as well as private spaces for the community to come together and exchange. Further, as levels of expertise vary between members – and one of the draws of a CoP is to gain the expertise necessary to participate in it – the community should allow for differing levels of expertise, i.e. it should not exclude interested people on the basis of their missing skill in the activity. The specific value that the members

see in the community should be openly and explicitly discussed between members. Lastly, there should be a sustainable yet regular amount of opportunity for the community to enact the exchange of knowledge that is necessary to sustain itself. The concept of CoPs provides a helpful lens in approaching and understanding the hackerspace. As will be further explored in the empirical chapter (cf. ch. 5), the dezentrale e.V., as the case study representing hackerspaces for this work is best understood, not as a place to practice activism, but a place in which to practice and follow the own, personal interest, which nevertheless often turns out to be activist. As a *community of practice* in Wenger's (2005) sense, the hackerspace, as well as its activism, will be analyzed in terms of the everyday practices, activities and social interactions that take place inside the community.

4 Case, Methods & Positionality

Having established an overview over the state of the art of the topic, the sensitizing concepts used and the research questions of this work, the following section will address the specific case that was investigated in order to provide an empirical basis for this work. Further, this chapter shortly introduces the methods used in collecting, as well as analyzing the empirical data. This is followed by a short description of the actual process of analysis that was instrumentalized to construct both, the empirical and the discussion chapter. Finally, the chapter concludes with a short reflection on my own positionality as a researcher conducting an ethnography in the hackerspace, but also on my personal situatedness in relation to the topic of research in general. Most of the scholarly discourse about activism in digital environments and hacking cultures – on a sociocultural (Coleman 2013), as well as an actor-level (Fleischhack 2018, Kubitsch  k 2018) – particularly emphasize the role of liberal values, or ‘moral genres’ (Coleman & Golub 2008) that are embedded in, but also guide the internal organization, outward communication and practice of activism in the form of hacking cultures. While they are enacted differently by different hacking cultures and communities, these shared values – as well as the visions constituted by them – will shape the action and forms of activism that comes out of hacking culture. Thus, in order to analyze the impact of such values and moral genres as they unfold in everyday practice it makes sense to analyze hacking culture on a much smaller, local level, the hackerspace. Characteristic of the everyday practices taking place in the hackerspace, is their grounding in the liberal values of individual freedom, autonomy, as well as the transformative force of sharing information and enabling individuals to retain, or reclaim their autonomy and privacy. As such, the hackerspace I joined for this study – while being from and for a rather small core community – is inherently open for anyone who is interested. Its core community sustains the hackerspace in their shared enthusiasm to creatively engage with and develop new technologies (which they in turn will often share publicly and for others to use). The particular motivation of this engagement however, is not merely in the production of technology, but equally – and very consciously with the potential transformative power these technologies can have for broader communities and publics beyond the community of the hackerspace itself.

4.1 Case

The fieldwork for this work took place in a hackerspace, the ‘dezentrale e.V.’ – also being the local branch and representative of the CCC in Leipzig. Formally, the dezentrale e.V. is a registered, non-profit organization running a hackerspace in the city. As a hackerspace, or

just 'space', they describe themselves in a very broad way, as a place of exchange and working together on technology-related projects²³. Importantly, while the space is communally organized and sustained most of the meetings in the dezentrale e.V., are accessible for anyone who is interested, making them not only easy to get into for myself as a site of research, but also an exemplary practice of empowering communities that might have no knowledge in the field whatsoever. Choosing the dezentrale e.V. in Leipzig as a specific site is a practical way to engage with and explore a community that is engaged in the work I want to contribute to in doing my thesis: Providing knowledge and empowerment for communities that seek to critically engage with the digital (as well as analogue) environments that make up large parts of our social reality. The dezentrale e.V. as an official, yet autonomous part of the CCC represents a community engaged in practices that make visible the processes and structures around digital environments, as well as formulating and communicating knowledge and practices to empower communities and individuals for an active, and – if so chosen – often activist participation in such environments. An explicit goal of the dezentrale e.V. is to provide knowledge, especially to vulnerable groups through their projects, for example providing an awareness of the digital structures and their underlying power constellations for minors and in schools. The specific emphasis of being open for anyone would also be an entry point to look at how other people and communities can be empowered and enabled to actively participate in the making and shaping of our digital surroundings. This way, I could simultaneously take the already established activist practices present in the CCC as a guidance in exploring activism and the emergence of agency, as well as to contribute to them throughout my fieldwork and hopefully with the finished work of my thesis.

4.2 Methods

The empirical basis of this work are the personal, ethnographic experiences – in the form of diary entries and my memory – I made during my regular visits to the space of the dezentrale e.V. I spent my evenings in the space two to three times a week, over the course of the first half of 2024 and participated in their activities, just hung out in the space, worked and engaged socially with members and visitors. Having spent a longer time in the space, provides me with a first-person account of the communities, group dynamics and the practices and relations that make up the dezentrale e.V from a first person perspective. In '*participant observation*' (Glaser & Strauß 1967), the researcher attempts to become part of the site they investigate. I want to contribute to the repertoire of action in communities like the CCC (as well as in other activist communities) and further rely on the expertise of the

23

very same communities. Hence, by being part of the communities to which I want to speak with my thesis, I would be able to access and engage with a rich field of knowledge and experiences allowing me to gain, first of all a deeper (maybe more 'technical') understanding of the (im)possibilities and potentials of such forms of activism, as well as of the potential motivations and experiences of those communities already involved (to some extent) in it. Additionally, I conducted in-depth, open-ended interviews with two long-time members of the space. Having gained a broad understanding of the activities, engagements, and exchanges at the *dezentrale e.V.*, these interviews allow me to conceptualize more specific aspects that could be contextualized with my personal experiences in the field. Doing these interviews also provides me with data that is more explicitly related to my research questions, something that is much more difficult just analyzing my own experiences at the *dezentrale e.V.*, which certainly often touch upon forms of activism, but are not always and not necessarily easily relatable to it. Therefore, I made sense of my own experiences, as well as the interviews reciprocally and cyclically: The Interviews were guided by my previous experiences in the field, but the knowledge gained from these interviews also helped me to further focus on specific aspects in my fieldwork. I analyzed the field- and interview-data I collected using a framework of constructivist grounded theory, as developed by Kathy Charmaz (2008). In its original iteration by Glaser and Strauss (1967), grounded theory aims to construct new theory out of the analysis of behavioral, qualitative data, as opposed to analysing data following preconceived theories. The conception of grounded theory provided a foundation of systematic qualitative research yielding equally significant outcomes as statistical and quantitative research did. The central aim of grounded theory is therefore theory generation rather than verification. As such an *inductive* method, grounded theory fundamentally relies on the emergence of categories and relations between them from the qualitative data collected by the researcher in order to develop theories of a social phenomenon (Kelle 2008, p. 211). This is done through an iterative process of going back and forth between data, categories emerging from it and theory conceptualized in correspondence, such that a 'constant comparative method' of coding, categorizing and theorizing shapes how the others develop in the further process of research (Glaser & Strauss 1967). Codification and the construction of categories from the collected data provide the backbone for the theory built from them, but as theory is beginning to take shape, it should also guide the further coding in turn.

Kathy Charmaz, in her book *Constructing Grounded Theory* (2014) builds upon and extends Glaser & Strauss original theory by acknowledging a postmodernist critique: The fragmentation of narratives of participants and situating the constructed theory as derived from objective facts extracted from the collected data. Constructivist approaches to

grounded theory add a reflective dimension to the approach: Neither the data, nor the resulting theory are discovered in the research, but both are co-constructed in the interaction of researcher and site of research (Charmaz 2006). In essence, Charmaz introduces a demand for critical reflexivity about the specific conditions of the production of research, as well as how this shapes the outcome of said research. This requires a particular attention by the researcher toward the circumstances in which they collect data (including their own presence as a researcher) and how they influence it throughout the whole process of research from the fieldwork to claiming and explicating findings (Charmaz 2020, p. 165). For Charmaz, this amounts to a large part to a consciousness about the impact of one's own research, but also acknowledging, embracing and explicating one's own positionality in one's research (Charmaz 2020, p. 174). Further repositioning the concept of grounded theory in alignment with the postmodern turn, Adele Clark, in her book *Situational analysis: grounded theory after the postmodern turn* (2005) also extends the concept of grounded theory. Importantly, Clarke puts a heavy focus on the interdisciplinary accessibility of research, as well as the integration of multiple sites of research into the process of a study. Thus, instead of solely analyzing interview data, Clarke proposes a range of analytical lenses, described by her as maps (situational, social and positional). They are intended to supplement the traditional process of working with grounded theory 'centering action over time as a basic social process' (Clarke 2003, p. 554).

By making grounded theory multi-sited – i.e. engaging with different kinds of qualitative data – Clarke acknowledges the postmodern tenet of a heterogeneity of actors with different positionalities, localities and ontologies that starkly contrast with the modernist claim to objectivity and universality (Clarke 2003, p. 555). Specifically, in situational analysis grounded theorizing is supplemented by a further sensibility for the inherent *constructedness* that encompasses all steps of the research, from the collection to the interpretation and the analysis of data. As such, the goal is not to construct an objective truth, but to show how heterogeneous, individually situated experiences and perspectives can be brought together in a meaningful, productive way. In situational analysis 'the goal is critically analyzing to produce 'a truth' or possible 'truths'—distinctive analytic understandings, interpretations, and representations of a particular social phenomenon.' (Clarke 2005, p. 9). This results in a pragmatist approach toward data collection and theory construction, which attempts to explicate not definitions of human, non-human, social and discursive aspects present during research, but attempts to uncover the relations between these actors by exploring the interactions (including with the researcher themselves) and relations between them (Clarke 2003, p. 559). Situational analysis acknowledges the 'embodiment and situatedness of all knowledge producers [...]' (Clarke 2005, p. 20) – encompassing both human and non-human

actors and relations between them – that are part of the *situation* of the researched phenomenon. In this work then, the concept of constructivist grounded theory provides a framework that allows a collection and analysis of qualitative, empirical data considering my own positionality as a researcher and regular ‘visitor’ to the hackerspace – and the corresponding situatedness in interpreting my experiences in it. Following my data in the construction of theoretical arguments and acknowledging the heterogeneity of different views, truths and practices that exist alongside each other in the hackerspace, situational analysis allows me to present my experiences not as an objective representation or narrative of what happens in the hackerspace, but as a situated way of making sense of my experiences in it (Clarke 2005).

4.3 Empirical Organization

The primary source of material used in this thesis is the ethnographic diary I kept throughout my time visiting the space. As a secondary source of empirical material, two interview transcripts served as contextualizing material that helped me in organizing, interpreting and making sense of the experiences I described in the diary. Both interviews were conducted after regularly visiting the space for two to three months, that is roughly halfway through my fieldwork in the space. As such, the interviews primarily served to gain a better and more explicit understanding of the – mostly rather chaotic – activities taking place in the hackerspace. Having two members of the community – both also sitting in the board of the association – elaborate on their own understanding of the space, but also on the questions that came up for me after spending some time in the hackerspace. Thus, the interviews, in this work, mainly serve to better understand and make more explicit the experiences I collected in my diary. During my fieldwork, I documented my experiences in the form of observational notes (Schatzman & Strauss, 1973, pp. 100-101), upon which I expanded directly after a visit by some more descriptive detail, as well as my own making sense of these experiences. Usually, on the morning after I visited the hackerspace, I used these notes to write a coherent text narrating my experience of that evening. These written-out diary entries served as the main source of empirical data in the later analysis. Stating my interest in doing interviews, one of the members of the *dezentrale e.V.* kindly referred me to two other members, which would be happy to do them with me. For these two *open-ended* interviews (Byrne 2016, Jensen & Laurie 2016), I thought of a range of general themes in relation to my research question, as well as a few questions, which were intended only to guide the interview such that its contents speak to my research aims. During the interviews themselves however, I tried to be not too rigid or to follow all of my specific, preconceived questions. Instead, I tried to play further into the direction the interviewees took after

introducing them to a specific theme of interest to me. Transcription of the interviews, as well as coding of both interview-transcripts and diary entries was done using *Ligresoftware*²⁴, a free-to-use, web-based software for analysis of qualitative data. Further, I also deleted several passages in the transcripts of both interviews as per request of the interviewees. Having transcribed the interviews, I listened and read both of them in their totality several times and afterwards wrote a short reflection in which I tried to get a grasp of the content and how I am to make sense of the interviews in a broadly general sense and in relation my field experiences, as well as research foci. After familiarizing myself with the empirical material I gathered in this way, I began the process of coding. While both – diary entries and interview transcripts – were used in the coding process following my fieldwork, the interviews in particular were helpful for me personally in making sense of what I experienced during my visits in the hackerspace in light of my research questions.

In practice the process of coding consisted of going through the transcripts and creating codes (each described with a note) from passages and sentences that I found significant. As a result of the coding process I ended up with three essential dimensions. Each of these dimensions encompassed several categories, which themselves contain the coded fragments from the text. It should be noted, that these dimensions, as well as categories are often intervoven and/or overlapping, with their ultimate categorization being of course somewhat arbitrary and based on my own preconceptions about which categorizations would allow me to construct a theory that could be engaged through my research questions. The three dimensions that emerged through coding and the categories they include were then used to organize and structure the empirical chapter, where each of these dimensions is analyzed and brought into dialogue with one of my research questions. The first dimension relates to the specific counter-imaginary formulated in the *dezentrale e.V.* This includes not only the ideals and values that are made explicit by members of the hackerspace, but also those embodied in the overall organization of the *dezentrale e.V.* 's structure, collective activity and public action. The second dimension concerns the more specific practices and materialities emerging as a result of the day-to-day activity taking place in the *dezentrale e.V.* Lastly, the third dimension revolves around the tensions and ambivalences, but also the responses to them, emerging between this counter-imaginary and the practices in the hackerspace. More specifically, this third empirical section is to visualize out not only in how far the hackerspace can be seen as productive of vanguard visions and a counter-imaginary, but also that it remains embedded into a broader sociotechnical landscape and that it is not always easy or possible to uphold and practice such a counter-imaginary, given the heterogeneity of different views, practices and visions in the hackerspace. Before concluding

²⁴ ligresoftware.com

this methodological outline and proceeding with the empirical chapter however, it is in order to shortly reflect on my own positionality as a researcher (and otherwise), to appropriately approach this work within the context of my personal background, beliefs and identity.

4.4 Positionality

As mentioned before in this work, my initial understanding, or rather expectation of what I was to experience and find out during my fieldwork turned out to be a somewhat superficial — if not naive — conception of the *dezentrale e.V.* and the hackerspace in general. This conception might have been shaped by my only previous, direct contact with the hacking culture existing around the CCC, namely the yearly convention of the *Chaos Communication Congress*, which took place in Leipzig (my hometown) in 2017. I was able to join the congress in that year as part of a group of friends volunteering there, as the event was and is largely organized through voluntary work, but I did not attend with any academic or scholarly intention, or even a sensibility for the broader sociotechnical and political implications of hacking as a form of culture at that time. Nevertheless, visiting the congress left a lasting impression on me, which I came to see under a more nuanced light, as I deepened my interest in the sociotechnical aspects of contemporary digital transformations during my graduate studies. Further, I was able to negotiate the possibility of doing an ethnography in the *dezentrale e.V.* before actually going there, as I had the opportunity to talk to someone who was a member of the hackerspace and still was in contact with its community. These aspects of my personal background situate the accessibility of the *dezentrale e.V.* as a site, as much as this personal background is constitutive of the whole research process, this thesis is the product of, from my first time visiting the *dezentrale e.V.*, to writing down the work itself. I also want to acknowledge my positionality considering my personal identity. As an educated, white male the resources afforded to me in researching and integrating into the community of the *dezentrale e.V.* might differ from other experiences. In fact, I experienced the environment of the *dezentrale e.V.* mostly in line with Sarah Davies (2017) assessment of most hackerspaces being – despite their stated openness – very homogeneous and characterized by a middle-class, mostly male member base (Davies 2017, p. 98). While being open for anyone and making a conscious effort to looking outward to include everyone interested (there is for example a bi-weekly Flinta event in the *dezentrale e.V.*), it seems that the space remains most accessible to men – something however, the members of the space also critically reflect, at least during the interviews I conducted.

5 Empirical Chapter - Chaos as a Form of Organization

Where the previous chapters of this work served to introduce and properly situate hacking culture theoretically, the following chapter lays out the empirical foundation to answer the research questions posed previously in the third chapter. Following a short, general description of – and introduction to – the *dezentrale e.V.* as a hackerspace, the empirical section is organized into three sections, each engaging more or less specifically with one of the research questions. Following the short phenomenological introduction of the *dezentrale e.V.*, section 5.2 outlines the values and ideals held by members in the hackerspace and is constructed here as describing the underlying logic of the counter-imaginary of the hackerspace. Section 5.3 explores the practices that are equally part of this imaginary and section 5.4 takes a closer look at the relationship between these values, ideals and practices in how they are maintained, but also how they come under friction and deal with ambivalences.

5.1 Introducing the ‘*dezentrale e.V.*’

Before going to the *dezentrale e.V.* for the first time, but already after my first request to do ethnographic work at the space to the associations board and their agreeing to it, I first got in touch with the community through the very active online channel run by the space on Matrix²⁵ (a communication/chat web protocol). After creating an account on the platform, and joining the *dezentrale* channel, I could already get an idea of what I would experience later in the analogue space of the *dezentrale*: For each of the regular, weekly events taking place, there is a dedicated chatroom, in which people planning to go to the respective event would exchange, organize and plan the upcoming evening, as well as reflect on and discuss previous evenings. My first in-person visit took place on a Friday evening and weekly ‘Chaostreff’ – a free to visit for everyone event, with no dedicated topic or activity – is taking place. After a 30 minute tram ride, I arrived at the address and rang the bell upon which the door buzzer immediately went off to open the door (afterwards I found out that the door-lock system is programmed to open the door automatically when the bell rings and there are members in the space). I step through the gateway into the backyard, where there is a smaller two-story building that looks rather run down. On the wooden door I see now, is a small laminated printout, disclosing the entrance to the space of the *dezentrale*. I step in into a dirty room, with a lot of electronic and mechanic parts lying on a desk and in several shelves, a lot of wood, processed as well as raw, a small door to the left, with a sign that says WC above it, a door right in front of me with a glass window, as well as a staircase to

²⁵ <https://matrix.org/>

my right winding up and to the right. My first impulse is to step through the door right in front of me, but taking a look through the very dusty glass and trying to recognize anything behind it I do not see anyone in there and the room itself looks more like a workshop for wood furniture, rather than a hackerspace. Then, after turning towards the stairs, I see another printout with the lettering *dezentrale e.V.* an arrow pointing up, as well as the logo of the hackerspace that I already saw on the website: A stylized Octopus, holding a variety of tools associated with different aspects of digital culture. Alongside the print, there are several LED-chains mounted to the wall and following the staircase at the height of a handrail on the wall to my left. As I climb the stairs, I notice that one of the stairs is actually made of chipboard and looks very makeshift, standing out from the other stairs. Coming out on the upper floor, I stand in a small corridor, with another empty room in front of me and a closed double-winged door to my right at the end of the corridor. Also, up here there are stickers everywhere, from furniture, to walls and the doors and especially many on the table in the empty room in front of me. I then turn to the double-winged door and open it, stepping into the actual hackerspace.

