West and East German Hackers from a Comparative Perspective

Federal Republic of Germany German Democratic Republic culture hacking home computers practices

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This overview deals with the advantages and problems of comparing hacker cultures in the liberal Federal Republic of Germany and in the socialist German Democratic Republic. The history of the divided Germany in the 1980s is thus used to compare the influence of state frameworks and technologies, arguing for more comparative and entangled perspectives in the research of sub- and countercultural computer usage. By looking at cultural practices, the complexity of hacker cultures will be highlighted and thus will show that hacking neither was just a Western phenomenon, nor that a technical retardation of the East covers the whole history of computerization.

Introduction

Hackers are an international phenomenon. Beginning with the "first hackers" in the 1950s at the MIT in the USA, one can observe that everywhere where computer technologies arose, hacker cultures emerged. Hacking is, broadly understood, the practice of playing with and exploring computer technologies. It can be either breaking codes like the software crackers, or creative programming like practiced in the demoscene, or hardware tinkering (Alberts and Oldenziel 2014, 4; see also Raymond 2003).

For quite a while now the history of different hacker cultures has been explored far away from the American master narratives. Local contexts of sub- and countercultural computer use were the main focus of the contributions in the anthology "Hacking Europe" (Alberts and Oldenziel 2014). The book offers a multitude of pioneering studies on home computer usage

in national and regional contexts, which focus not only on Western industrial nations. It does not surprise that the history of hackers in the Federal Republic of Germany (FRG), not least because of the prominence of the Chaos Computer Club (CCC), is one of these contributions (Denker 2014). In addition to the history of the CCC, which, despite initial works (Denker 2014; Kasper 2014; Röhr 2012; 2018), still requires in-depth investigation, the history of German hackers beyond this prominent institution is also relevant. And this applies not only for the West German context, but also for the German Democratic Republic (GDR).

The comparison of West and East Germany and the study of those two states' entanglement is a recent, yet well-established approach in contemporary history (Bösch 2015). Some studies have also been published on media and technology use in both states, which have highlighted numerous similarities and differences (e.g. Schildt 1998; Dussel 2004; Bösch and Classen 2015). An entangled and comparative history of the computerization of the two German states is, however, a new approach (Danyel and Schuhmann 2015) and needs further investigation.[1]

In my contribution I want to highlight why hacker cultures are worth studying from a West and East German perspective. I will argue why there should be more comparisons and cross border investigations for the history of home computing in general – even beyond the focus on the regime competition between capitalism and socialism.

Home- and microcomputers moved into German households in the 1980s. Computerization in the private sphere thus began in the last decade of a divided Germany. In this respect, the history of computerization of the divided German states also offers the opportunity to not only present a comparative study, but also to examine the merging of more or less separated entities.

My paper aims to highlight different problems which result from a comparative and entangled history of the FRG and the GDR regarding private computer usage in the 1980s. A study on the sub- and countercultural use of computer technology thereby has to take the broader social, political, economic and cultural levels into consideration. The term "hacker", the question of the availability of resources, and the different and asymmetrical infrastructures must therefore be elaborated. These problematic areas also provide chances, as I will show inter alia by emphasizing the findings that have resulted from my research on German hackers' history. It will show that despite different conditions, numerous similarities

existed between the hackers of the FRG and the GDR, even though famous hacker clubs like the CCC did not cultivate contact with their equivalents on the other side of the Wall until the opening of the inner-German border in November 1989.

In fact, such exchanges took place only after this crucial event in German history. Since 1984 the CCC had annually hosted the Chaos Communication Congress in December, where hackers and activists of various kinds would come together. Just a few weeks after the fall of the Berlin Wall, the motto of that congress was dedicated to the East German computer hobbyists: "*Offene Grenzen: Cocomed zuhauf" ("Open borders: Cocome in droves").* This referred to the restraints of the Coordinating Committee for Multilateral Exports Controls (CoCom) that banned or restricted the export of certain trade goods, including high-tech, to the countries of the Eastern bloc from 1950 onwards. CoCom also influenced the naming of the first West and East German Computer amateur meeting in February 1990 in Berlin called "KoKon". This was the short form for *"Kommunikation Kongress"* – which also referred to the annual hacker meetings in Hamburg, organized by the CCC. Despite the missing interaction of popular West and East German hacker clubs before the autumn of 1989, the inner German border was permeable with a clear tendency of goods and ideas being transferred from the West to the East, and less in the other direction.

In the following I will address the question of what a hacker is in regards to the case of a divided Germany, as well as from an international perspective. I will also discuss the problem of an imbalance of sources for studying West and East German history. In the second part of this article I will outline the usage and access to computers in the two German states. Then I will stress the role of computer clubs in respect to education and community formation.

I. Terms, practices and resources

Of course, an advantage in the history of a divided Germany lies on a linguistic level, since the researcher only needs to be familiar with the German language for working with sources. Despite the fact that the two German states spoke the same language, some kind of translating efforts must still be done, as we are dealing with a liberal-capitalist Germany in the West and a state socialist Germany in the East. The language is thus influenced by the political situation. Especially in the history of hackers and computers, it is apparent that although German was spoken in both countries, it was not always the same vocabulary that was used.