Having entered, I step into a large room of about 40-50 square meters, brightly lit, with plastered walls, painted in white, a very dirty linoleum floor and yet more stickers. It smells of machine oil, but also a bit of food. Upon my first impression, the room has way too many things to take it all in without being slightly overwhelmed. The rectangle room is splitted at around two thirds of its longer side by a large, makeshift wooden shelf, containing many boxes, tools, devices, cables and much more. Behind that, the view is omitted, but several people seem to be busy back there. Coming in, to my right is a fridge, and an old mechanic cashbox on a little table and a blackboard with several nicknames (some of which I recognize from the Matrix channel) and tally counters on it. Next to the table there is a small bookshelf, which is full of books, as well as several boxes full of unused stickers of the likes of those that were at the walls outside of the room. In front of me is a rather large area in which 4 couches are arranged around two small coffee tables, which themselves feature a variety of devices (such as power outlets, as well as several ethernet ports) that are screwed to them. To my left there are three large desks with several monitors and a PC, as well as one person working in front of one of the monitors, and at the height of the room-splitting shelf, there is a cube that I recognize as a 3D-printer after a few seconds. Also, the inside of the room presents a stark change of the atmosphere to the outside, from which I just came. From outside, I couldn't hear anything, but inside there are a lot of people, a lot of noise and a range of different activities taking place, some of which were difficult to comprehend at first glance. On the ceiling there are three projectors, pointing to different walls.

After a few moments taking in the space as a whole, then taking a few steps into the room, feeling slightly out of place, as my arrival did obviously not go unnoticed and of course I also announced myself one of the days before in the Matrix channel. As I go, several people – those in the ‘couch area’, the rest are rather absorbed in front of a screen, or in doing their undefinable work in the back behind the shelf – notice my arrival, in turn prompting me to give an introduction of myself. After doing so, and again explaining my specific reasons for being there, several people actually remember that the board of the *dezentrale e.V.* mentioned me and the work I want to do at the space before. While no one seems to really know exactly why I’m there, there are several people, who at least in some form are informed about and agree with my idea of doing ethnographic work in the space. At that point however, I had the strong feeling that no one present in that situation actually understood what the research I was imagining to do actually was – and I’m not even sure, I did myself. Nevertheless, I was welcomed very warmly, as well as with a lot of interest in my research. After explaining for a few minutes, what exactly I want to research in the space, as well as how and why – which was much easier when I was theorizing it in the seminar-room setting, I’m told I chose the perfect day to come by the first time and get to know the space, as well as to take a drink from the fridge, as the first one is free for everyone who comes.

After choosing one from the fridge, which is full of all kinds of beverages ranging from beer to juice, and going back to the group at the couches, I’m questioned a bit further, on my thesis and the research I want to do, as well as on STS in general. After a few minutes, most of the people on the couches are at their laptops again, such that I end up in a one to one conversation with one of the club’s very active members – as I find out over the course of our conversation and over the course of my further visits to the space – whom I will call K. here and throughout the text. I’m also offered a ‘guided tour’ through the space by K., which I gladly accept, because I really want to see the part of the room that was hidden behind the shelf until now. Passing by the shelf, I see that there is a door to yet another room, which K. promptly opens, revealing a server-, as well as storage-room, with more shelves full of cables, laptops, platines and much more unidentifiable electronic parts. Coming into the room, on the right-hand side, there is a server-rack with several large switches, tons of cables and a large paper note with a ‘NICHT ANFASSEN!’²⁶ warning on it. K. takes some parts from a shelf and we leave the room, now facing the large workbench that goes along the whole length of the backside of the room-splitting shelf. This part of the space is much more messy, there are several, heavy tool cabinets, even more shelves with different electronic parts. At the workbench, there are 3 people, respectively working with soldering irons and/or precision mechanic sets, either on putting together circuit boards (I have no idea to which purpose), or

²⁶ ‘Do not touch’ (my translation)

on disassembling a smartphone and a laptop, respectively. K. tells me, back here is where the work on hardware mostly takes place, especially the soldering of circuit boards. Another interesting piece of furniture is a standard Ikea shelf, with every single section marked with a name. K. goes on to tell me that these are the 'member shelves' that each official member of the association is supposed to get. Funnily, the number of spaces in the shelf does not even closely match the number of actual members of the space. As a result, K. explains, the spaces in this shelf are assigned to some of the most active, regularly present members in the space, which is of course a way of allocation that is easily contested, which is only underlined by K. getting into a small rant about the disorder and scrap the shelf is filled with supposedly. After the short tour through the space, we go back around the shelf, I go to get another drink – which, this time does cost me 2€ that I have to put into the mechanic cash register next to the fridge – and we sit down on the couches again. The rest of the evening, I mostly spend with K. and one other person, also a member of the space, whom I will call M., who both inquire further about my thesis and research. After a while of this and some further small talk, I also got to know both of my partners in conversation a bit better. Both, – and most other members of the space that I meet throughout my time here – study, work, and/or have some expertise in informatics. Around midnight, I decide to go home, leaving the space with a feeling of being very welcome and also of appreciation, or interest for my research. I only noticed after leaving, that no one introduced themselves with their actual names (except for me), which somehow went past me without noticing.

Reflecting on my experience in the space this first time, as well as more generally in the beginning of my time going to the space, I certainly went into the fieldwork somewhat naively, or rather with less mundane expectations of the activities taking place in the space than reality had to offer. In essence, after my first visit, it certainly did not really feel like I would be able to see how activism is overtly practiced in the space. Instead, everyone was just going to the space as a place to hang out and/or follow some personal project, but less so to rally against state surveillance and capitalism (which is not to say that critique on increasing surveillance was very much and regular content of the discourse in the space). It actually took a few visits to the *dezentrale* for me, as well as a thorough reconsideration of the questions I wanted to ask, before I was able to make coherent sense and purpose of my own research here. It just did not really feel like I would be able to experience the space in a way that would make explicit how 'digital activism' works, or is done following definitive instructions. Nevertheless, I also had the feeling that what is happening in the *dezentrale*, as well as what the *dezentrale* – as an actor – 'is doing', is very much interwoven with activist practices itself. Looking at the diary entries from the first few times I was at the space I wrote a lot about how I feel unable to grasp these practices with my initial expectations and

understanding of the space. While it is very much the case that the CCC as a larger institution gains public attention for some very specific, intentional, activist actions, its much more small-scale branch of the *dezentrale*, does so very rarely. Instead, I have come to see the hackerspace as more of a space that does empower individuals in their engagement with the digital, in providing pragmatic solutions to everyday problems users of digital environments face, but also over time and in a sustained engagement with and in the space. In doing so, being much more of an implicit, continuous process, rather than a succession of goal-directed actions, it also enables forms of activism that do not necessarily take place in, or even start from, the *dezentrale*.

Another thing that was rather present throughout the entries of my diaries was a more personal feeling of insecurity, as a large portion of the discourse taking place in the space was very technical and I felt a bit inadequately equipped to contribute properly – even when it touched more socio-technical matters. In general, a slight feeling of being, to a degree – and as one of the few people regularly visiting despite not being a member – an outsider to the space persists in my diary entries almost to the end. Most of the time, I felt like this when there were a lot of people in the space and I have to admit, that I at times coped with this by taking a step back, resorting to observing, instead of actively engaging, in essence I sometimes felt a bit lost in between the others in the space. Luckily for me, most of the times I was there, the space was not that full and there was rarely anyone that I could engage in a one to one conversation with. I also think, that most of the members, after a while of me regularly visiting and all of us getting used to each other, developed a certain awareness of me not just hanging out in the space, but also doing research – as I openly talked about with them – and in the consequence showed a lot of interest, but I felt, were also very conscious – if not cautious – of what they were saying and how. Further, I also felt – sometimes – that some issues became more of a topic, just because I was there and people knew the field I come from and I'm not sure in how far they would have been pointed out as something special otherwise, without me being there. At the same time, my professional and personal interests and contributions were always met with genuine interest and appreciation. Mostly, if I had a question, or wanted to try something, I was encouraged to do so and even got help in the process, as long as I showed the initiative to engage. And even despite the general need to show some initiative, coming the first few times and not knowing anyone there yet, I also was actively engaged by the member that took the responsibility for the organization and smooth running respective evening. I would also experience this later, when I myself felt a bit more at home in the space: When other people were visiting for the first time, they were actively engaged and integrated into the ongoing conversation, ensuring that they could participate from the start.

5.2 Counter-Imaginaries, Values & Ideals

S.: '[...] es gibt [...] in keinem anderen Land der Welt eine Hackerkultur wie in Deutschland.'

Although in retrospect I would certainly perceive it as such, it is difficult to situate the everyday practices I experienced in the hackerspace as some range of world-changing activist action that enables one to fully reclaim eroding, individual privacy in the digital economy. I started coming to the *dezentrale e.V.* hoping to see exactly that: At least some instances, in which the community in the space actively conceptualizes and acts actively to overthrow, or subvert existing monopolies on digital infrastructure. It took some time in the space for me to cope with the fact that this is not really the primary concern of the community – although it is still related to much of its activities. It was only after a while I spent in the *dezentrale e.V.*, that I was able to perceive the space as profoundly activist. As I was able to participate in the everyday activities and practices that take place in the *dezentrale e.V.* as a clubhouse and space for a tight-knit community to spend time together that is also open to newcomers most of the time. This is to say, that I did not – at least not for most of the time – get to explore how the *dezentrale e.V.* acts on a broader societal level, for example as part of the Chaos Computer Club, but also with other local initiatives, especially in Germany's East. The first section of the empirical part relates to the first research question of this work investigating the ***counter-imaginaries formed in a German hackerspace and how they relate to broader hacking cultures***, by making explicit the ideals and values formulated in the *dezentrale e.V.*

5.2.1 Hacking, Open Source Software & Empowerment

One of the most direct and explicit contexts, in which members of the *dezentrale e.V.* formulate a set of values or ideals, is that of the hacker ethics as they were taken up from Levy (2010) and extended upon by the CCC²⁷. The hacker ethics, as they were described in the second chapter of this work (cf. ch. 2.2), can be seen as a loose set of guidelines which define ethically appropriate forms of engagement with computational technology. Particularly the two-fold approach to handling public and private data, which particularly emphasizes the use of public data and vehemently criticizes the use of personal data. One of the interviewees summarizes the propositions of hacker ethics as follows:

P.: 'The hacker ethic is a summary of, I believe, ten points. [...] Hacker ethics were published, setting out a few principles on how data should be handled from the CCC's point of view, or exactly what they actually define as hacking [...]. Points such as using public data

²⁷ <https://www.ccc.de/de/hackerethik>

*and protecting private data are very good principles, for example. Yes, or all information must be free. This goes in the same direction, in that it says that public data, for example, should be freely available. So, for example, if public broadcasting produces programs, then I would like to be able to watch them in 20 years' time, because they are actually public.*²⁸

Most prominently, this inherently critical form of engagement is also embodied in the related practices of hacking, as well as in free- and open-source software projects. Importantly, hacking, as it is conceptualized here, is corresponding less to a cliché, 'hollywood-esque' image of young criminals sitting in a dark room in front of a monitor, but refers much more to an artistic practice and general way with which reality – not just digitally – is engaged with: Essentially it describes the practice of creatively transforming the intended use and usage of cultural, social and technological artifacts, without necessarily knowing what the result of this engagement will be:

P.: 'Let's put it this way: the term "hacker" has been given quite a negative connotation by the media. [...] Of course, I don't want to imply that there aren't people out there who could hack the Pentagon, but they would go about it in a more subtle way. [...] Hacking — in my view — describes the process of what I always call "creative use of technology". So, I have technology and usually want to achieve certain goals. Sometimes I just want to go with the flow and see where the journey takes me.'

An important aspect in this is the contribution to and distribution of technical systems that are free to use and open to modification by their users. Hence, in the interview with P., they make it very clear that they see more and better open source software as the foundation of empowering individuals in their engagements with digital technologies:

P.: 'Yes, and that's where I see a great demand for more free software, better free software. There's still a lot to do [...]. For example, if you can develop software, you can pick a project that interests you and just start participating in it. Simply put, to become a contributor, so to speak, to advocate the advancement of free software, which ultimately leads to ... more software being available.'

The actual political and moral values that underline the visions and practices in the hackerspace, as well as the role the dezentrale as an actor takes in this are rather clear: It is to enable individuals to protect their own, personal data on the one hand, on the other it means to enable the tools and know-how of individuals to access and use public data to their own, personal benefit (which at best, would be the creation of free- and open-source

²⁸ All translations of the (originally German) interview material were done by the author

software, that embodies an opposition to so-called proprietary software, which even if it is 'bought', is not owned by its users):

P.: 'So the worst thing that can happen is probably having closed-off systems where the user is actually no longer the owner of the system. Take an Android phone, for example, where you simply –. although you are its user, the actual data belongs to Google: Even if it's on your phone, it actually belongs to Google.'

The specific orientation toward the hacker ethics, as well as the endorsement and practice of developing, contributing to and sharing open source software also motivates the formulation of the visions of the future in the hackerspace. Specifically, the idea that, not only software, but technological and technical know-how in general should be freely available and shared between individuals, in order to add to and improve this collective know-how is an imaginary that contrasts dominant, hegemonic imaginaries of a digital world, that promise a maximum of comfort and a frictionless experience for the price of resigning individual privacy and autonomy and knowledge of the systems. Particularly, this also concerns the idea of *algorithmic governance* (Aradau & Blanke 2022), enabled through the collection of private and increasingly detailed information about individuals and their behavior. In the interview, P. strongly criticizes the contemporary attempts of state and corporate actors to push for the collection of personal data:

P.: '[...] And for me, a liberal approach to data means that exactly this does not happen. That a government says, "Okay, we have to collect data up to this point, but actually, anything we don't have to collect, we shouldn't." First things coming to mind for me are surveillance cameras and facial recognition. But also creating movement profiles from mobile data. Data retention is a very big issue here. These are more like counterexamples to freedom.'

5.2.2 Chaotic Forms of Organization & Practice

A second aspect that positions the community of the *dezentrale e.V.* enacting a counter-imaginary of the digital future is found in the internal organization of the hackerspace itself, as a formal association, recognized by the local municipalities, but also how collective action is organized, inside the hackerspace but also as the community engages with other public actors. Throughout my whole time in the space, a continuous topic in the club was the upcoming move of the space to another location. As this was planned and organized by the members for a rather long time, before the move actually happened, I was able to experience first hand how *dezentrale* is organizationally structured. I could join several *plena* and was even encouraged to contribute ideas if I had any – as a non-member of course

without any real votes in any decisions. In the plena itself²⁹, everything is democratically decided on, by all the members attending the plenum, per vote. These plena were actually one of the few occasions where there was an externally visible effort to structure the event in a rather strict way, that is to say it was much less 'chaotic' than anything else I experienced in the space before. Of note to me in this was, that there was no specific top-down distribution of responsibility for anything about the relocation. Instead the whole project was subjected to a strategy of 'divide and conquer', in which it was split into many subprojects (also by democratic process), for which people would then volunteer to take responsibility.

The whole process took a rather long time, but considering that everyone in the plenum had equal rights to voice their opinion and ideas, it led to a bottom-up distribution of tasks, diverse enough for everyone – even non-members – to contribute in some aspect (I for example volunteered for joining the supervision of the moving company which would later be hired to transport everything). One of these subprojects in particular was especially interesting – and being mostly worked on in the space – to follow, as it exemplified the strengths of this kind of organization: An electronic door lock system, which would allow only members to remotely open the door in the new space. Of course, the people who volunteered for this project were planning to build this system by themselves and from the ground up. Over my visits in the space, I was basically able to follow the development of this system from conception to actual implementation. A strength of organizing this way – especially in this community – is the joy with which people will engage with these projects. The two that were making the lock system were – of course – also some of the most regular faces in the space.

While there were no hierarchical structures that were enforced top-down, this intrinsic motivation of people to engage with and contribute to the concerns and matters of the space made for a certain power structure in the space as well: One that depends on the individual motivation to participate, bringing in own ideas and projects, as well as the expertise to follow through with this. Not having this expertise on the other hand, implied just not being able to contribute to and shape the space in the same way, even if it was encouraged. Despite the general organization into 'themed evenings', in visiting the space, I always had the impression of a very chaotic, unorganized structure of events, for example, people would just hang out for a beer during 'Techniksprechstunde' (normally the evening for repairing electronic devices). Often, there were different projects and different activities going on next to each other. Yet, there was always someone having an eye for people – like me in the beginning – who seemed lost, or were new to the space. It took me a while to realize, that

²⁹ publicly accessible under: <https://wiki.dezentrale.space/Protokolle>

despite the chaotic touch of the space as a whole, there is also a functioning form of organizing and acting as a collective actor. It was after doing the interview, as well as visiting one of the plena, when I noted to myself that *dezentrale* and its community are characterized by 'Chaos' even in organizing itself. One of the interviewees summarizes this explicitly in this passage:

P.: *'I have to say, this works in chaos. So, anything that goes in the direction of hackerspaces, I'll just call chaos [...]: when you don't have a central authority to coordinate things. People will find ways on their own to connect with each other and [...] organize themselves.'*

Despite the chaos in which almost all activities internal to the space were embedded, the club retained the ability to structure the activities of the club and to organize effective, intentional, collective action in it. Following the interviewees' statement, this 'chaotic order' is also something that is very consciously – and maybe even proudly – managed. Given the joy and motivation with which the core-community works in – and for – the space, it becomes also a bit more understandable that the work needed for such a continuous form of organization seems so easily done, even with a considerable number of members that participate in organization, but at the same time have to be organized:

P.: *'Das klappt eigentlich ziemlich gut, auch wenn man keine zentrale Instanz hat, die das koordiniert. Leute finden dann auch von sich aus Möglichkeiten, Schnittstellen zu schaffen und und und. Sich selbst zu organisieren.'*

On the other hand, the interviewee, P. also notes that at some point certain 'levels of abstraction' become necessary in order to sustain efficiency of collective action, as he refers to larger events, like the Chaos Communication Congress':

P.: *'From a certain point, you have to have at least some levels of [organizational] abstraction [...]. So, of course, there are always resources that you have to work with, that you have to allocate. Whether that's times in the weekly slot, i.e., slots in the weekly program, or rooms [...].'*

The *dezentrale* manages to do the same on a smaller, local scale. In the case of the planned move to another location the same flat hierarchy was constitutive of organization. Available as well as needed resources (workforce, expertise, time, budget, etc.), as well as a list of tasks were assessed and agreed upon democratically and taken on voluntarily and in small, self-organized groups. In our interview, P. specifically refers to the team responsible to design and implement an electronic door-lock system for the new location of the

hackerspace, pointing out the enthusiasm with which some of the members engage with their – technically often complex – tasks:

P.: 'So we haven't even started the actual move yet, but they've already gotten so into it that questions are coming up like: Okay, how do we link this to the LDAP so we can exchange certificates to authenticate users, and oh yeah, we still have a doorbell button and we still have this....'

As the names of the CCC and the dezentrale e.V. already suggest, the chaotic appearance that characterizes the structure of German hacking culture is very intentional: The idea of chaos is embraced and integrated into the internal organization of the hackerspace and its relation to other actors. Chaos, in that sense, is embraced as an imaginary in which collective and individual action is enabled without the need for hierarchical structure and based on autotelic engagement, personal interest and the free sharing of knowledge and resources.

5.2.3. Impact & Achievements

On a directly visible level, there are the public statements and activities that constitute the main activities of the space: Holding workshops and presentations, giving out hardware for people in need, affording a space to which everyone can go and get help in repairing their devices, or even creating their own. In this they not only engage with and tackle problematic technology practices (for example, hardware that is 'defective by design'), speak publicly and take a stand toward these problems, but also provide an entry point for all those that are interested and motivated to engage with net politics and everything around the digital more deeply and critically. In our interview, S. points out the success of pushing more benevolent legislation in Europe, in which the hacking culture, as it is practiced in Germany and middle Europe contribute its part:

S.: '[...] Significant progress has already been made. For example, with the GDPR – the General Data Protection Regulation of the European Union –, or also in the domain of the right to repair, or in the case of USB-C as a standard.'

Generally, the interviewees emphasized the rather special hacking culture in Germany, a fact that also would have been lost on me. While it is difficult to see it at times, to see it as the primary intention, the practice in the hackerspace certainly is activist in the sense of aiming for social change and imagining alternative societies. Putting idealistic values (like the hacker ethics of the CCC) into everyday and mundane practice (in contrast to one-time, large-scale action) demands a lot of continuous effort and – in my opinion – necessitates not

only the infrastructures to do so (e.g. in form of a hackerspace), but often either a very strong motivation, and/or doing so as a profession. While this concerns only a few people I met in the space, members of the space are very aware of the sociotechnical visions and impacts that emerge through the practices of the *dezentrale* and of the hacking culture in Germany in general:

S.: '[...] At the same time, representatives of hackerspaces are often the first point of contact when it comes to gaining a citizen-centered perspective on digitalization, digital issues, and problems associated with digitalization.'

Also important for S. in this regard is the missing awareness, if not the persisting ignorance of the surveillance-capitalist structures that constitute contemporary digital environments. Depressingly, as both interviewees admit, it is simply not enough to bring to awareness the fact that individuals are exploited for their personal data on a large scale, by state as much as corporate actors. As a matter of fact, an awareness of this general environment of surveillance does not necessarily situate an effective basis to fight or subvert this surveillance itself. This becomes particularly clear in the both the interviewees words:

P.: 'It's worth taking a look at the intentions of these companies until now and where this might be heading. So, what happens with the collected data, is for example the generation of advertising profiles, which is a really big thing that Google earns its money from [...]. So it's no coincidence what ads we see, because Google has a lot of data about us.'

S.: '[...] The only thing more shocking to me than the Snowden revelations was, how little has changed in people's everyday lives since then. Except that the standard response from people who don't want to deal with the issue has shifted a little from "Yes, but you don't think they're monitoring everyone now" to "Well, they already know everything about me anyway. What else can I do now?"'

Beyond the space as a public actor, it is also open for anyone interested to, but in order to really participate and contribute one has to either bring a lot of know-how and expertise in the first place, or find the time to acquire enough of – by oneself, but also in the space. It has to be said that in my experience, the activities taking place in the *dezentrale*, even the *dezentrale* itself, are first and foremost part of the personal leisure time of its members. It is therefore not surprising, that other than continuing to provide a safe space, the *dezentrale* does not primarily, or at least not directly work to dedicate every possible resource to the enactment of goals such as the hacker-ethics of the CCC. Nevertheless, the same ethic underlies and guides both the organization of the hackerspace, as well as the values upheld

and practiced in it. This is captured, for example, in one of the interviewees description of their own positionality before and after they joined the dezentrale e.V.:

S.: '[...] I was already very interested before, but at my age back then, of course there was the internet, but I would say that the decentralize definitely benefited me a lot in the sense that I learned much faster because I had people around me who had decades of experience in the field and whom I could simply ask [...], which is absolutely not a given.'

While my personal experiences of the dezentrale were limited to the everyday social interactions inside the space, the interviews provided a bit more information on how the hackerspace connects, not only to the CCC as its umbrella organization, but also to other local NGOs, localities and initiatives. While the dezentrale e.V. has accounts on several (alternative) social media platforms (e.g. Mastodon, Matrix), many initiatives from the dezentrale are in the responsibility of single, individual members of the hackerspace. Different members might have different connections to other NGOs, hackerspaces and individuals, they might hold presentations and workshops on their own and not necessarily as a representative of the hackerspace as such. Yet, these individual connections and networking practices at some level also trace back to the dezentrale e.V, either as an implicit understanding of the involved people, or even enabled through the space the dezentrale e.V. provides in the first place. Much of the impact of the dezentrale e.V. has in bringing about social change is therefore tacit and difficult to disentangle and explicate given the chaotic environment such change emerges from. This impact is manifested mostly in either interpersonal interaction by members of the space with people in their personal sphere, in the context of the regular events in the space, or in the form of an individual member's engagement – often also in other organizations, hackerspaces and initiatives and not necessarily the dezentrale e.V. itself.

P.: 'We visit other hackerspaces and network with them. This also attracts people who don't really have much to do with the Leipzig hackerspace. We've had people come in and say, "Hey, I was in Dresden and heard that there's a hackerspace in Leipzig, so I just wanted to stop by...".'

Following the interviewees, the importance of a broad scale understanding of digital infrastructures and technologies is not only critical, but also does not resign in the face of a seeming powerlessness to act against the complex of surveillance that underlies digital infrastructure. In our interview, S. emphasizes the importance to try to empower other people, not on a large scale but in interpersonal engagement:

S.: '[...] I think it's also extremely important to empower people, [...] and also to show them a way out of the powerlessness in the face of this huge, seemingly invincible surveillance-capitalist apparatus that has been building up for years, decades now.'

Listening to the interviewees and considering my own experiences in the space, this general, pessimistic tenet that characterizes today's landscape of digital media does not necessarily imply an actual powerlessness. In the specific case of the *dezentrale*, this tension is consciously engaged with, publicly as a charitable organization with the specific aim to educate, contribute to contemporary art and culture and enable citizens for crime prevention³⁰. On an interpersonal dimension and also beyond just the practices taking place inside the space, one of the interviewees neatly summarizes the scale on which the space perceives the most leverage to act against surveillance-capitalist, digital structures. This includes not only an awareness of the importance of-, and the know-how to protect and manage the own, personal data but most importantly to share this awareness and if possible, knowledge with others who might not be as invested in these matters. As hackerspace communities are of a rather small scale most of the time, this is most effectively done in the personal, private social sphere of individuals, i.e. with one's friends and family:

S.: '[...] An important aspect [...] is that now, yes, you should become a multiplier. If you have the knowledge, if you have the skills and feel capable of doing so, then you should also talk to people in your own environment, perhaps use other applications, or whatever.'

P.: '[...] I think it's just as important to help other people do the same, so to speak, simply teaching people how to handle data carefully.'

5.2.4 Summary

Gabriella E. Coleman (2013) conceptualizes hacking culture (in the United States) as closely intertwined with a range of liberal values and ideals, as well as the practices of developing, using and contributing to free- and open-source- software projects, which in turn are meant to enable all individuals equally to participate in their development, as well as use. This stands in stark contrast to many of the contemporary practices and legislations that enforce the enactment of intellectual property rights and trademarks which strictly regulate the use, distribution and accessibility of such property. Hacking in this view is thus not merely the activity of 'breaking' and 'breaking into' digital proprietary systems, but much more a critical engagement with such digital systems and infrastructure, either by repurposing intellectual property, for example in subverting their original and intended use, or by creating alternatives to these systems in the form of open-source soft- and hardware. Many of the values that are

³⁰ Vereinssatzung *dezentrale* e.V.: <https://dezentrale.space/docs/dezentrale-satzung.pdf>

held by hacking communities in the US are also present in hacking culture in Germany and are practiced in the hackerspaces here. There is however, a range of dimensions and aspects in how these small-scale, local communities interpret and enact such values, that makes hacking culture, as it is practiced in the *dezentrale e.V.*, distinct from Coleman's (2013) description of some of the heterogeneous genres of hacking culture.

In practice – and as the next section will explore in detail – this counter-imaginary provides more of a framework that orientates and guides activity in the hackerspace, to construct and maintain an alternative, locally limited reality of engaging with digital technologies. This however, is not to say that the practices that are enacted in the *dezentrale* do not have an actual, visible impact on its surroundings. While on a spatially small-scale, local level the space does help anybody, even if they are visiting only once to get help with specific technical problems, on a broader scale the space also remains embedded in the overarching organizational structure of the Chaos Computer Club. Starting at the local space itself, formal, bureaucratic and official rules and structures are instrumentalized to the bare minimum needed to ensure communication with the municipality (e.g. fulfilling the criteria to register as a charitable organization, to rent an actual, material space). Besides that, there is a conscious decision to organize in non-hierarchical, decentralized ways, and to avoid being dependent on centralized and proprietary infrastructures inside the localities of the *dezentrale e.V.* This practice can further be traced in the organization between different hackerspaces in Germany, as well as in the carrying organization of the CCC. With the everyday activities taking place in the *dezentrale e.V.* being situated on a locally limited scale, the members of the *dezentrale* might be seen as vanguard visionaries (Hilgartner 2015). Vanguard visions – while they are not institutionalized and stabilized in a broader population, as for example sociotechnical imaginaries are – can be held and enacted by very small communities, or even individuals. The 'pioneers' holding and implementing such vanguard visions, aim for the advancement of their visions, such that they eventually become a stable imaginary of a broader community.

5.3 Practices & Activities

P.: *'You can create art and beauty with a computer [...]*'

Having established an understanding of the imaginary that is upheld in the *dezentrale e.V.*, following section will focus on the specific practices that take place in the hackerspace and put them into relation with the previously outlined practices of hacking, the chaotic and decentralized mode of action and the distribution of the visions enacted in the *dezentrale e.V.* These practices are organized following the daily schedule of the themed evenings that structure the activity in the hackerspace: *Hardware for Future*, the *Techniksprechstunde* and the *Chaostreff*. In centering the specific practices and activities taking place in the *dezentrale e.V.*, this section speaks to the second research question I pose in this work: ***How are these counter-imaginaries co-constituted in the daily activities and practices enacted in the hackerspace?***

5.3.1 'Hardware for Future' - Enabling Access

Hardware for Future is a public project by the *dezentrale e.V.* in collaboration with the municipalities of the city of Leipzig. The space exists since 2020 and is very successfully in place ever since. The description of the project by one of the interviewees amounts to this:

P.: *'As a new project, we also host "Hardware for Future", which started out with an idea we had: Wouldn't it be cool to provide others – or rather those in need – with hardware [...]? In essence, you take donations of hardware and hand them out refurbished and free of charge to people that need them [a computer...]. This has received a special boost from COVID-19, because demand has risen sharply as a result. For example, all students needed lots of webcams and lots of PC systems for online classes, but also for working from home and so on.'*

In essence, the project consists of repairing and preparing old computers that are mostly donated by the city or other public actors and then distributed among people in need of them. My second time coming to the space, I visited the weekly event of the 'Hardware for Future'³¹ (HfF) project. HfF is a project that donates computers to people in need. This time, nearing the gate to the backyard of the space, I notice several people coming and going through it. Those that go, carry heavy bags which contain whole PCs, keyboards and cables. As I enter, stepping into the backyard, I already see a line of people, standing in front of a desk which itself is built up in front of the entrance into the space itself. Behind the desk are two members of the space I didn't see before. Everything seems pretty busy, the members

³¹ <https://hardwareforfuture.de/>

are occupied talking to the people waiting in front of the desk. I also notice that the room next to the entrance to the space is rather busy. Looking inside, I see a small room (roughly 10 square meters), crammed full of Computers which are piling up to the ceiling and taking up most of the space in the room. On one side of the room there is a large workbench with five to six monitors, as well as a collection of cables on each of these monitors. Five people are in the room working at the workbench in front of the monitors, each of them working on one of the many PC's in the room. Two more persons are carrying out the computers that are piled up here, bringing them to the desk outside where they are distributed to the people waiting in line.

As the members at the outside desk are busy explaining and giving out the hardware, I go inside the little room, where I see M., who I already met my first time in the space. After greeting everyone and introducing myself and why I'm here, I get an explanation of how HfF is organized: The hardware – PCs and notebooks – is mostly acquired through donations from the city of Lipsia to the *dezentrale e.V.* If possible, the pieces of hardware that are 'more than necessary' (there seems to be a standard of performance for all the PCs) are taken out of the computers if possible, but they will also get SSD hard-drives, if they do not contain one yet. They are then set-up with an operating system before being directly distributed to the donatees waiting outside. There are much more PCs that are donated than notebooks (mostly the donations are remainders of closed offices or companies), although most people getting a donated computer would rather have a laptop than a stationary PC. Thus, if they insist on a laptop, people will easily wait up to half a year for a donation. There also are exceptions to this: The range of quality of the donation is rather broad, especially when it comes to the laptops. This is – as I will learn sometime later in space – because of the non-modularity of modern laptops, where all the parts are integrated into the main board, making it difficult to impossible to take them apart. Therefore, some of the hardware is much better than others and I'm told that there is no special mechanism by which it is decided who gets what, most of the time it is on a 'first-come first-serve' basis. Being a relatively young project (being first initiated in 2020) one of the interviewees spent a substantial amount of time building up and participating in the project, which ultimately also carries over to their overall engagement inside the *dezentrale* as an association. Additionally, the project itself also contributed to a growth in material space and public visibility and impact of the *dezentrale* as a public actor:

S.: I was a member here for several years. What had a big impact on Dezentrale, was the Fridays for Future project, which developed from a fairly small thing that we were trying to organize here in the existing rooms to more and more automation. We rented an extra room

downstairs for this, attracted a lot of people who are now very active in the association now and we also have won a lot of prizes and awards [...]

HfF presented itself to me, like it was somewhat of a poster child for the *dezentrale*, as it is – at least publicly – the most successful and impactful project the space enacts today. It is not only a rare public and official cooperation with the municipalities of the city, but also received broad public attention and has won the ‘Sächsischer Digitalpreis 2022³²’, the certificate of which is also proudly framed and hung on a wall in the space for everyone to see. Distributing hardware in cooperation with the city and other actors (e.g. companies) donating it to the *dezentrale* e.V., the community of the hackerspace not only manages to empower individuals who do not even have access to digital technology. At the same time, they establish themselves – and by extension their vision of universal free access to the use of technology – as an actor holding expertise in the public discourse and governance of sociotechnical developments. As such, the HfF initiative can be seen as a practical implementation and an attempt to make visible and spread their alternative imaginary of a universally free access to technology.

5.3.2 ‘Techniksprechstunde’ - Empowering for Autonomy

The ‘Techniksprechstunde’ on thursday is probably the weekly event, to which most people who do not visit – or plan to – the space regularly, come. The event is primarily dedicated to support people who need help – in any form – with their personal technical devices, i.e. in buying, repairing, configuring and programming them. Together with the *Chaostreff*, the *Techniksprechstunde* was the event I visited most often. Although I was told on several occasions that everyone is welcome on every evening, I felt like these two events were not only those when the space was most lively, but also those that were most accessible and welcoming to new people in the space, me included. Of course this is not to say that other events weren’t welcoming, they were just much more specific in what they were about and hence required specific expertise to be engaged with meaningfully.

The *Techniksprechstunde* on the other hand specifically is dedicated to help people who otherwise might have nothing to do with the space. One reason to often come to the *Techniksprechstunde* was because I could always be sure to see how the space as a whole interacts with people who do not have any further connection to the space. In addition to that, on Thursdays there were often also many members, as well as affiliated people, such that it was sometimes even more full than on Fridays *Chaostreff*, although much less consistently so. Mostly, during *Techniksprechstunde*, the core-group of members that is in

³² <https://www.digitales.sachsen.de/DigiPreis22.html>

the space most of the time anyways, will be there as well. In addition, over the course of the evening several people with specific technical problems or questions will come to the space. Most of the time, they have never been to space and will not come again after their problem is solved. Usually, over the progression of the evening, there are many new faces coming and going. One of the interviewees summarizes the general purpose of the Techniksprechstunde like this:

P.: 'We have the "Techniksprechstunde" that follows the concept of [...] repairing rather than throwing away. It's like a repair cafe where you can go if you have a broken device, for example. And there are people there who know what they're doing. But the focus is on the guest with the broken device doing it themselves and learning how to do it.'

Next to the repair work, members or regulars to the space also arrived and often – in contrast to the visitors – came to stay and hang out for the rest of the evening. As newcomers enter the space, they often seem just as lost as I felt – and still feel – when I came here the first time. However, just as with me, there always was some member that noticed this and engaged with these newcomers to help them. Often the space became really full with a mix of members, regulars and newcomers asking for help with a specific problem. In my memory, there often was – next to the members that were there as always – a rather continuous exchange of guests coming with particular problems regarding the hard- or software regarding their digital devices, other guests leaving having solved their problems and some who would spend several hours in the space trying to solve their specific problem. Very often, the more difficult or potentially risky steps needed to fix something were executed by the members themselves, for example no one trying to repair their phone would be forced to screw it apart and together again by themselves. Instead a member would often do the 'actual' repair for them and explain it to the guest in the process. As I later learn from one of the interviewees, the reason for the space being so full with new faces on thursdays is a loose collaboration with another local institution in the same neighbourhood as the dezentrale:

P.: 'We also have a somewhat informal agreement with Cafe Kaputt, which is another repair cafe nearby, and they occasionally send us PC, laptop, and cell phone cases, among other things.'

The Techniksprechstunde – to me – felt like an in-between of the social activity and interaction of members between each other (e.g. in the more casual 'Chaostreffs') and the more utilitarian, ends-oriented activities that are also more directly aimed at the public (as for example in the HfF project). Over the course of an evening on Thursday, some of the members would continuously engage with the visitors coming and help them, while other

members would just hang out in the space and – if anyone's specific expertise was needed – help upon request, otherwise following their own project or conversation. Where the HfF project is best seen as enabling individuals to access digital technologies in the first place, the Techniksprechstunde is rather aimed at people who need help in repairing their broken devices or personal projects requiring more expertise than they have. As such, it is also directly open for and aimed at publics beyond the community of the hackerspace itself. The Techniksprechstunde provides the technical know-how and expertise that often makes it difficult for lay-people to take on a 'hacking' mindset allowing them to engage with their technical devices in a way that goes beyond the prescriptions of usage and functionality intended by the actors developing actors. The dezentrale e.V. thereby puts into practice a particular vision of a sustainable future enacted on an individual and grassroots level and aimed at pragmatic, everyday concerns of citizens. They thereby provide an effective and pragmatic counter-practices to those of proprietary hard- and software enforcing *Digital Rights Management* (cf. Pellegrini 2020, Burg & Cohen 2000,), designing technical artefacts we use everyday with a *planned obsolescence* (cf. Pope 2017), and disabling consumers from repairing their own devices (cf. Gambino 2023).