Hence the term “hacker” was not used in the GDR, except when magazines or state authorities talked about a Western phenomenon.[2]

Even terms for technical devices such as “joystick” were not universal, the latter sometimes having been called “Spielehebel” (“game lever”) in East Germany, as the socialist state wanted to prevent English vocabulary due to the antagonism of the two competing systems. Curiously enough, we still find English terms here, but these are mostly collective terms such as “computer fans” and seldom “computer freaks” (Gießler 2018). However, this should not prevent us from assuming a similar phenomenon of exploring computer technology in private, despite different designations for those enthusiasts. In researching hacker cultures we are confronted with a lot of synonyms everywhere: “hobbyists” or “computer wizards” in the USA (Levy 2010, ix), while in the Netherlands, hacking could be called “computerkraken” (based on the Dutch term for squatters, Nevejan and Badenoch 2016, 202) and also in the FRG, synonyms and broader terms were used to name these kind of computer fans, for example “frieks”, which is simply a German notation for “freaks” (see also Erdogan 2018, 228).

To explore the connections and similarities, it is therefore necessary to employ a stronger focus on the level of cultural practices. It is with a focus on practices and values of subcultural computer groups that a study on hackers from a comparative East-West-perspective becomes possible. This approach also enables us to investigate the phenomenon of hackers in all its broadness, thus diminishing the two dominant narratives of political and social activists on the one hand, and of wild intruders into computer networks on the other. Too often the hackers are only seen in their relation to online systems. This disregards the fact that hacking could also involve soldering or offline programming.

Also, the image of the hackers changed in the course of the 1980s. In the FRG, hackers had been first regarded as ‘excessive programmers’ (Weizenbaum 1976; von Randow 1978; 1982) until hacking activists entered the public stage in the mid-1980s. Clubs like the CCC or people around the hacker zine *Bayrische Hackerpost (BHP)* managed to establish a rather positive public image of hackers as specialists in the course of home computerization. In the second half of the 1980s, this image was challenged as more and more hacking was done to intrude computer networks. Furthermore, developing and changing laws concerning computer usage influenced this transformation (Denker 2014).

Already in the first half of the 1980s, the increasingly unruly activities of hackers in data networks caught media attention in the USA. In 1981, a hacker broke into a Norwegian system that monitored Soviet atomic bomb tests („Schweifende Rebellen“ 1983). In addition, a group of six teenagers operating under the name “The 414s” – Milwaukee’s telephone area code – hacked into computers at Los Alamos National Laboratory, which inter alia developed atomic and hydrogen bombs. The so called “good” hackers tried to defend themselves against the increasing equation of what they were doing with data theft and what hackers in turn perceived as “crashers” – the destroying of code and databases. It was at this point that a separation of different hacker cultures began (see also Hartmann 2017, 86).

Steven Levy’s book *Hackers. Heroes of the Computer Revolution*, which he wrote in the first half of the 1980s, is witness to this differentiation. He actually provided more than just a story and a documentation of the history of hackers. First of all, in his book he put up an ethic (Levy 2010, 27–38) that still represents an important foundation of many hacker cultures today:

1. Access to computers – and anything that might teach you something about the way the world works – should be unlimited and total. Always yield to the Hands-On Imperative!
2. All information should be free.
3. Mistrust Authority – Promote Decentralization.
4. Hackers should be judged by their hacking, not bogus criteria such as degrees, age, race, or position.
5. You can create art and beauty on a computer.
6. Computers can change your life for the better.

It should be pointed out that this code of values was not written down by hackers themselves. On the contrary, it was a kind of silent agreement and shared convictions which were expressed in hackers’ practices, which were, in turn, examined and summarized by Levy. This ethic thus did not presuppose hacking practices, but was a result of Levi’s observation of hackers from which he derived these maxims. Moreover, he summed up various groups as “hackers” which explored and played with computer technology and acted under different synonyms from the late 1950s to the 1980s. Levy’s codification of hacker ethic, in turn, influenced the practices of computer enthusiasts and, through the publication of the book, promoted the prevalence of these hacker values. Computer users recognized themselves in

Levy's narrative, creating a sense of affiliation and a philosophy. As the media scholar Claus Pias stresses, there was a certain necessity for the hackers to separate the "bad part" of hacking from the hackers, and for this purpose, Levy's ethic came just in time (Pias 2002, 268).