5.3.3 'Chaostreff' - Sustaining Engagement

During one of my early visits to the dezentrale, on a Fridays Chaostreff, M. approached me and we talked a bit about what we study and besides that about our personal lives and hobbies. The conversation eventually turned towards my personal interests in the activities in the hackerspace, besides just my scientific interest as a student in STS. Telling M. that I already engaged a few times with repairing electronic devices but otherwise do not have much proficiency in computer science, I'm being given a very old and visibly broken laptop. M. asks me if I would like to take apart his laptop, since it needs to be thrown away otherwise and this way at least some parts can still be used (apparently it is also just one of too many at M.'s home). I happily take the offer and M. gives me a precision mechanic set and sits down next to me at one of the tables. Looking at me expectantly M. asks, 'So, how would you start?' We agree to begin with the backside and I start taking apart the laptop, while M. sits next to me, observes and comments here and there. After a while, M. leaves me to my task and goes to the HfF room where a few people hang out as well. In the meantime, at the same table I worked on, two more people started to take apart their digital devices. With the continuing deconstruction of the laptops and smartphones by the three of us, our shared table also quickly gets cluttered with tools, tiny screws, circuits and electronic parts. After a while M. came back and – glancing at the chaos on the table – ironically

remarked that in electronics repair it is paramount to meticulously order single parts and screws when disassembling any device. In this case, of course it was no problem, since the laptop wasn't going to be reassembled afterwards. Just as people come to the *dezentrale* to get help in repairing their devices during the *Techniksprechstunde*, the members that are regularly in the space help each other in the projects they do. Often like I did when deconstructing the laptop, these activities and their byproducts quickly start to take up room making for a chaotic atmosphere and collection of things on every surface in the space. Over my time in the hackerspace, I talked with a lot of different people, all sharing an interest in everything digital and computer-based, but also having vastly different expertises. In this light, the *dezentrale* situates itself as a space and a community that provides the tools, rhetoric and the know-how to engage with digital, computational technology in a mindful and conscious way. First and foremost. Yet it is inclusive and open to anyone interested, although it also felt very 'hidden away' from the public. It is therefore also a space in which learning to do so becomes possible in the first place, as the individuals in the space share their own knowledge and know-how, voluntarily and in mutual exchange, which is an important point also for both interviewees:

P.: '[...] There are people who have the expertise, who come to the space and maybe exchange ideas with each other or just help newcomers.'

S.: '[...] If there is something I don't understand, I can ask people who are also dealing with it [...]. And it [the space] also provides other social contexts where people discuss these topics.'

At the same time the space – especially on Fridays *Chaostreffs* – could also be just a place to hang out, drink a beer and talk with other, like minded people. To me that gave the space a general atmosphere of joy and voluntary engagement for the sake of itself. Often one or several people organized some event for Friday evening. One time I remember vividly, is a particular *Chaostreff* themed after *The Hitchhiker's Guide to the Galaxy* (Adams 1995). The day before I visited the *Techniksprechstunde* and when I left, P. asked me if I would come tomorrow and if yes, to bring a towel. On Friday, when I arrived at the space, it was very dark with only a projector throwing a picture on the wall to the right of the entrance. Coming in P. greeted me with a towel over the shoulder and asked if I brought mine. I took it out and also put it over my shoulder. At my time of arrival at around seven p.m., next to P. and me only five other people were there, all with towels (I think it is some reference to the book/game). I got myself a beer and asked P. what this is all about upon which he explained that he planned to play an old text-based video game about *The Hitchhiker's Guide to the Galaxy*. Upon his prompt to try it out, I sit in front of the PC at the desk to the left of the entry and

look at the screen which is also projected to the wall for everyone else. P. sits on the couch with the others as they talk about something else but do not seem particularly invested into the game.

After a while of figuring out how to operate it, a few more people arrived at the space and after looking at the projectors image of me playing for a while sat next to me at the desk as I explained the game to them. For the next one or two hours, there were always several people playing the game in cooperation, with some joining and some leaving the playing group every now and then. After talking a while with P. and K. I noticed that the space was getting empty again, as people started to leave, which is also when I decided to go home. Given its non-thematic orientation, the Chaostreff is probably the event visited most often by a lot of members, although it is intended to be an evening for interested newcomers to get to know the space, as well as for individuals from other organizations to get in touch with the dezentrale e.V.'s community. The Chaostreff is first and foremost an occasion for casual – but no less political – social exchange and does not presuppose a shared activity that is supposed to take place that evening. As such, the Chaostreff also captures how the alternative imaginary of the hackerspace is practiced in everyday, mundane activity that often is enacted in an autotelic manner (as in just for the sake of itself and without an external end or goal). Hacking, as was established in the previous section on the ideals and values of the hackerspace, is first and foremost a creative engagement with technology that is not merely instrumental but characterized by genuine enjoyment and curiosity. The dezentrale e.V. then, first and foremost is a place that makes it possible to experience an alternative imaginary, as it is put into practice and as it constitutes the materiality of the hackerspace itself.

5.3.4 Co-Creating Alternative Spaces and Lived Practice

Activism as a topic in itself was much less often a topic than I expected initially, there were a few – seemingly minor – instances, which stuck to me as very ‘activist’ in their character even if they were, in a sense, rather mundane. One such experience also took place on a fridays Chaostreff: That evening, I met L. for the first time, who is also on the board of the club and who was also the first to remember that I requested coming to the space to do research. After talking a while about my studies and thesis, I in turn get a bit of an overview over the clubs overarching organization and structure. L. was also the person who actively engaged me and introduced me to both of the people I later interviewed. That evening however, we were just sitting on the couch and talking, when L. – coming back from an empty fridge – decided to order new beverages for the space. After ordering around ten crates of beverages, we proceed to follow the real-time tracking of the order and start to talk

about the economy of food deliveries. We specifically talk about the working conditions of delivery workers and the impact such a tracking-mechanism has on their working practices and M. tells me that delivery workers are tracked not over their cars, but through an app on their phones. Since it is not only the customers, who are able to track their order, but also the employer, workers are always under time pressure, also in carrying the beverages from the car to an apartment. L. tells me that when I order any delivery online, I should always do so to the highest possible floor, even if I am actually on the ground floor. In response to my confusion as to why I would do that, L. tells me that in doing so, the time the delivery worker has for his order increases accordingly with the floor they have to deliver to (e.g. if I order six crates of beer into the 5th floor, the deliverer will actually have several minutes more to execute the order). While this might seem like a very small act, it spoke to my personal idea resisting the hegemonic, prescriptive technological infrastructures in an everyday setting. This is enacted less as an active, intentional form of activism, but rather with an implicit awareness for the impact of contemporary forms of digital-technological mediation in daily practices.

Instances such as the one in which L. ordered new beverages for the space are exemplary for the embeddedness of hacker ethics into the daily – and often mundane – practices through which the counter-imaginary of the *dezentrale e.V.* is enacted. Rather than focusing on the power imbalances between citizens and the actors governing and developing digital infrastructures, the activism of the *dezentrale e.V.* emphasizes action and intervention on a grassroots level. A sensibility for the implications of the use of digital technologies, as well as how they impact the day-to-day routines and workflows of individuals as well as society is at the core of this imaginary. Subsequently, the activism of the *dezentrale e.V.*'s community also takes place in these small-scale, day-to-day, sociotechnical interactions. Going beyond just recognizing the exploitative aspects embedded in contemporary sociotechnical systems, these sociotechnical systems are 'hacked' and exploited in turn, once they are understood, this time however in order to benefit those under repression by a system of surveillance. Of course, maintaining this kind of alternative space takes continuous engagement and is embodied in lived practice.

Looking at my time in the *dezentrale* retrospectively, I think these very small instances best embody the form of activism – if one wants to term it as such – that the *dezentrale* makes possible. It also very much shows the general form of influence that the hackerspace can have: A very implicit, often unspoken way of engaging with one's everyday surroundings, specifically if they involve digital technology or devices. While it always felt very welcoming and open to anyone coming there, the *dezentrale* is nevertheless 'hidden from sight': The space is in a backyard behind the seemingly closed, wooden gate of another house. Thus, in

order to get to the place one has to know of it, which in turn presupposes the intention to come to the space and knowing where it is: There is no storefront, or signs that signal the location of the space. Instead, people might get referred to the space by others, as was the case with many visiting the Techniksprechstunde (cf. 5.3.2), or because they researched where they found the dezentrale beforehand. I noted before, that many visitors, despite their interest, came with a specific problem or project they needed help with (e.g. it is an engagement that ends with a finished project, e.g. a repaired phone, laptop, etc.). Once they got their help, they did not engage with the space beyond that. Sometimes however, people come to the hackerspace, not with a specific problem to be solved but because they learned of the dezentrale e.V. as a public space of social and technical exchange for people interested in everything digital. In the case of one of the interviewees, the dezentrale ultimately even became the starting point of their professional career:

S.: 'Besides that there were times, especially in 11th and 12th grade, when I was here [in the space] practically every day and partook in every event of the week. At some point, I took over the press work for Hardware for Future, which meant I attended all the events, wrote blog posts, answered inquiries [...]'

Essentially, the Chaostreff manages to provide an entry point, as well as learning environment that enables and furthers critical engagement with digital technology at the same time as it provides valuable knowledge and practiced skills to be learned in this engagement. Regardless of the time and resources invested by anyone into visiting and being in the space, one of the interviewees specifically emphasizes their personal investment in enabling a space, in which anyone who is interested has the possibility to learn to protect and empower themselves in a digital world:

S.: '[...] And I do think that this is the way to go, because in larger settings you can't really address individual problems and questions. Especially not problems that might arise when it comes to encryption [...]'

Despite that the space itself – given a motivated engagement – will over time afford the know-how, material, as well as social relations, not only to acquire the technical skills for such an engagement, but also the ability to take a critical perspective in it. In the case of one of the interviewees, this even became a professional interest. At the same time, S. reports that the expertise they acquired in the dezentrale e.V. also shaped the interviewees views on the politicization of technology:

S.: '[...] also that dezentrale has strengthened my interest in this field to such an extent that it has now become my main profession and also my field of study [...]' Before that, I was very

[...] unconditionally “tech-positive”. [...] Um, and that has changed quite a bit over the last few years, not least because of the dezentrale.’

During my early visits in the space, I perceived the dezentrale mainly as a place for its members to hang out with each other and share their interests, whereby a particular mindset of empowering others, or doing activism was much less an explicit topic than I initially expected. To me the space appeared as a very tight-knit community which, although open for anyone, can also be very hard to access, as this takes a lot of time, practice and learning if not already proficient in computer science. While there is a weekly, public schedule with specific topics, or events for every evening, it seems to me that these events are not the essence of what takes place there every evening: There seems to be a core group of people who are in the space every evening and seem to just spend their free-time in the space if they can. In this, the space is not only a location to meet and engage with like-minded interests, but also provides the material and technical necessities (i.e. tools, parts, know-how) to follow, express and share these interests. Retrospectively, it feels to me like this ‘core’ of people who are in the space most of the time it is open and its purpose as a space to hang out and spend free-time is what really keeps the space alive. In essence, the dezentrale really is a space for people who share an interest and expertise in everything digital. It is much less dedicated to actual activism as a main goal. Over my time being in space, this perception changed to some extent: Most people in the space do not necessarily go there to bring forth social change but to enjoy a beer after work, hang out with likeminded people and engage with their personal hobbies together with others. Everything else – including any activist aspirations, or actions –, it seems, emerges out of this setting as well.

5.3.5 Summary

The hackerspace itself – to a degree – therefore prescribes different practices, logics and possibilities for action than those that hold outside of it. Spending time in the dezentrale e.V., I could not help but be conscious of my digital surroundings and their corresponding practices and affordances: Everyone has know-how, many people actively build new things, a lot of the time people avoid using real names, nobody in the hackerspace uses a new laptop (at least not if they are there). While this was very overwhelming for me, especially during my first visits, the members of the dezentrale e.V. proved to be extremely welcoming and open for anyone to visit as often as they like, no matter how knowledgeable they are and also without necessarily becoming a member. As a space that affords, but also demands a creative engagement with digital technologies in its sustainment, it also presupposes a – more or less – critical stance toward contemporary digital culture, as such an engagement is often made difficult by the artefacts and structures that constitute this

culture. Nearly every time I visited the dezentrale e.v.– not only to the dedicated repair sessions – someone was using a soldering iron, to meld together some electronic parts or devices. To me, it felt like all of these activities and practices of (re-)building and re-arranging objects in the hackerspace were not out of necessity, but as an end in itself, i.e. because it was joyous. Nevertheless, looking back at my time with the dezentrale e.V., this continuous activity of a core group of members always being there and always working on some project is probably the most lasting impression I retain. I see the dezentrale e.V. as a space built and maintained by a community sharing an interest in everything digital- and computer-related, with an emphasis on a creative and productive engagement with these domains. Inside this space, there is an overwhelming amount of tools and materials one might need in working with electronics, as well as mechanics, which are constantly used and consumed, but also added to.

A lot of these tools themselves, especially digital ones seem to be the product of this continuous 're-'use, remaining in the place as an addition to its inventory. A lot of the time coming to the hackerspace, some more or less minor detail would change, for example in the form of different lighting, toys, or new tools or devices, making the hackerspace a location that continuously changes in its materiality and constitution. In coming together, to build on their personal projects and visions, to learn from others, but also to share their own knowledge with others, members of the dezentrale e.V. enact a space in which alternative imaginaries of reality become thinkable and doable. In showing how these visions are entangled with the practices, skills, and a critical stance in engaging with digital culture, I intend to position the hackerspace as material spaces that contain both the room to envision other digital realities, but also a space in which such an alternative reality is put into practice, thereby presenting a lived counter-imaginary (cf. Kazansky & Milan 2021, Mager 2023) to dominant SIs of the digital future. While this might not necessarily lead to the formation of highly motivated communities of a much larger scale, or even to a higher motivation at all, it is yet an effective contribution to enable the formation of both, a critical stance, as well as the perceived availability of alternatives and subsequently of an alternative vision and its underlying sociotechnical infrastructures and practices.

Being presented with real and material alternatives to those digital infrastructures of surveillance that are criticized here, allows one to conceive an alternative reality that escapes the perceived powerlessness in face of the complex of surveillance one faces in most contemporary digital spaces. Mostly, this takes place in a very applied and specific form, for example repairing a device, learning to use a specific piece of technology or to encrypt and protect the own data. While certainly not for everyone coming to the dezentrale e.V, for the members this is a continuous process: Rather than being ceased with reaching a

specific end, it provides a space to practice and grow their own critical engagement with the digital over time. In some cases, as for example for one of the interviewees, conscious activist action even became a profession through their continuous, still ongoing engagement in the *dezentrale e.V.* over the years. The most important work however – in an activist sense and as emphasized by the interviewees as well – is done in the interpersonal engagements the members have, especially in their broader social circles beyond just the hackerspace: In convincing friends and family of the importance of privacy-related issues and problematic data-practices of tech firms, but also by showing that countering specific aspects is in many cases not difficult or even pragmatic. In essence, the *dezentrale*, rather than aspiring to and advocating for a broad-scale overthrow and subversion of hegemonic digital infrastructure, functions in scope and scale on a much smaller and personal level. I experienced the *dezentrale e.V.* much more as an escape from, rather than a subversion of surveillance capitalism. The hackerspace then, does not as much fight for, as it embodies a constellation of alternative infrastructures in itself (One which, however, remains thoroughly embedded in the reality of digital environments on a broader, societal scale).

5.4 Friction & Stabilization

P.: *'Protect private data, use public data!'*

Some of the members I saw almost every time I was in the hackerspace, as they seem to spend large parts of their free time there. Further, all of the activity by members in the hackerspace was characterized by being voluntary and autotelic. However, despite the generally very friendship-like form of interpersonal engagement I was met with in the hackerspace, I also came to notice that as a member, as well as visitor of the hackerspace certain formal rules, but also a set of more abstract, overarching values and ideals embodied in the totality of the dezentrale e.V. While the general practice and activity in the dezentrale e.V. is guided effectively by the hacker ethics alluded to throughout this work, there are times in which the imaginary that is constituted by these practices – as much as it enables them – becomes difficult to uphold. Given the dezentrale e.V.'s rootedness in everyday and mundane practices of the imaginary in the dezentrale e.V., it can also become contested in seemingly insignificant and mundane actions. While these frictions and contestations certainly make visible the fragility of the alternative imaginary at place in the hackerspace in showing where it fails to be productive or even breaks down, in their significance they also show that – besides these failures and breakdowns – this alternative imaginary performs rather well in its spatiotemporal confines.

5.4.1 Accessibility/Publicity

Most of the time I experienced the space as a very niche community, which does not really go out of its way to be perceived in the broader public (for example on social media). However, on a very-small scale local level, the space is much more present, for example on local public events. Further, there also seem to be several loose and informal arrangements with other local initiatives in Leipzig, for example with repair cafes who send the cases they can't solve themselves to the space. While the space presents itself as decidedly open for anyone, it also remains relatively hidden from sight and is not just randomly and unintentionally found. One of the interviewees had an active interest in the Chaos Computer Club way before finding the dezentrale, but only found the dezentrale e.V. after a friend introduced them to the space:

S.: [...] *I was interested in the Chaos Computer Club before, but I was a little sad that my research didn't result in finding anything like that in Leipzig. Then one evening, I was at a party in a park [...] and met someone there who had similar interests and who [...] already*

knew about Dezentrale and told me about it, and that's how I came here, the first time with him and then later mostly on my own.'

I actually had a similar experience before 'finding' the dezentrale, as I started out with the same interest in the CCC but had difficulties in finding an entry point into the organization itself. It was through the mediation of a personal relative, that I was referred to the dezentrale e.V. by a friend of his. As S. goes on to tell me in our interview and as I also experienced myself, once the initial hurdle of becoming aware of the hackerspace was overcome, engaging with the space was very easy. Retrospectively, I have the feeling that everyone who visits the space (besides the members) does so with a specific intention, most often in the form of a specific problem, project, or idea. From my own perspective, in the beginning of my time in the space – when I was still a new face to many people there – I was 'taken under the wing' of at least one of the members in the space: When I arrived, someone would always welcome me and also ask if I need help with anything and throughout the evening they would make sure to engage with me and make me feel integrated into the ongoing activities (in my case mostly talking). Much later, toward the end of my time visiting the space and as I was a more regular visitor this special 'attention' or 'care' had ceded. Instead I could observe that new visitors, especially during Chaostreff were always taken care of in the same way as I experienced for myself. I also noticed that there was at least one voluntary person taking the role of being responsible to welcome, engage with and introduce anyone new to the space. Beyond that and while the Chaostreff functions as evening for informal and casual get-together, with no particular agenda, they are also open for anything, given someone is willing to organize it (cf. ch. 3.3.3).

Getting there is of course a different and much more difficult matter, as is the definition of a static framework of practices that would allow broader populations and societies to get there. Since digital environments, as well as the technological artifacts and structures that enable them are continuously changing and developing, it is very difficult to come up with forms of actions that definitely, once and for all, can tackle them if they are perceived problematic. Instead – and this is where the dimension of temporality also gains a more positive spin – such forms of engagement should be just as dynamic and continuously changing – even if it is for the price of a much smaller, more niche, community. In the hackerspace, this is not only manifest in the demand for long-term motivation from its members to be able to critically and effectively engage with digital infrastructure in the first place. It also is an inherent part of the internal, as well as external organization in and with other hackerspaces in the form of chaos. This, to me was exemplified by the history and involvement of the interviewees with the dezentrale e.V., which started out with an initial interest in digital matters, increasingly

taking responsibility for different organizational matters inside the space and finally, getting involved with more diverse, but also specific other NGOs and organizations:

S.: '[...] In the middle of last year, I was elected to the board as treasurer of the dezentrale [...]. Since then, I've been trying even harder to shape the association and get involved. [In addition] I founded the Bits und Bäume Stammtisch for Leipzig here. I regularly attend the Berlin, uh, Bits in Bäume Trägerkreistreffen meetings in Berlin. Um, at the federal community meetings [...] So generally, in everything that has to do with Bits in Bäume, I'm relatively present.'

There seems to be an ambivalence between the dezentrale e.V.'s public work and its overall public visibility. On the one hand, its community has the aspiration to distribute and spread their vision of a technological, digital future into the public, and to actively engage with its local, social surroundings in order to let them benefit from their expertise. On the other hand, the community – in using alternative digital infrastructures where possible – they also miss out on the public visibility that comes with being present on the largest social media platforms. Instead, the dezentrale e.V. manages to be publicly present and visible in a very selective and locally limited manner, that directly speaks to its local, social surroundings but does not spend much resources to scale beyond that.

5.4.2 Friction of Values & Contestation in the Imaginary

One thing I struggled making sense of at times was the surprising range of social and political viewpoints that people in the space implied or expressed directly, ranging from rather neoliberal to anarchist stances. Not only with regards to political views, but also in their (un)critical engagement with digital infrastructures, which I really did not expect before coming to the space for a while. While there were certain political views that are probably shared by most of the members of the space, there were others where I personally would have expected much more homogeneity in opinion. Most of the time, this was not something I noticed in discussions about grand political topics, but in very small things and habits.

One such occasion was a discussion about paying for drinks in cash. As I learned on my first evening in the space, the only way to pay for the drinks in the fridge was with cash. There is a blackboard next to the fridge, where members are allowed to 'put it on the tab' if they do not have the coins on them. However, this is apparently only tolerated to a certain degree, which was the starting point of mentioned discussion: One member, who wasn't in the space for a while, was pointed to the fact that they should probably pay for the drinks that were still unpaid and listed on the board. Saying they had no cash, they proposed to just pay the tab

over PayPal. This quickly spiraled into a prolonged discussion, which turned into a discussion about basic principles of conduct in the space. After probably half an hour, the person was convinced to pay for their drinks in cash, but by then the otherwise very good vibes of the evening were gone. On other occasions I could observe similar tensions regarding other, very dominant characteristics of the space, that not only led to interindividual conflict and discussion, but to me also embodied an active break with the ideals that are upheld in the *dezentrale*.

As a consequence, these instances and the disagreement they cause are at times debated intensively (depending on the) in the space. While there was often only mild disagreement if someone used a clear name (especially if most of the present people in the space were members), such instances were at least always noticed, as out of the norm. Missing things, as well as things lying around – at all, as well as just in the wrong place – on the other hand were the most common issues discussed immediately. Different ideas about what might be a valuable resource (for example a small electronics part) at some point and what should be thrown away as to keep a minimum order in the space, continuously compete for room and make for an environment difficult to navigate in terms of ownership and order in the hackerspace. Someone taking something that belonged to someone else, or someone leaving something where it didn't belong were some of the more frequent, but small points of conflict between members in the space. Maybe because of this, most of the members brought only very old and outdated laptops — apparently dedicated specifically to their use in the hackerspace (see ch. 5.2.1) — which would easily be replaced if they broke or went missing.

While everyone seemed to have a general overview over the many things lying around in the space, sometimes it happened that a particular disappeared, as it was deemed useful or as trash by somebody (for example my iPad, but also things like electronic parts, devices and so on) and hence taken away from where it was, often leading to a confrontation in the space. While these things were certainly not taken with the intention of stealing, the general, implicit agreement in the hackerspace seemed to be that electronic devices shouldn't run unsupervised in the space, next to the fact that none of the members seemed to bring their private, or working laptops to the space. Instead, as I figured out over my time in the space, most members actually bring their 'hobby-devices' (i.e. devices that are dedicated to anything you would do in the hackerspace). As I remember from a talk I had with K. some time after, well into the ongoing planning of the move, there was also a more critical assessment of the 'overengineering' with which such tasks like planning, designing and implementing the door-lock system were engaged. Thus, the motivation and joy with which members take on tasks in and for the space, can also lead to tensions in the sense that they

are not necessarily undertaken with efficiency, or even the most practical solution, but rather with a primarily 'non-serious, or leisure intentionality, in mind.

In many aspects, conduct in the hackerspace is consistent in enacting practices that are characterized by the counter-imaginary of hacking. While the *dezentrale e.V.* as a whole manages to uphold this imaginary for most of the time, it nevertheless remains embedded into a broader sociotechnical environment that can make it difficult to put the values and ideals that come with this imaginary into practice in every possible situation. While the *dezentrale e.V.* can be seen as a space, in which an alternative imaginary is actually lived and put into practice, it is also very much confined to the material locality of the hackerspace itself and only limited in its outreach. Instances such as the one involving the attempted *Paypal*-transaction show the tensions that can arise between the counter-imaginary of the hackerspace and the practices that are supposed to constitute it. Different members of the space might have different visions of how responsible, digital practice should look like, especially in their lives outside of the community of the hackerspace. Thus, maintaining a coherent imaginary in the hackerspace presupposes the constant negotiation between a heterogeneous field of –sometimes competing – visions. At times this negotiation and maintenance breaks down and shows that the *dezentrale e.V.* remains embedded into and part of broader sociotechnical configurations that are shaped by more dominant and hegemonic imaginaries of the digital future.

5.4.3 Maintaining the Hackerspace

On the evening at which M. gave me their laptop to take apart, after disassembling everything and spreading it out on the space left on the table, someone admires the modularity of old laptops, with which it is possible to exchange single parts of the device – something that is impossible with modern one, as everything is built into the mainboard. Finally, M. asks if anyone needs any of the pieces on the table, upon which several people start to distribute among themselves some of the parts of the disassembled notebook, in order to reuse them later for their own, personal projects. Afterwards, I throw everything that is left into a chest with electronic waste and talk a bit more with M. before I get ready to leave. The use of space to store personal things, as well as the ones shared in the space is one of the more regular matters of dispute in the space, both because of people taking up needed space with personal belongings, that should be stored elsewhere, but also because of people freeing space of things that are 'not supposed to be where they are'. It seems that in the community that makes up the space, there are different views on how both, shared space, as well as personal and communal belongings – I will probably just call it 'hardware'

from here on – are to be organized and managed. Instead, it felt to me over the course of my time in the hackerspace, that this issue expressed itself in a continuous argument over, or negotiation of where specific things are supposed to, or allowed to lie around, as well as from where they should be expected to disappear if they are lying around. This also became much more apparent and explicit later, as the space was collectively planning and executing moving to another, bigger location.

While this 'waste-management' in the space is rather effective (every piece of electronic has some potential use), it also constitutes a much more general concept of ownership over specific things lying around in the space: Things that lie around for extended amounts of time, will inevitably get taken by someone in the space, especially if it looks broken (be it to craft something new, or just because it could come in handy at some point). That this sometimes becomes problematic, as sometimes things that are valued by some people and are regarded as personal property, sometimes just disappear. I myself experienced this literally my second time I was in the space, where I forgot my tablet when I left. When I came the next week, to look for it – and certainly expecting to find it without problems – I was severely let down, as the tablet had disappeared and it was only months, several thorough searches of the space, as well as asking in the Matrix channel if someone found it later, when it appeared again and I found it randomly lying in the large shelf on a box for smartphones that are to be recycled. Besides my own experience with this, people in the space were regularly asking where this or that thing they had left in the space had disappeared, often to no avail and a lot of frustration.

On the flipside of this, the space collectively provides a lot of materials that are free to use and members, sometimes – depending on value and perceived utility – also by non-members, are allowed to use the parts and resources that the hackerspace provides. Further, since nearly everyone disassembles one of their – seemingly infinite – personal end devices every now and then, there are also regular giveaways of electronics parts by individual people that don't need them anymore. As a consequence, it is often very hard to discern, which of the things lying around the space belong to whom, or are free to use (although there are technically dedicated places for these things, which however, are not used as often as they should be). Also, almost everyone coming regularly to the space, when it comes to personal, digital end-devices, only seems to use very old, outdated and sometimes almost broken phones and laptops and while I can't confirm it, I think this also makes it less of a catastrophe if such a device somehow gets lost in the space. On my second visit, for example, M. gave me one of several of his very old laptops he brought, and encouraged me to take it apart, as an exercise and afterwards distributed the single parts among the surrounding people. Another thing that was rarely shared in the space were the

birth names of people. Throughout my time in the space, I almost never heard real names being used in the space. If someone was called by a name, it was mostly by the same nicknames also used in the Matrix channel. Over the whole course of my visits, it happened only very rarely that someone would be called by their real, first name and mostly not without critical remarks for doing so by the people around. At first I thought that the codenames were more important than they actually were: Sometimes they were emphasized, but just as often they used clear names. Also, while people would constantly sit and work in front of their phones, laptops and other devices, almost everybody, especially members of the space, would make a point of never letting one of their personal devices unattended, even for a few seconds. Even for getting a drink from the fridge people would close or turn off the screens of their devices and seem generally very aware of who would be able to look at their screen at all times. Except for the PC and monitor that remains in the space, it felt to me like an unwritten rule to not let one's own digital end-devices be running unattended.

While it is presented here as significant, planning, contributing to or developing something for the move remained very much embedded into the everyday practices that constitute the space. Next to some minor miscommunications, discussions and missed deadlines (see ch. 5.4 and 6.3), this specific instance of decentralized, organized action proceeded rather smoothly, not only during this specific instance of organized action, but in the general organization of weekly events as well. For some evenings, such as the – often relatively small – *Elektronikrunde*³³, the same person would be responsible every week. For others, such as the *Techniksprechstunde*, or the *Chaostreff* there would be another volunteer every week. Also, despite there being an official, weekly schedule of the daily events at the *dezentrale e.V.*, each with a different purpose and implied activity, most of the evenings were also just an opportunity 'to hang out', with or without participation at that scheduled activity. Given the chaos it seems to bring with it, an insistence on completely decentralized organization, in which single actors act completely autonomously and independently at times also seems to hinder the effectiveness and impact of the *dezentrale e.V.* in stabilizing and enacting their imaginary. Further, the hackerspace contains a multiplicity of different views, practices and visions that are not always aligned with each other. In its strongly decentralized and chaotic organization, it becomes difficult at times to coordinate collective action and resources of the community such that it serves both the individual visions held by members and the broader imaginary enacted through the *dezentrale e.V.* as a whole. Of course, maintaining this kind of alternative space takes continuous engagement and is embodied in lived practice. In such practice, there also emerge frictions, ambivalences and tensions between the overarching spirit of the space and the lived situations taking place in

³³ A description of which did not make it into this work, sadly.

the dezentrale (which will be part of the later sections in this chapter). Despite that the space itself – given a motivated engagement and time – will afford the know-how, material, as well as social relations, not only to acquire the technical skills for such an engagement, but also the ability to take a critical perspective in it.

5.4.4 Summary

The mode of interpersonal engagement in the space is very warm, informal and friendly, the social relationships enacted in the space wouldn't accurately be described as 'friendship-like'. While a core-group of members seems to know each other very well (given they meet in the space at least several times a week on average), the conduct in the space, despite its casualness, seems to be more instrumental and less casual than that of just friendship. While the rules of this conduct – especially that of verbal communication – are actually made explicit (in the form of a poster on the wall), they made me think of the social interaction taking place in the hackerspace as that of a community of practice (Wenger 1998). The diversity of political, social and technical opinion in the hackerspace represents an immensely heterogeneous landscape of individually differing political stances, as well as technical and theoretical know-how. This diversity of knowledge serves as a resource that members and visitors could rely on, but very often was also a source of friction, disagreement and conflict. Another constant tension that I felt in doing the fieldwork, as well as in writing this thesis, was in how to appropriately describe how far the practices I experienced and participated in could be seen as activism. One of my problems in doing so, might have been the actual focus of such practices. A critical awareness of and stance toward the dominant imaginaries of datafication that predominantly shape contemporary digital culture, is certainly expressed – to more or less of a degree – by all members of the dezentrale e.V. I talked with, next to the interviews.

The explicitly stated ideals that are held up (ch. 5.2), as well as practiced (ch. 5.3) in the dezentrale, also seem to be in tension with the lived reality in the space at times. The temporal continuity, as well as conceptual diversity with which the alternative reality of the dezentrale e.V. is enacted also remains embedded in a broader social and political landscape. The activism taking place in the hackerspace is primarily embodied in everyday practice, rather than single, one-time large-scale actions. The diversity of different, individual ideals and practices that exist in the dezentrale e.V. at times are also in friction, not only with broader sociotechnical imaginaries (as for example in surveillance capitalism), but also with each other (for example, in conceptions about ownership, taking up room and sharing materials in the space). Internally maintaining a shared imaginary in the hackerspace depends on and is constituted in the maintenance of the communal and social relationships

that take place inside the space. Part of this shared spirit is the inherent diversity in the individual practices that embody 'being critical' towards the mainstream use of digital technologies and their underlying ideologies. Thus activism in a digital world itself, often is a matter of contestation, conflict and negotiation in practice in the hackerspace. While it remains very difficult to pinpoint the exact achievements the dezentrale e.V. made in pushing their alternative sociotechnical imaginary of a digital world – not necessarily because it is small or non-existent, but because it takes form mostly in very implicit and practiced form, as well as in small-scale social spheres, for example one's own family and friends.

6 Discussion

The collection of impressions of the previous chapter were chosen to serve both, as an overview over what happens in the dezentrale e.V. generally, as well as a curated selection of my own experiences that felt significant with regard to my research. Having provided an overview over some of the experiences I made in the dezentrale e.V. and which I take as constitutive of hacking culture as it is lived in a local context, the following sections will analyze these experiences as to answer this work's main question: How practices and imaginaries around 'hacktivism' take shape and are enacted in a german hackerspace, but also how these imaginaries relate to the broader sociotechnical constellations in which the hackerspace is embedded. The empirical part was – next to a short introduction of the hackerspace – organized into three thematic clusters: 1) *Values & Ideals*, 2) *Practices & Impact* and 3) *Frictions & Ambivalences*.

The first cluster paints a picture of a range of general values and political stances that the dezentrale e.V. and by extension its members adhere to per constitution of the association. Importantly, this is not to imply a generally homogeneous and frictionless space where everybody holds the same political opinions. On the contrary, the community of the dezentrale e.V. consists of a diversity of different individual political stances, technical expertise and professional positions. Everyone in the hackerspace however, probably would agree for the most part in the set of rules upheld in the *Hacker Ethics* (Lyon 2010). The second cluster, *Practices & Impact* took a different focus and emphasized the role of specific practices, habits, schedules and their role in constituting and maintaining the hackerspace. It also explicates how these practices and the hackerspace itself realize an alternative vision and reality of how life in a digital world can look like. Importantly, this cluster shows how the often mundane, everyday activities taking place in the hackerspace are not only constitutive of the hackerspace as such, but how these mundane practices characterize a form of activism. Lastly, in the third cluster, *Frictions & Ambivalences*, I collected experiences and events in which there was conflict in the dezentrale e.V. and where the alternative visions otherwise lived in the hackerspace became contested, subverted or stood in friction with certain situations – in short, moments in which the counter-imaginary enacted in the hackerspace itself became contested, renegotiated or broke down. This cluster is also intended to point toward the opportunities for action that might emerge out of the analysis of the empirical material. In doing so I will approach the experiences described previously through the lens of counter-imaginaries, which were introduced in the chapter on this work's *Theoretical Approach* (ch. 3) and look at the community that makes up the space as a CoP (Wenger 2013). Specifically, the empirical chapter is organized to allow an analysis that

takes into account the entanglement between 'imaginaries and the socio-material practices of technological use and development' (Kazansky & Milan 2021, p. 366). The experiences described in the previous chapter are not necessarily confined to their clusters, as they speak to the other ones as well. In this, I also use the concept of *CoPs* (Wenger 1998), a concept well suited to analyze the practices and 'go-ons' taking place inside communities sharing a particular set of values, common interests and exchanging their knowledge and expertise – with each other and beyond their own community (Fisk 2023).

This being said, the following sections are first, to make explicit the ideals and values upheld in the hackerspace. Second, to put these ideals and values into dialogue with the everyday practices taking place in the hackerspace. And third, to show from this dialogue the convergences, as well as divergences between these values, ideals and everyday practices, pointing toward the tensions, contestations, ambivalences, but also the impact the space enacts in its broader sociotechnical environment. The first part of the discussion is centered around the explicit political stances and the ideals and values that they relate to, as they can be found in a hackerspace and one of the local representative actors of the CCC, such as the *dezentrale e.V.* The first focus of discussion will therefore be on situating the *dezentrale e.V.*, as a hackerspace and *Erfa* of the CCC, in a broader context of technopolitical culture around the digital. Specifically, it is to situate the *dezentrale e.V.* as an autonomous actor, on a local level, with values and ideals that often, but not always, align with those upheld in hacking culture more generally (cf. Coleman 2013).

6.1 The Imaginary of the Hackerspace

While the *dezentrale e.V.*, as well as several of individual members are also involved in explicit political action, the everyday practices taking place in the hackerspace itself, to me seem much more mundane in nature. Yet, I also think that they are – in their own right – practicing activism. Before going on to discuss these regular practices in more detail, it is worth analyzing how far the hackerspace can be described as being part of the lived *counter-imaginary* (see ch. 3.3). Counter-imaginaries allow the analysis of groups actively voicing and enacting the development of technologies aimed at social transformation, thereby animating 'civic society to respond to perceived threats to its values and ways of living' (Kazanski & Milan 2021, p. 366). Kubitscheck's (2018) and Fleischhack's (2018) analyses of the Chaos Computer Club (see ch. 2.3), of which the *dezentrale e.V.* is formally a part of, lets us consider the hackerspace – although being an autonomous actor – as embedded into the particular forms of hacking culture practiced in Germany and Middle-Europe. As a registered association for the public benefit, the *dezentrale e.V.* does

directly refers to its intended contribution to public and societal benefit as threefold: 1) In producing ‘art and culture’, 2) providing ‘education’ and 3) enabling ‘crime prevention’³⁴. Following the description of intent and the interviewees, the *dezentrale e.V.* – and probably most of its members – strongly and explicitly align with the CCCs revised, open-ended *hacker ethics* (see ch. 2.2.3). One particularly emphasized practice relating to hacking culture, is the development and distribution of *free and open source software* (cf. Coleman 2013, see ch. 2.2.2) and more importantly the need for people with the necessary expertise to participate in the contribution to such software. Following the dominant imaginary, digital technology and infrastructures are designed providing maximal comfort in individually tailored user experience at the cost of personal autonomy and privacy of these users. In the hackerspace, a different way of engaging with the digital is practice: Rather than trading the comfort of easy to use, but opaque technologies for personal privacy and agency, the hackerspace embraces the complexities and pluralities of expertise that constitute, but are also needed to navigate digital technologies and infrastructure.

In sharing their individual expertise with each other, the community of practice (Wenger 2013) of the *dezentrale e.V.* manages to effectively practice an imaginary that actively counters those of state and industry actors. While this demands a rather high level of individual expertise in the first place, the hackerspace affords the acquisition of this expertise just as well. The imaginary of the digital future shared and practiced in the hackerspace — as heterogeneous as it is — is a response to such dominant SIs around the digital, in its public political action, in their everyday practice and hacking, as well as in distributing their own expertise to their local social surroundings (cf. Mehmood & Cousins 2024). The statutes of the space, specifically aim to empower individuals to critically and creatively engage with digital media, as well as to educate publics on the – often hidden – structure, function and impact of digital media on their personal lives and helping publics to defend themselves against exploitation by various actors in digital environments. The values and ideals that characterize the hackerspace – beyond the explicit statements from the interviewees – also show in the continuous state of chaos I experienced as constitutive to the space. Next to the freedom of information, another point stated in the hacker ethics by the CCC proclaims: ‘*Mistrust authority - promote decentralization*’³⁵! The imaginary prevalent in hacking culture, is that of a world in which information, as well as its exchange are completely free and unimpeded. The existence of borders, as well as the governance of states by centralized instances oppose such a free exchange of information and should therefore be replaced with decentralized structures of social organization (Levy 2010, p. 28).

³⁴ <https://dezentrale.space/docs/dezentrale-satzung.pdf>

³⁵ [https://www.ccc.de/en/hacker ethics](https://www.ccc.de/en/hacker%20ethics)

As an alternative form of organization, the *dezentrale e.V.* as an association - internally, as well as externally as part of the CCC and in cooperation with other public actors – is organized non-hierarchically and decentrally for the most part. Where it is not, this is often due to the formal bureaucratic demands that are put forth by the legislative actors to registered associations. One opportunity for me to reconsider the seemingly chaotic and unorganized evenings I spent at the *dezentrale e.V.*, was the planning of the, then upcoming, move of the *dezentrale e.V.* club space to another location (cf. 5.2.2). Here I also could gain more insight into how organized, collective action is realized internally to the hackerspace – and similarly beyond that in the CCC. Through democratic, voluntary engagement, members organized into independent task-groups that were agreed upon democratically. Members and task groups engaged with these tasks on their own and without top-down control, and afterwards brought the progress and results of their work back to the plenum to share them with the collective. Given the motivation and joy with which some of the members engaged with their respective tasks in the case of the upcoming move, the outcome can sometimes even also benefit broader, but equally interested others, as was the case for example in the team that built the door-lock system for the new space. The result of their work was, for once, a professional-level electronic door-lock system for the new location, that was built from the ground up and did not include proprietary, third-party systems. In a later conversation with one of the two working on the system, they also told me that their intention is to make the documentation, code and instructions of the project available as open source material for other interested people (Beyer 2014).

Publicly, the *dezentrale e.V.* explicitly raises its voice against the wide use of proprietary systems that sacrifice personal security for an apparently seamless user experience that prescribes very specific forms of action, use and behaviour (cf. Akrich 1992) and represses or even criminalizes (Koebler 2024) their use beyond such prescribed usage. Where this form of digital practice seems to diminish the agency and capacity of users to navigate digital spaces unmanipulated, the interviewees endorse the opposite: A mutual engagement of people with technology in order to build and develop new hardware and software in a creative way and for societal benefit (Kelty 2008). The specific emphasis on enjoying the task to build something from the ground up, by themselves and in a creative, artistic way (cf. Monahan 2015), rather than only 'trying to avoid proprietary systems', speaks to both, Coleman's (2013) analysis of the F/OSS movement where the free sharing of knowledge constitutes the foundation for creating new technologies, as well as to the term hacking – as the CCC conceptualizes it – as an autotelic, even artistic way of engaging with technology. The explicit emphasis in the space's organization on individual, voluntary engagement, decentralized organizational structures, specifically in the contexts of the association's

structural organization, its networking with other hackerspaces and -initiatives and with the CCC provide a more nuanced understanding of the – to me – initially, in every aspect chaotic nature of the space. The concept and terminology of *chaos* is one that is particularly embraced in the German hacking scene as a whole (for example in the name Chaos Computer Club) and also part of what makes hacking culture in Middle-Europe something unique, as both of the interviewees emphasized. The ‘Chaos’ that is also embraced in the hackerspace is the result of such a decentralized way of organizing the hackerspace itself, collective action inside of it, as well as its relationship to other organizations and the public. It should be noted however, that this kind of effective, coordinated, yet decentralized form of action is only possible through the excitement, personal investment, but also the collective expertise with which members engage with matters of concern to the space. To me, it is specifically the continuous change of arrangements of people, devices, tools, events and discourse that is underlying the broader chaos that also speaks to the inherently activist identity of the hackerspace: In the mutual co-construction of a hacking culture (cf. Coleman & Golub 2008), and a space to practice it in.

A critical stance toward the dominant imaginaries of a digital future that lead to broad-scale surveillance however, is very much shared among the — otherwise politically very heterogeneous, but generally left-leaning — members of the space. Technology as a political category (cf. Kubitschko 2018) is regularly the topic of discourse in the hackerspace. While the everyday practices in it are as much open to and directed at local publics, the hackerspace is first and foremost a space serving the personal interests of its members and less obviously in order to work toward a revolution or liberation from a digital economy perceived as threatening. The community of the *dezentrale e.V.* therefore sustains the hackerspace as a space in which they can follow their personal interests. In this the space itself already provides a lived, alternative culture opposing dominant imaginaries of datafication, in which knowledge, skill and resources are exchanged voluntarily and freely for the benefit of everyone in the space, as well as other local actors. In this everyday life in, but also of the *dezentrale e.V.*, the hackerspace embodies a ‘stabilized’ form of a counter-imaginary (Kazansky & Milan 2021, p. 367): It is an established and formally recognized local actor, that is in constant discourse with its local surroundings, is firmly embedded into a broader, institutionalized culture in the form of the CCC and finally, just as the hackerspace acts independently of the CCC, many of its members act independently and on their own initiative. They are also connected with other actors that publicly engage with contemporary, sociotechnical issues that can include, but also go beyond concerns around digital media.

In this, the outcomes of the personal projects of the members, for themselves as often as for the hackerspace contribute as much to this alternative future, as the explicit initiatives and responses of the hackerspace that are aimed at its local surroundings and publics (e.g. the 'Technikprechstunde' and 'Hardware for Future' initiative). At the worst, the impact of the *dezentrale e.V.* as an actor does not go beyond being a small community of like-minded people exchanging and developing their personal interests together. As such, it can be seen as a spatially limited, but material and lived form of alternative digital culture, which is continually built upon by its members (Binder 2019). At best, in being such an embodiment of an alternative digital – and equally heterogeneous and contested as dominant SIs (Mager & Katzenbach, p. 226) – imaginary, it also empowers broader publics to participate and benefit from this alternative culture. Thus, rather than merely opposing dominant imaginaries of datafication, the *dezentrale e.V.* and its community actively work on and realize their own shared alternative imaginary of a digital future (Milan 2013, p. 170).

6.2 Practicing Hacktivism

Having established an overview of the ideas and values that are both explicitly stated and embodied in the practices taking place in the hackerspace, also provided insight into how the hacking culture practiced in the space embodies an alternative imaginary that directly opposes dominant SIs of datafication. It further makes visible, in how far the *dezentrale e.V.*, is a space in which this counter imaginary can be lived as a reality, given the expertise to do so. As the hackerspace is embedded into broader, institutionalized structures in the German hacking scene such as the CCC, it can be seen as part of a stabilized sociotechnical imaginary that can rely on firmly established organizational structures and ways to politicize sociotechnical phenomena and developments (Jasanoff 2009). Looking at the *dezentrale e.V.* only in its totality and in how far it is – as an organizational actor – embedded into and entangled with broader communities, risks conflating the heterogeneous, chaotic practices and experiences that constitute the hackerspace. Therefore, and because these mundane, everyday practices provide an insight into how exactly, the ideals and values of hacking culture are lived and become productive, a further discussion of the particular activities taking place in the hackerspace shows how they are constitutive of the alternative imaginary and reality of the hackerspace. It also shows how the broader counter-imaginary that is envisioned in hacking culture is in mutual co-constitution with the multiple, heterogeneous and chaotic field of practices members of the hackerspace come up with, enact and sometimes stabilize into political forms of action (Jasanoff 2019a, p. 10).

As such the *dezentrale e.V.*, as community of practice (Wenger 1998), can be seen as a sociotechnical vanguard, working on, living and spreading their alternative vision of life with digital technologies. A sociotechnical vanguard is a small collective whose members '[...] act intentionally to realize particular sociotechnical visions of the future that have yet to be accepted by wider collectives, such as the nation [...] Vanguard actively position themselves as members of an avant-garde, [...] driving a wave of change ' (Hilgartner 2015, p. 34). In working on their own, personal projects and helping each other in doing so, the community of the *dezentrale e.V.* effectively creates a space in which their counter-imaginary is a lived reality. In continuously building on and maintaining the hackerspace and in the hackerspace's productiveness, the community of the hackerspace assumes the role of a vanguard, not only problematizing dominant imaginaries of the digital future, but actively building on an alternative to it.

A large part of this, next to a political motivation is also the personal interest and autotelic motivation members invest into these practices. As such, the alternative visions that are enacted in the hackerspace are not only multiple and often overlap only partially between individuals, but also take place on a spatiotemporally small scale, i.e. they prioritize immediate and actionable concerns rather than large-scale political action (Bardone & Oppermann 2025). Given this rootedness in action on a small, locally situated scale, the impact of such political action is often – but not always – rather tacit and difficult to measure.

One of the initiatives that, since its conception, has become very established and effective in its purpose is that of *HfF* (see ch. 5.3.1). The idea of the initiative is to provide free hardware (Laptops and Desktop-PCs) to people in need of them. In order to do so, the *dezentrale e.V.* collects donations (e.g. in form of old computers, monitors and other hardware) in coordination with the municipalities of the city. The donated PCs and laptops are then prepared for use by and handed out by volunteering members. Unlike almost all other events, *HfF* takes place outside and in the yard (where the computers are handed out) and the small workshop (where they are prepared) of the space. Following the interviewees *HfF* is probably the most impactful and temporally persistent project that the *dezentrale e.V.* enacts. With the project the hackerspace empowers those that are otherwise excluded from participation in digital cultures. It also contributed to the establishment of the *dezentrale e.V.* as a recognized and impactful social actor – for example in the form of the 'Sächsischer Digitalpreis', which was awarded by the state of Saxony to the *dezentrale e.V.* in 2022. While the *HfF* project is aimed at the local publics around the *dezentrale e.V.*, the *Techniksprechstunde* (cf. ch. 5.3.2) – also aimed at these publics – is much closer to the everyday practices taking place *inside* the hackerspace. The event is dedicated to the repair of personal hard- and software and attracts a lot of people visiting the space to get help.

There usually is a more or less large group of members staying in the space, working on their own project. As such, The hackerspace manages on a local level, what Kubitschko (2018) termed a *spiral of legitimation* with which the CCC also positions itself as a politically relevant actor: By making technology a political category, at the same time offering the expertise to engage with the concerns emerging from this politicization.

Being dedicated to building and repairing things, the *Techniksprechstunde* – even more so than the *Chaostreff*, where mostly only members attended – provided insight into how the hackerspace acts as a *Community of Practice* (Wenger 1998) which is explicitly open to individuals who are not members of that community to participate in and benefit from their shared pool of practice and knowledge-sharing. The hackerspace, as a CoP distinguishes itself from its surroundings by an interest and expertise in digital and new media technologies, net-politics and hacking³⁶. The hackerspace maintained by the community of the hackerspace serves as a space in which the community comes together, shares resources, discusses and builds relationships. It also is a space in which the community builds and develops a shared repertoire of knowledge, know-how, material and tools from which they can draw, practicing and furthering their interests in the space (Wenger-Trayner 2015, p. 2). While these practices themselves are already constitutive of an alternative sociotechnical imaginary of empowerment through digital literacy and technical know-how, the community of the *dezentrale e.V.* is also making an explicit effort to open up to and offer their own expertise to the local social environment it is embedded in. In sharing their knowledge and practices with their local social environment, they also convey the ideals and values that they enact inside their community otherwise (Maida 2024, p. 43).

Practicing their own, local understanding of hacking culture – and doing so for their own joy and in their free time – the members of the hackerspace come together first and foremost for the community of like-minded people they can engage with in that place. The hackerspace – despite its seemingly static, weekly schedule of daily events – is also always a place for its members to spend their leisure time at and to enjoy themselves, whether building on a project, or just drinking a beer and conversing with each other. These practices are often experimental, messy, sometimes short-lived, or embedded into other practices and most of the time very chaotic in their emergence and unfolding. The hackerspace — in its material spatial expression mirrors this and is constituted, but also continuously reconfigured, extended and contested in the multitude of practices that take place in it. At the same time the hackerspace itself is performative, as it is not only the material outcome of the collective, activist work of the *dezentrale e.V.*'s members, but it in turn affords its members and visitors

³⁶ <https://dezentrale.space/docs/dezentrale-satzung.pdf>

the capacity to think of, develop, work – and in the small reality of the hackerspace itself live out – alternative futures to those that are dominantly in place outside of the reality in the hackerspace (Milan 2018, p. 367). Activism, situated by the CoP of the hackerspace is therefore embedded in the practice and sharing of personal interests of the community's members. Building Desktops and repairing PCs to hand them out for people in need, showing and helping to repair one's own technical devices and generally offering help to anyone having the interest to engage with technologies beyond their mere intended use. The small-scale orientation in the activist action of the *dezentrale e.V.* is also pointed out in the interviews, where S. emphasized the idea that activism – when it comes to the political category of technologies of datafication (Milan & ten Oever 2017)– should be practiced on an interpersonal and pragmatic level: Creating awareness in those closest to one's own social circle and in the form of mundane, everyday practices.

6.3 Embracing Ambivalence

While the activism in the hackerspace is often embedded in everyday practices, without these practices necessarily being aimed at social change as an end, the hackerspace itself remains embedded, not only into its local surroundings and the decentralized structures of broader hacking culture, but also into the broader SIs – to a degree even those, that are usually perceived as problematic in the *dezentrale e.V.* Most of the time, the hackerspace and the practices contained in it, convey a lived alternative vision of engaging with technology and datafication. However, there are also instances in the hackerspace, in which the otherwise shared vision of the hackerspace comes under tension, ambivalence or is outright challenged (cf. Jasanoff 2019b, p. 329). The visions produced and enacted through the hackerspace are therefore not only contesting and opposing dominant SIs of datafication, but are themselves contested (Mager & Katzenbach 2021). Having established an overview of how activism in the hackerspace materializes in the everyday, mundane practices that take place inside the hackerspace, discussion will now turn toward the ways in which the practiced vision of the hackerspace might stop being productive, becomes contested or even breaks down, but also how this is responded to and coped with in the *dezentrale e.V.* Just as the activism in the hackerspace can be found in the everyday action taking place in the hackerspace, the difficulties, shortcomings, or contestation of the shared vision that is enacted also manifest in small, seemingly mundane situations and instances taking place in the hackerspace (Kozinets & Seraj-Aksit 2024). Generally, conflict – just as activist action – in the *dezentrale e.V.* emerged not necessarily along the lines of abstract political identity or view, but rather in the small, mundane practices that take place routinely in the hackerspace.

Developing and enacting their visions through practice, the community of the hackerspace struggles at times to contain these different practices, held by individuals with only partially and at times not-at-all aligned approaches, views and visions (Davies 2018). Despite being a place in which thinking alternative visions and building on them becomes possible, it remains embedded into society at large and into broader sociotechnical infrastructures and as such, even vanguard communities such as those in hackerspaces remain – to a degree – dependent on these infrastructures as well. In essence, '[s]ociotechnical vanguards seek to make futures, but [...] they cannot make them simply as they please; they do not make them under self-selected circumstances, but do so using vocabularies and practices already given and transmitted from the past (Hilgartner 2015, p. 50). Most of the time, members in the hackerspace routinely engage with and rely on the technical infrastructure that was – over time – built into the hackerspace. This could be the *dezentrale e.V.*'s internal network and server system, the many tools to build and craft things, the old cash register at which the drinks would be paid. While these artefacts and the practices they constitute – in their totality – enact an alternative, lived reality, spatially confined to the hackerspace, this reality can also be fragile and easily disrupted, as for example when one of the members tried to pay their drinks with Paypal³⁷ (see ch. 5.4.3), when members were using clear names, or when they wasted the communities shared resources (in the perception of other members).

Another dimension along which it sometimes becomes difficult to establish a maintained dialogue between the hackerspace and its broader social surroundings is that of expertise. Being also one of the main concerns of this work, expertise (i.e. what kind of expertise is necessary to live alternatives to dominant imaginaries of datafication and how it is acquired) probably situates the most apparent schism between the community of the *dezentrale e.V.* and the publics they aim to speak to. The hackerspace and its community of practice (Lave & Wenger 1991) do provide the affordances to acquire a level of expertise that allows individuals to live and practice an alternative vision and way of engaging with technology as well. However, it mutually also necessitates an interest and engagement in contributing to this imaginary in turn. Given the hackerspace's general state of chaos, not just in regard to its internal organization, or the heterogeneity of its community, but also in its materiality of objects, tools and devices continuously moving, going missing, taking up too much or not enough space. While it is a very welcoming and open place to anyone who finds the *dezentrale e.V.*, it remains itself rather 'hidden' from view, such that people coming to the hackerspace for the first time either have to be referred to the location, or have done some research themselves in finding it. Even some of the core members – before joining the *dezentrale e.V.* – seem to have had trouble in finding the hackerspace. This makes the

³⁷ <https://www.paypal.com/de/home>

space also less accessible to broader publics. While this is of course also due to the fact that the channels of communication used in and by the hackerspace are – as far as possible – not instantiated on the mainstream platforms of social media used by the majority of people and as such might also be missed by them.

This creates a tension between the general aim of the space to be open to publics that are not involved in hacking culture otherwise and the practical but – necessarily – somewhat secluded reality lived in the hackerspace. Not only is it difficult to easily become aware of the *dezentrale e.V.* in the first place, maintaining the engagement over time requires a lot of resources, time and motivation. For many of the visitors coming to the space however, their engagement with and exposure to the counter-imaginary of the hackerspace is spatiotemporally limited to visiting the space with a specific technical problem. Besides that however, the problem of expertise also makes visible one of the shortcomings in contemporary imaginaries of hacking- and F/OSS culture: The practice of openly sharing and opening-up technologies for the free use for everyone does not necessarily lead to more equalities, as the ability and capacity to make these open technologies productive heavily depends on having the know-how and tools to use them in the first place (Gurstein 2011, Birchall 2021). As a community of practice the individuals making it up come together in the hackerspace with a shared purpose and interest, on which they work together and while sharing resources (Wenger-Trayner 2015). Nevertheless, the hackerspace is not just a place to work on hobbies and get help and resources in doing so, but also a place for social exchange, playing games, casual conversation, discussion and generally a place of leisure. The work to maintain the hackerspace is therefore not only found in the technical aspects of practice in the *dezentrale e.V.*, but also in the resources of social interaction and the maintenance of an adequate framework of norms and rules of such interaction.

6.4 Findings

The previous sections discussed in detail how the empirical findings from my field study could be related to activism using a lens of *sociotechnical imaginaries* (Jasanoff 2015a), *counter-imaginaries* (Mager 2021) and *vanguard visions* (Hilgartner 2018) to describe the alternative visions of the future that are enacted in the hackerspace. Empirically, this work investigated how the sociotechnical imaginary that is embodied in the hackerspace is a counter-imaginary to the dominant, hegemonic SIs of datafication that are enacted by state and corporate actors (Aho & Duffield 2020). The practices and individual visions that constitute the totality of the *dezentrale e.V.* are multiple and heterogeneous, yet come

together under a community of practice that sustains an alternative sociotechnical imaginary in the everyday practices enacted by the members and visitors of the space.

The first sub-question in this was: ***‘What are the counter-imaginaries formed in a German hackerspace and how do they relate to broader hacking cultures?’*** In the discussion I presented the hackerspace as enacting a form of counter-imaginary that is thoroughly embedded in a broader *hacking culture* (Coleman 2013), which might be summarized as practicing a creative, artistic and critical engagement with technology. It further aims at the availability of technical capacities for everyone and to society's benefit. More specifically, the *dezentrale e.V.* is the local representative of the Chaos Computer Club in Leipzig and as such is aligned with its particular values and ideals (see ch. 2.2.3). Despite this, the everyday activities taking place in the hackerspace also represent their own, localized variation of putting these values and ideals into practice. As such, there are a variety of initiatives and projects, aimed at creating social change, that take place in or around the *dezentrale e.V.* The hackerspace itself not only contains these practices but is materially and spatiotemporally constituted in them as well. This in turn makes the *dezentrale e.V.* a space that itself is an escape from the hegemonic, dominant SIs around datafication and surveillance, in which the enactment of individual visions becomes thinkable and doable in the first place. At the same time, developing and building on their own, individual visions, the members of the hackerspace characterize and maintain the *dezentrale e.V.* and its counter-imaginary imaginary. Most characterizing of this counter-imaginary is the ‘chaos’ that constitutes the hackerspace, emphasizing a decentralized form of organization throughout. Inhabiting a space of alternative reality.

Taking a closer look at the chaotic practices in the hackerspace the second research question I asked in this work was: ***‘How are these counter-imaginaries co-constituted in the daily activities and practices enacted in the hackerspace?’*** Several of the themed evenings held in the hackerspace, were introduced in the empirical part of this work (see ch. 5.3). The themed evenings forming the weekly schedule of the *dezentrale e.V.* are open to anyone with any level of expertise. However, in the activities the schedule prescribes (loosely), there are also differences. While *Hardware for Future* (see ch. 5.3.1) is intended for people in need of a computer, it takes place outside of the space, given the space needed to store, prepare and hand out dozens of PCs. Next to ‘Hardware for Future’, the *Techniksprechstunde* (see ch. 5.3.2) takes place in the spaces interior, in-between the activities of members spending their free-time in the space and on their personal projects and provides help to people in repairing their broken or dysfunctional devices, mostly smartphones, or laptops. While HfF enables access to technology and participation in digital culture in the first place, the *Techniksprechstunde* empowers individuals for autonomy and

teaches how to repair electronic devices. Both of these practices enable local publics around the hackerspace to pragmatically act against planned obsolescence (Pope 2017) and to help publics to improve their digital literacy (Pangrazio 2016). The dezentrale e.V., throughout this work, is described as CoP (Wenger 1998). As such a community, they share their expertise, know-how and resources with each other and anyone interested in their practice, to the point of actively reaching out to the public, such that they can benefit from this collective expertise as well. Some of the most active members in the hackerspace thereby act as sociotechnical vanguards, both by conceptualizing and building and sharing new technology and software, but also by engaging in public, activist events and individually connecting with other hackerspaces and initiatives. In doing so, they actively work on, develop and realize their personal projects. Mundane, everyday activities and social interaction make up the largest part of what happens in the hackerspace. Naturally, this also extends to the imaginary of – and activism practiced in – the hackerspace, such that most of the time it emerges in the ‘hands-on’ (Levy 2010) practice of day-to-day interaction.

Lastly, the third sub-question asked: ***‘What are the ambivalences, tensions and challenges that arise in the hackerspace and how are they dealt with, rhetorically and practically?’***. Activism in the hackerspace emerges in the everyday practices and exchanges taking place inside the hackerspace. Given the chaos and multiplicity of practices taking place in parallel and often partially overlapping with each other, there are also tensions that arise from the frictions between them (Markham 2021). Given this chaos that characterizes the hackerspace, it is understandable that it leads to misunderstandings about ownership over things, the order in the space, or the social and sustainable conduct that seemed to be the convention in the otherwise very free-spirited hackerspace. Another ambivalence can be found in the intention of the hackerspace staying hidden beneath the immediate view, but also to speak to its local surroundings and publics. While being very welcoming to anyone visiting the hackerspace, in some cases even collaborating with other actors (see ch. 5.3.2), it is rather difficult to find the dezentrale e.V. by oneself. Instead, to find the hackerspace, one has to rely on word-of-mouth practices, or know of the space beforehand and do some research online. Thus, while much of the hackerspace’s resources are aimed at local publics around the space, its ‘hiddenness’ might in some cases take away from its impact as a local, political actor. Further, it might be open for debate in how far the simple sharing of access to data and technology (e.g. in the case of the F/OSS movement) actually leads to more equality and less exploitation (Gurstein 2011). The community of the hackerspace can rely on a rich pool of expertise and know-how if they engage with such technologies. Not everyone however, possesses such expertise and thus might not be as able to make productive use of the practice of sharing data, code and making technology

available for free use. This also touches upon the general difficulty of thinking and doing activism aimed at digital environments: It necessitates not only individual expertise, but a community in which knowledge and resources are shared with each other, to act effectively.

While the hackerspace situates such an environment, the amount of time, resources and motivation needed to effectively make use and become part of such a community of practice often make it difficult to do so. In such an 'everyday activism' (cf. Chatterton & Pickerill 2010), it is possible to cope with and embrace the ambivalences that come with the tensions of being part of a counter-culture, while remaining embedded in and part of a broader sociotechnical environment, perceived as oppressive. Despite the rather pessimistic outlook members often expressed in face of the 'perceived inescapability' (cf. Markham 2021) of the surveillance by state- and corporate-actors, they continue to work on the realization of their own, alternatively imagined sociotechnical future. They do so not necessarily on a societally large scale, but on a spatially limited, local level, of impact most immediately for themselves in sustaining the hackerspace, but are also open for – and in some of their entanglements with other local actors actively inviting them (see ch. 5.3.2) – anyone interested or in need of these practices.

7 Conclusion

The starting point of this work was the outlook on an increasingly oppressive and exploitative way of how – and to what purposes – contemporary information technologies are designed and implemented. Specifically, this concerns the design of technologies that situate a broad-scale surveillance of citizens by state- and corporate actors. While this status quo of surveillance is extensively discussed in media, politics and academia, it does not seem to be made easily productive in countering or working against it. The dominant imaginary of both an inevitability of surveillance and sociotechnical practice that trades a critical, but also creative engagement with technology against closed, proprietary systems that prescribe very limited forms of use and a maximized quality user experience (Gray et al. 2018). In response, several scholars have turned toward exploring practices and cultures that do not only oppose these dominant sociotechnical imaginaries shaping today's sociotechnical realities, but started to build on and proliferate imaginaries that represent alternatives to those dominant imaginaries. The main concern of this thesis then, was to explore how such an alternative is built on and lived in a German hackerspace, the *dezentrale e.V.* Based on an analysis of interview- and ethnographic data, I engaged with three research questions, in order to 1.) situate the imaginary of the hackerspace in a broader hacking culture, 2.) analyze how this imaginary is entangled with the practices of the members of the hackerspace, forming a community of practice and 3.) what kind of challenges, tensions and ambivalences emerge in this practice and how these are coped with.

The *dezentrale e.V.* – in its general values and ideals – aligns smoothly with the broader landscape of hacking culture as it is practiced in Germany. Specifically, this work showed that the locally practiced hacking culture of the *dezentrale e.V.* can be seen as a collectively shared and lived counter-imaginary. It criticizes and politicizes contemporary sociotechnical issues, while at the same time developing technologies and practices that embody an alternative to imaginaries of a digital future in which privacy and autonomy are the price for benefitting from the affordances of digital technologies. Of note in this, are the hacker ethics, which are embodied for example in the decentralized organization, the meticulous concern for keeping the screens of their devices private, or the constant use of pseudonyms instead of clear names in the hackerspace. Beyond this general alignment in values and ideals and general stance regarding technology as a political category (Kubitschko 2018), the *dezentrale e.V.* acts autonomously and enacts its own, locally and historically situated vision of engaging with technology. Ultimately, the activism taking place in the hackerspace, as well as the visions endorsed in it are rooted in the material practices of the community. Looking at the daily practices that take place in the hackerspace, often seems chaotic – a characteristic that is very much embraced in the hackerspace.

The mundane, yet heterogeneous, multiple and sometimes overlapping activities that take place in it are ultimately in co-constitution with the imaginary represented by the hackerspace: It is as much a space in which the thinking and making of alternative visions becomes possible, as these alternative visions, practices and artefacts constitute the hackerspace in turn. As a community of practice, the *dezentrale e.V.*, for its members, is first and foremost a place to build, develop, discuss and exchange knowledge about technology. At the same time, it is a place that is explicitly open and reaching out to broader publics offering the same expertise that they share between themselves. As such, the hackerspace has conceptualized and implemented practices specifically aimed at bringing social change by enabling access to and empowering for autonomy in digital environments. While the hackerspace is part of a larger network of actors in the German hacking culture, the everyday activity taking place in it is aimed at — and takes place on — a much smaller scale and is more limited to the immediate surroundings of the *dezentrale e.V.*

Given the emphasis on the ‘hands-on’ approach that characterizes the hackerspace, not only activism and visions in the space are rooted in practice, but also the most common reasons for conflict, tension and ambivalences emerging between members in the space. Further, given that the hackerspace makes a point of practicing an alternative imaginary, the reach and visibility of the *dezentrale e.V.* is also limited by the channels of communication used in and by the community. Lastly, to benefit most from the hackerspace’s drive for social change, presupposes a high level of expertise. While it also affords the acquisition of such expertise, it does so only over very long periods of maintained engagement in the hackerspace, which costs a lot of time, resources and motivation. The community of the *dezentrale e.V.*, while emphasizing the importance of enabling broader populations to participate in building their alternative vision, is also very aware of their limited impact, which is why they emphasize the importance of activist action on a personal level.

This work provides valuable insights into conceptualizing effective strategies for contemporary forms of activism in the domain of digital media, particularly in the form of bottom-up, grassroots communities. The organization and practices of the hackerspace, show an effective, if only small-scale form of driving for social change by building on alternatives to dominant imaginaries of datafication and enabling lay publics to participate in them. The imaginary brought forth in the hackerspace, enables citizens to defend themselves against exploitative practices emerging with the digitalization of society and the ‘datafication’ of populations and individuals (cf. Ruckenstein & Schüll 2017, Ulises & Couldry 2019). Looking at – and – learning from the hackerspace, provides relevant insights for policy-making in the domains of digital literacy and protection from surveillance. The *dezentrale e.V.* – in its day-to-day activities – is a place for its members to spend their free

time in, relax and enjoy themselves. Despite this, the topics and activities engaged in the space often bear a political dimension and are grounded in imagining an alternative, more democratic and participatory way of shaping the digital future. Members of the hackerspace both find joy and political concern in their engagement with sociotechnical issues and they share it not only with each other, inside their community, but with the local publics surrounding them as well. At the same time, the hackerspaces community is well aware that – beyond the steps they take to realize their counter-imaginary – it is impossible to completely overturn, or reverse surveillance capitalism as such. Instead, the *dezentrale e.V.* embraces the ambiguity of living not only in, but with a changing landscape of digital practice that increasingly incorporates infrastructures of surveillance, while still acknowledging the impact and importance of imagining and working on an alternative to this regime of surveillance.

The *dezentrale e.V.* manages to realize and spread their vision not as an end, or to reach an explicit sociotechnical future in the sense of a final outcome or product. Instead, the hackerspace as a spatiotemporally confined but lived counter-imaginary, as much as its impact on its public and political surroundings is dependent on the continuous, autotelic work on their community of practice. While it is important to create policies that oppose an increasing surveillance of citizens and their disempowerment in the use of technology, it might be equally important on a policy-level to provide citizens with the affordances to counter practices of corporate and state surveillance in their everyday lives. The hackerspace – in being open to anyone interested and forming a locally situated community – provides these affordances on a grassroots level. Encouraging and supporting these spaces would therefore enable more individuals to empower themselves in their day-to-day lives and practices with digital technologies. Next to this, the work contributes to the ongoing discourse on sociotechnical imaginaries, counter-imaginaries and vanguard visions, by providing an analysis of a small, local, non-profit actor that aims for social change not on a broad societal level, but enacts grassroots on a local level. Another contribution this work has to offer is for activist groups seeking to organize effectively in that it provides an analysis of the effectiveness of decentralized, bottom-up social action. Finally, this work is limited in that it is a case study of a single hackerspace that, while it is embedded into and aligns with a broader culture of hacking, represents a locally situated culture and cannot necessarily be generalized to German hackerspaces in general. Also, given that the activist action emerging from the hackerspace is intentionally carried out on an interpersonal level, its impact is ultimately hard to measure, or quantify. In order to get a more nuanced understanding of counter-imaginaries as they are practiced in hackerspaces future research should focus also on other, local variations of hacking culture, either on an equally small

scale as this work, or focusing on a more regional level (for example on the 'Chaoszone', as an umbrella term – and witty play on words – for the network between hackerspaces in the states of the former German Democratic Republic).

Bibliography

Adams, D. (1995). *Hitchhiker's Guide to the Galaxy* (Book 1). New York: Del Rey Books.

Aho, B., & Duffield, R. (2020). *Beyond surveillance capitalism: Privacy, regulation and big data in Europe and China*. *Economy and Society*, 49(2), 187–212.

<https://doi.org/10.1080/03085147.2019.1690275>

Akrich, M. (1992). *The de-scription of technical objects*. In: Bijker & Law (eds.) - *Shaping Technology / Building Society: Studies in Sociotechnical Change*. pp. 205-224.

Aradau, C., & Blanke, T. (2022). *Algorithmic Reason: The New Government of Self and Other* (1st ed.). Oxford University Press Oxford.

<https://doi.org/10.1093/oso/9780192859624.001.0001>

Arrieta-Ibarra, I., Goff, L., Jiménez-Hernández, D., Lanier, J., & Weyl, E. G. (2018). *Should We Treat Data as Labor? Moving beyond "Free."* *AEA Papers and Proceedings*, 108, 42.

<https://doi.org/10.1257/pandp.20181003>

Bardone, E., & Opermann, S. (2025). *In search of the future classroom: Exploring the contribution of Estonian edtech companies as sociotechnical vanguard*. *Digital Education Review*, 108. <https://doi.org/10.1344/der.2025.47.92-108>

Becker, S., Tenório, N., Sartori, R., & Santos, A. P. (2023). *THREE PILLARS FOR KNOWLEDGE CREATION IN HACKERSPACE*. *Perspectivas Em Gestão & Conhecimento*, 13(esp), 2–16. <https://doi.org/10.22478/ufpb.2236-417X.2023v13nesp.65580>

Beyer, J. L. (2014). *The Emergence of a Freedom of Information Movement: Anonymous, WikiLeaks, the Pirate Party, and Iceland*. *J Comput-Mediat Comm*, 19, 154.

<https://doi.org/10.1111/jcc4.12050>

Binder, W. (2019). *Social imaginaries and the limits of differential meaning: A cultural sociological critique of symbolic meaning structures*. *ÖZS. Österreichische Zeitschrift Für Soziologie*, 44, 35. <https://doi.org/10.1007/s11614-019-00371-2>

Birchall, C. (2021). *Radical secrecy: The ends of transparency in datafied America*. University of Minnesota Press ProQuest Ebook Central.

<https://ubdata.univie.ac.at/AC16605473>

Boerman, S. C., Kruikemeier, S., & Zuiderveen Borgesius, F. J. (2017). *Online Behavioral Advertising: A Literature Review and Research Agenda*. Journal of Advertising, 46, 376.

<https://doi.org/10.1080/00913367.2017.1339368>

Borsook, P. (with Internet Archive). (2000). *Cyberselfish: A critical romp through the terribly libertarian culture of high tech*. New York : PublicAffairs.

<http://archive.org/details/cyberselfish00paul>

Bulger, M. E. (2012). *Measuring Media Literacy in a National Context: Challenges of Definition, Method and Implementation*. Media Studies, 3, 104.

Burk, D. L., & Cohen, J. E. (2000). *Fair Use Infrastructure for Copyright Management Systems*.

Callon, M. (1986). *"Elements of a sociology of translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay"*. In John Law (Ed.), *Power, Action and Belief: A New Sociology of Knowledge?* London, Routledge: 196–233.

Chan, R. (2020). *"The Cambridge Analytica whistleblower explains how the firm used Facebook data to sway elections"*. Business Insider. Archived from original on January 29, 2021.

<https://web.archive.org/web/20210129123154/https://www.businessinsider.com/cambridge-analytica-whistleblower-christopher-wylie-facebook-data-2019-10>. Retrieved 26.09.2025

Chan, J., & Moses, L. B. (2017). *MAKING SENSE OF BIG DATA FOR SECURITY*. British Journal of Criminology, 57, 319. <https://doi.org/10.1093/bjc/azw059>

Charmaz, K. (2012). *Constructing grounded theory: A practical guide through qualitative analysis* (Repr). Sage.

Charmaz, K. (2020). *"With Constructivist Grounded Theory You Can't Hide": Social Justice Research and Critical Inquiry in the Public Sphere*. Qualitative Inquiry, 26(2), 165–176.

<https://doi.org/10.1177/1077800419879081>

Chatterton, P., & Pickerill, J. (2010). *Everyday activism and transitions towards post-capitalist worlds*. Transactions - Institute of British Geographers (1965), 35, 490.

<https://doi.org/10.1111/j.1475-5661.2010.00396.x>

Clarke, A. E. (2003). *Situational Analyses: Grounded Theory Mapping After the Postmodern Turn*. Symbolic Interaction, 26, 576. <https://doi.org/10.1525/si.2003.26.4.553>

- Clarke, A. E. (2005). *Situational analysis: Grounded theory after the postmodern turn*. SAGE,.
- Cohen, J. E. (2013). *WHAT PRIVACY IS FOR*. Harvard Law Review, 126, 1933.
- Coleman, E. G. (2013). *Coding freedom: The ethics and aesthetics of hacking*. Princeton University Press.
- Coleman, E. G., & Golub, A. (2008). *Hacker practice: Moral genres and the cultural articulation of liberalism*. *Anthropological Theory*, 8(3), 255–277.
<https://doi.org/10.1177/1463499608093814>
- Cox, K. (2020) "Wink smart hub users get one week's notice to pay up or lose access". *Ars Technica*.
<https://arstechnica.com/information-technology/2020/05/wink-smart-hub-users-get-one-week-s-notice-to-pay-up-or-lose-access>. Retrieved 03.10.2025
- Davies, S. R. (2017). *Hackerspaces: Making the maker movement*. polity.
<https://ubdata.univie.ac.at/AC15215842>
- Davies, S. R. (2018). *Characterizing Hacking: Mundane Engagement in US Hacker and Makerspaces*. *Science, Technology, & Human Values*, 43, 197.
<https://doi.org/10.1177/0162243917703464>
- Deephouse, D. L., Bundy, J., Tost, L. P., & Suchman, M. C. (2017). *Organizational Legitimacy: Six Key Questions* (p. 52). <https://doi.org/10.4135/9781446280669.n2>
- Enzensberger, U. (2004). *Die Jahre der Kommune I: Berlin 1967 - 1969* (1. Aufl.). Kiepenheuer & Witsch.
- Fisk, N., Kelly, N. M., & Liebrock, L. (2023). *Cybersecurity communities of practice: Strategies for creating gateways to participation*. *Computers & Security*, 132.
<https://doi.org/10.1016/j.cose.2023.103188>
- Fleischhack, J. (2018). 'Data trainings' in German schools – learning empowerment from hackers. In *The Politics of Big Data* (1st ed., Vol. 1, pp. 247–264). Routledge.
<https://doi.org/10.4324/9781315231938-12>
- Foucault, M. (2019). *Überwachen und Strafen: Die Geburt des Gefängnisses* (21. Auflage). Suhrkamp. <https://ubdata.univie.ac.at/AC16080363>

- Federal Trade Commission (2025). *FTC Takes Action Against General Motors for Sharing Drivers' Precise Location and Driving Behavior Data Without Consent*.
<https://www.ftc.gov/news-events/news/press-releases/2025/01/ftc-takes-action-against-general-motors-sharing-drivers-precise-location-driving-behavior-data>. Retrieved 03.10.2025
- Fuchs, C. (2021). *Social media: A critical introduction* (Third edition.).
- Gambino, A. J. (2023). *Right to Repair: Whose Right is it Anyway?* Transactions: Tenn. J. Bus. L., 25, 125.
- Gillespie, T. (2010). *The politics of 'platforms.'* New Media & Society, 12, 364.
<https://doi.org/10.1177/1461444809342738>
- Glaser, B. G., & Strauss, A. L. (2008). *The discovery of grounded theory: Strategies for qualitative research* (3. paperback print.). Aldine Transaction.
<https://ubdata.univie.ac.at/AC06752466>
- Glenn G., Ewen M., Laura P. (2013). *Edward Snowden: the whistleblower behind the NSA surveillance revelations*. The Guardian
https://web.archive.org/web/20140126013224/http://www.theguardian.com/world/2013/jun/09/edward-snowden-nsa-whistleblower-surveillance?CMP=tw_t_gu Archived from original: 26. Januar 2014 Retrieved: 26.09.2025.
- Gray, C. M., Kou, Y., Battles, B., Hoggatt, J., & Toombs, A. L. (2018). *The Dark (Patterns) Side of UX Design*. 2018-, 14. <https://doi.org/10.1145/3173574.3174108>
- Gurstein, M. B. (2011). *Open data: Empowering the empowered or effective data use for everyone?* First Monday, 16. <https://doi.org/10.5210/fm.v16i2.3316>
- Gutierrez, M., & Milan, S. (n.d.). *Technopolitics in the Age of Big Data: The Rise of Proactive Data Activism in Latin America*.
- Habermas, J. (1983). *Ziviler Ungehorsam – Testfall für den demokratischen Rechtsstaat. Ziviler Ungehorsam im Rechtsstaat*, Frankfurt am Main: Suhrkamp, 29-53.
- Haraway, D. (1988). *Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective*. In Simians, Cyborgs, and Women. Routledge.
- Hildreth, P., & Kimble, C. (Eds.). (2004). *Knowledge Networks: Innovation Through Communities of Practice*. IGI Global. <https://doi.org/10.4018/978-1-59140-200-8>

Hilgartner, S. (2015). *Capturing the Imaginary: Vanguard, visions and the synthetic biology revolution* (R. Hagendijk, S. Hilgartner, & C. A. Miller, Eds.; 1st ed., p. 55).

<https://doi.org/10.4324/9780203564370-3>

Iliadis, A., & Russo, F. (2016). *Critical data studies: An introduction*. Big Data & Society, 3.

<https://doi.org/10.1177/2053951716674238>

Jasanoff, S. (2004). *The idiom of co-production*. In Jasanoff, S. (2004). *States of knowledge : the co-production of science and social order* (1st ed.). Routledge. ch 1.

<https://doi.org/10.4324/9780203413845>

Jasanoff, S. (2019a). *One. Future Imperfect: Science, Technology, and the Imaginations of Modernity*. In Jasanoff, S., & Kim, S.-H. (eds.) *Dreamscapes of Modernity* (pp. 1–33).

University of Chicago Press. <https://doi.org/10.7208/9780226276663-001>

Jasanoff, S. (2019b). *Fifteen / Imagined and Invented Worlds*. In Jasanoff, S., & Kim, S.-H. (eds.) *Dreamscapes of Modernity* (pp. 321–342). University of Chicago Press.

Jasanoff, S. & Kim, S.H. (2009). *Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea*. *Minerva* (London), 47(2), 119–146.

Jensen, E., & Laurie, C. (2016). *Doing Real Research: A Practical Guide to Social Research* (First edition). SAGE Publications, Ltd. (UK).

<https://resolver.vitalsource.com/9781473944282>

Kazansky, B., & Milan, S. (2021). “Bodies not templates”: Contesting dominant algorithmic imaginaries. *New Media & Society*, 23(2), 363–381.

<https://doi.org/10.1177/1461444820929316>

Kelle, U. (2007). *The Development of Categories: Different Approaches in Grounded Theory* (K. Charmaz & A. Bryant, Eds.; p. 213). <https://doi.org/10.4135/9781848607941.n9>

Kelty, C. M. (2008). *Two bits: The cultural significance of free software* (1st ed.).

<https://doi.org/10.1515/9780822389002>

Kim, K. (Kathy), Kim, W. G., & Lee, M. (2023). *Impact of dark patterns on consumers’ perceived fairness and attitude: Moderating effects of types of dark patterns, social proof, and moral identity*. *Tourism Management* (1982), 98.

<https://doi.org/10.1016/j.tourman.2023.104763>

Kim, S.-H. (2015). *Social Movements and Contested Sociotechnical Imaginaries in South Korea*. <https://doi.org/10.7208/chicago/9780226276663.003.0007>

Kitchin, R. (2014). *Big Data, new epistemologies and paradigm shifts*. Big Data & Society, 1. <https://doi.org/10.1177/2053951714528481>

Koebler (2024). "Samsung Requires Independent Repair Shops to Share Customer Data, Snitch on People Who Use Aftermarket Parts, Leaked Contract Shows". 404 Media. <https://www.404media.co/samsung-requires-independent-repair-shops-to-share-customer-data-snitch-on-people-who-use-aftermarket-parts-leaked-contract-shows/>. Retrieved 03.10.2025

Koopmans, R. (2004). *Movements and Media: Selection Processes and Evolutionary Dynamics in the Public Sphere*. Theory and Society, 33, 391. <https://doi.org/10.1023/B:RYSO.0000038603.34963.de>

Kostakis, V., Niaros, V., & Giotitsas, C. (2015). *Production and governance in hackerspaces: A manifestation of Commons-based peer production in the physical realm?* International Journal of Cultural Studies, 18(5), 555–573. <https://doi.org/10.1177/1367877913519310>

Kozinets, R. V., & Seraj-Aksit, M. (2024). *Everyday activism: An AI-assisted netnography of a digital consumer movement*. Journal of Marketing Management, 40(3–4), 347–370. <https://doi.org/10.1080/0267257X.2024.2307387>

Kubitschko, S. (2018). *Chaos Computer Club: The Communicative Construction of Media Technologies and Infrastructures as a Political Category* In: Hepp, A., Breiter, A., Hasebrink, U. (eds) Communicative Figurations. Transforming Communications – Studies in Cross-Media Research. pp. 81-100. Palgrave, Macmillan, Cham. https://doi.org/10.1007/978-3-319-65584-0_4

Lakoff, A. (2015). *Global Health Security and the Pathogenic Imaginary*. <https://doi.org/10.7208/chicago/9780226276663.003.0014>

Latour, B. (2004). *Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern*. Critical Inquiry, 30, 248. <https://doi.org/10.1086/421123>

Lave, J., & Wenger, E. (2009). *Situated learning: Legitimate peripheral participation* (20. print.). Cambridge Univ. Press. <https://ubdata.univie.ac.at/AC08081849>

Lehtiniemi, T. (2017). *Personal Data Spaces: An Intervention in Surveillance Capitalism?* Surveillance & Society, 15, 639. <https://doi.org/10.24908/ss.v15i5.6424>

Lehtiniemi, T., & Ruckenstein, M. (2019). *The social imaginaries of data activism*. Big Data & Society, 6. <https://doi.org/10.1177/2053951718821146>

Levy, F., & Murnane, R. J. (2004). *The new division of labor: How computers are creating the next job market* (1st ed.).

Levy, S. (2001). *Crypto: How the Code Rebels Beat the Government—Saving Privacy in the Digital Age*. Penguin.

Levy, S. (2010). *Hackers* (First edition.). O'Reilly Media,.

Lyon, D. (2014). *Surveillance, Snowden, and Big Data: Capacities, consequences, critique*. Big Data & Society, 1. <https://doi.org/10.1177/2053951714541861>

Lyon, D. (2019). *Surveillance capitalism, surveillance culture and data politics* 1 (E. Isin, D. Bigo, & E. Ruppert, Eds.; 1st ed., p. 77). <https://doi.org/10.4324/9781315167305-4>

Mager, A. (2023). *European Search? How to counter-imagine and counteract hegemonic search with European search engine projects*. Big Data & Society, 10(1), 205395172311631. <https://doi.org/10.1177/20539517231163173>

Mager, A., & Katzenbach, C. (2021). *Future imaginaries in the making and governing of digital technology: Multiple, contested, commodified*. New Media & Society, 23(2), 223–236. <https://doi.org/10.1177/1461444820929321>

Maida, C. A. (2024). *Learning in the anthropocene: Reimagining education in the twenty-first century*. Lexington Books.

Markham, A. (2021). *The limits of the imaginary: Challenges to intervening in future speculations of memory, data, and algorithms*. New Media & Society, 23, 405. <https://doi.org/10.1177/1461444820929322>

Martins, B. C., & Albagli, S. (2020). *Hackerspace movement: A study of the Brazilian experience*. Em Questão, 161–185. <https://doi.org/10.19132/1808-5245261.161-185>

McSherry, Corynne (7 Oct 2014). "Adobe Spyware Reveals (Again) the Price of DRM: Your Privacy and Security". EFF. <https://www.eff.org/deeplinks/2014/10/adobe-spyware-reveals-again-price-drm-your-privacy-and-security>. Retrieved 03.10.2025

Mehmood, A., & Cousins, J. J. (2024). *Energizing dissensus: Socio-technical (counter) imaginaries along the China–Pakistan Economic Corridor*. Environment and Planning. D, Society & Space, 42(2), 294–316.

- Mejias, U. A., & Couldry, N. (2019). *Datafication*. *Internet Policy Review*, 8, 10.
<https://doi.org/10.14763/2019.4.1428>
- Middleton, B. (2017). *Chaos Computer Club*. In *A History of Cyber Security Attacks* (1st ed., Vol. 1, pp. 19–24). Routledge. <https://doi.org/10.1201/9781315155852-5>
- Milan, S. (2013). *Social Movements and Their Technologies*. Palgrave Macmillan UK.
<https://doi.org/10.1057/9781137313546>
- Milan, S. (2018). *Political Agency, Digital Traces, and Bottom-Up Data Practices*. *International Journal of Communication*, 12, 507–527.
- Milan, S., & Hintz, A. (2013). *Networked Collective Action and the Institutionalized Policy Debate: Bringing Cyberactivism to the Policy Arena?* *Policy and Internet*, 5(1), 7–26.
<https://doi.org/10.1002/poi3.20>
- Milan, S., & ten Oever, N. (2017). *Coding and encoding rights in internet infrastructure*. *Internet Policy Review*, 6, 17. <https://doi.org/10.14763/2017.1.442>
- Miller, C. A. (2019). *Thirteen. Globalizing Security: Science and the Transformation of Contemporary Political Imagination* In Jasanoff, S., & Kim, S.-H. (eds.) *Dreamscapes of Modernity*. pp. 277–299. <https://doi.org/10.7208/9780226276663-013>
- Monahan, T. (2015). *The Right to Hide? Anti-Surveillance Camouflage and the Aestheticization of Resistance*. *Communication and Critical/Cultural Studies*, 12, 178.
<https://doi.org/10.1080/14791420.2015.1006646>
- Moulier-Boutang, Y. (2011). *Cognitive capitalism*. Polity.
- Murillo, L. F. (2020). *Hackerspace Network: Prefiguring Technopolitical Futures?* *American Anthropologist*, 122(2), 207–221. <https://doi.org/10.1111/aman.13318>
- Pangrazio, L. (2016). *Reconceptualising critical digital literacy*. *Discourse*, 37, 174.
<https://doi.org/10.1080/01596306.2014.942836>
- Parks L (2015) “Stuff you can kick”: toward a theory of media infrastructure. In: Svensson P and Goldberg DT (eds) *Between Humanities and the Digital*. Cambridge, MA; London: MIT Press, pp. 355–373. <https://doi.org/10.7551/mitpress/9465.003.0031>
- Pellegrini, T. (2020). *Digital Rights Management—Technologien, Anwendungsbereiche und Entwicklungsperspektiven* (J. Krone & T. Pellegrini, Eds.; p. 346).
https://doi.org/10.1007/978-3-658-09560-4_79

- Pickren, G. (2018). *The global assemblage of digital flow: Critical data studies and the infrastructures of computing*. Progress in Human Geography, 42, 243.
<https://doi.org/10.1177/0309132516673241>
- Pope, K. (2017). *Understanding planned obsolescence: Unsustainability through production, consumption and waste generation*. Kogan Page. <https://ubdata.univie.ac.at/AC13290117>
- Pöttsch, H. (2016). *Materialist Perspectives on Digital Technologies: Informing Debates on Digital Literacy and Competence*. Nordicom Review, 37(1), 119–132.
<https://doi.org/10.1515/nor-2016-0006>
- Protalinski, E. (2014, December 28). *Chaos Computer Club claims it can reproduce fingerprints from people's public photos*. VentureBeat.
<https://venturebeat.com/business/chaos-computer-club-claims-it-can-reproduce-fingerprints-from-peoples-public-photos/>
- Purchase, Robert (19 Dec 2014). *"Don't call it DRM: what's Denuvo Anti-Tamper?"*. <https://www.eurogamer.net/denuvo-anti-tamper-drm>. EuroGamer. Retrieved 03.10.2025
- Richterich, A. (2018). *The Big Data Agenda: Data Ethics and Critical Data Studies*.
<https://doi.org/10.16997/book14>
- Robinson, S. (2021). *Scientific imaginaries and science diplomacy: The case of ocean exploitation*. Centaurus, 63, 170. <https://doi.org/10.1111/1600-0498.12342>
- Rubel, A. (2015). *Privacy, Surveillance, and Autonomy* (R. Kukla, E. Fenton, & J. D. Arras, Eds.; 1st ed., p. 324). <https://doi.org/10.4324/9780203804971-29>
- Ruckenstein, M., & Pantzar, M. (2015). *Datafied life: Techno-anthropology as a site for exploration and experimentation*. Research in Philosophy & Technology, 19, 210.
<https://doi.org/10.5840/techne20159935>
- Ruckenstein, M., & Schüll, N. D. (2017). *The Datafication of Health*. Annual Review of Anthropology, 46, 278. <https://doi.org/10.1146/annurev-anthro-102116-041244>
- Schatzman, L., & Strauss, A. (1973). *Field research: Strategies for a natural sociology*. Englewood Cliffs, NJ: Prentice-Hall.
- Schrape, J.-F. (2021). *Digitale Transformation*. transcript Verlag UTB.
<https://elibrary.utb.de/doi/book/10.36198/9783838555805>

Shapiro, A. (2019). *Predictive Policing for Reform? Indeterminacy and Intervention in Big Data Policing*. *Surveillance & Society*, 17, 472. <https://doi.org/10.24908/ss.v17i3/4.10410>

Shimomura, T., & Markoff, J. (with Internet Archive). (1996). *Take-down: The pursuit and capture of Kevin Mitnick, America's most wanted computer outlaw—by the man who did it*. New York : Hyperion. <http://archive.org/details/takedownpursuita00shim>

Silverman, J. (2017). *Privacy under Surveillance Capitalism*. *Social Research*, 84, 164. <https://doi.org/10.1353/sor.2017.0010>

Smith, E. (2019). *Twelve. Corporate Imaginaries of Biotechnology and Global Governance: Syngenta, Golden Rice, and Corporate Social Responsibility* In Jasanoff, S., & Kim, S.-H. (eds.) *Dreamscapes of Modernity* (pp. 254–276). University of Chicago Press. <https://doi.org/10.7208/9780226276663-012>

Steakins, W. (2025). *Trump administration's new artificial intelligence plan focuses on deregulation, beating China*. ABCNews. <https://abcnews.go.com/Politics/trump-administrations-new-artificial-intelligence-plan-focuses-deregulation/story?id=124011520>. Retrieved 03.10.2025

Susser, D., Roessler, B., & Nissenbaum, H. (2019). *Technology, autonomy, and manipulation*. *Internet Policy Review*, 8, 22. <https://doi.org/10.14763/2019.2.1410>

Turner F (2006) *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*. Chicago, IL: University of Chicago Press.

Van Dijck, J. (2021). *Seeing the forest for the trees: Visualizing platformization and its governance*. *New Media & Society*, 23, 2819. <https://doi.org/10.1177/1461444820940293>

Vercellone, C. (2007). *From Formal Subsumption to General Intellect: Elements for a Marxist Reading of the Thesis of Cognitive Capitalism, in Historical Materialism*. *Historical Materialism : Research in Critical Marxist Theory*, 15, 36. <https://doi.org/10.1163/156920607X171681>

Wagenknecht, S., & Korn, M. (2016). *Hacking as Transgressive Infrastructuring: Mobile Phone Networks and the German Chaos Computer Club*. *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*, 1104–1117. CSCW '16: Computer Supported Cooperative Work and Social Computing. <https://doi.org/10.1145/2818048.2820027>

- Wark, M. (2004). *A Hacker Manifesto*. Harvard University Press.
<https://doi.org/10.4159/9780674044845>
- Wark, M. (2006). *INFORMATION WANTS TO BE FREE (BUT IS EVERYWHERE IN CHAINS)*. *Cultural Studies* (London, England), 20(2–3), 165–183.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge University Press,. <https://doi.org/10.1017/CBO9780511803932>
- Wenger-Trayner, B., & Wenger-Trayner. (2015). *A brief overview of the concept and its uses. Communities of Practice*.
- West, S. M. (2019). *Data Capitalism: Redefining the Logics of Surveillance and Privacy*. *Business & Society*, 58, 41. <https://doi.org/10.1177/0007650317718185>
- Wieckmann, J. & Chaos-Computer-Club (Eds.). (1989). *Das Chaos-Computer-Buch: Hacking made in Germany* (20.-23. Tsd). Wunderlich.
- Williams, M. R., & Hall, J. C. (2015). *Hackerspaces: A case study in the creation and management of a common pool resource*. *Journal of Institutional Economics*, 11(4), 769–781. <https://doi.org/10.1017/S1744137415000016>
- Wright, D., & Kreissl, R. (2015). *Effects of surveillance on civil liberties and fundamental rights in Europe* (R. Kreissl & D. Wright, Eds.; 1st ed., p. 310).
<https://doi.org/10.4324/9781315851365-7>
- Wright, M. A., & Kakalik, J. S. (1997). *The erosion of privacy*. *Computers & Society*, 27, 25.
<https://doi.org/10.1145/270913.270922>
- Yeung, K. (2017). “Hypernudge”: *Big Data as a mode of regulation by design*. *Information, Communication & Society*, 20, 136. <https://doi.org/10.1080/1369118X.2016.1186713>
- Zuboff, S. (2015). *Big other: Surveillance Capitalism and the Prospects of an Information Civilization*. *Journal of Information Technology*, 30(1), 75–89.
<https://doi.org/10.1057/jit.2015.5>
- Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power* (Paperback edition). Profile Books. <https://ubdata.univie.ac.at/AC15286018>
- Zuboff, S. (2022). *Surveillance Capitalism or Democracy? The Death Match of Institutional Orders and the Politics of Knowledge in Our Information Civilization*. *Organization Theory*, 3(3), 26317877221129290. <https://doi.org/10.1177/26317877221129290>