The hacker ethic and popularity of the hacker phenomenon in media, as well as the divergence of their culture, had an influence on West German hackers. The code of values was translated, published and even extended by the CCC (Schrutzki 1988, 172–74). First of all, the version that the CCC put up included "sex" or rather "gender" – as the German language makes no distinction in this respect – in point four of the hacker ethic which specified that hackers should be judged by their skills and actions and not by other criteria. As the hacker movement in the FRG emerged above all as a watch group for data security and the protection of the private sphere, this aspect was also included in the German version of the ethic. Last but not least, the database break-ins previously mentioned and the case of Karl Koch from the West German city of Hannover, who was paid for hacking by the Soviet secret service, led to a modified version. The version of the CCC, which developed into the voice of many German hackers in the 1980s, has eight instead of six points. It also contains points dealing with the maxim of hackers' behavior in databases: "Do not litter in other people's data" and "Make public data available, protect private data".[3] Thus, we see that West-German hackers not only adopted the hacker ethic, but also extended and specified it for their own beliefs and aims. The computer enthusiasts of the GDR did not have this fixed code of values. Nevertheless, their practices of computing as well as the interaction within their peer-group was quite similar.

It is here that another problem of a West and East German history of hackers becomes apparent. The West German hackers were highly vocal participants in the discussion about computerization, and, as a result, produced a lot of documents. For example, they made their own newsletters such as the CCC periodical *Die Datenschleuder*, while Munich hackers published *Die Bayrische Hackerpost*. In their statements they offended and mocked authorities, and this peer feeling of "we against those up there" became an integrative motive next to their interest in technology. They were able to create a specific public image of themselves and to present hacking as an instance of bottom-up control against the state. These kinds of documents are mostly lacking for the GDR, where freedom of expression and criticism of the state were much more limited and repressed. The descriptions of hacker

practices that are available to historians are therefore mainly produced from the state's point of view. There are some letters to the editor and several magazine articles of the 1980s which deal with computer experiences and the everyday life within the computer clubs. But these are very different from their Western pedants, because the subversive element is missing. At least there are some retrospective views that show the computer hobbyists' perspective in the GDR (Pritlove, 2010; Schweska 2015; Strugalla 2017; Schweska 2017).

A source imbalance also exists due to the availability of access to files of the *Ministerium für Staatsicherheit* (the Ministry of State Security, also known as *Stasi*), while documents of the West German intelligence services are not accessible to researchers. Other West German state documents are becoming accessible only now, as the record retention period amounts to 30 years. At the same time, however, the collapse of the GDR and the associated processing of *Stasi* documents offers an extraordinary opportunity for research in contemporary history. Yet we have to keep in mind that in the case of the FRG there is an abundance of documents presenting the hackers' perspective, while documents on hackers from the state's security point of view are mostly missing – while it is the other way around when it comes to the GDR.

II. Consumption of computer technology

The 1970s and 1980s in the GDR were strongly influenced by Western lifestyles, protest and social movements (Gehrke 2008). Still, a comparison of consumption and its practices in the two German states can only be asymmetrical due to the different availability of goods and different economic concepts. The GDR ran a planned economy and was primarily oriented towards providing everyday goods instead of catering to conspicuous consumption, contrary to the social-liberal market economy in the FRG. Changing consumer practices can still be determined in the GDR from the 1970s onwards. Researchers speak of a "consumer culture" in relation to the GDR as opposed to a "consumer society" in the Federal Republic to focus on the consuming practices, which were, in fact, quite similar (Neumeier and Ludwig 2015, 240f).

The GDR was able to record a certain boom in computer technology in the 1950s and 1960s (Danyel 2012, 204) and computerization was formulated and promoted as a central task by the political leadership from the end of the 1970s again.[4] In 1988, GDR engineers managed

to construct a 1 megabit chip (Danyel 2012, 205), but the planned economy of the socialist state could not achieve the same supply of consumer goods as the West German market. Nevertheless, several computer clubs emerged as results of private initiatives, as well as so called *„Computerkabinette"* or *"Computerzirkel"* ("computer cabinets" and "computer circles") which were sustained by the state authorities. Many of these facilities, which provided computer workstations, were directly connected to the communist youth organization *Freie Deutsche Jugend (FDJ),* schools or universities (Weise 2005). Some microcomputer models were developed in East Germany, for example by the state-owned company Robotron, which were primarily provided to enterprises and educational institutions.

These models remained rare consumer goods in private household. On the one hand, the GDR was only able to achieve low production rates: The production of a 8-bit microcomputers series called KC *(Kleincomputer)* began in 1984 and until the opening of the inner-German border in 1989, only 30,000 units of this computer series were produced (Weise 2005, 13). On the other hand they were therefore hardly realistic purchases for private households. For example, the KC 85/1.10, which was sold from 1986 onwards, costed 1550 East German Marks, while an average monthly income of that time amounted to 1179 East German Marks (Arbeitseinkommen 1987, 129).

Yet, Western home computers were used in the GDR, too. Most of them were obtained by East German citizens through relatives living in the FRG, but also, from 1985 onwards, microcomputers could be bought for high prices at the so called *Intershops* which offered goods from the West in exchange for Western currency. Also, computer smuggling was widespread: In 1987 alone, 188 cases of speculation with and smuggling of computer technology were recorded, with a value of 45 million East German marks.[5] Western microcomputers were profitable speculation objects: The black market price of a microcomputer from the West German company Schneider, for example, could be 22 times higher in the GDR than its original retail price. In the course of the regime competition, the leadership of the GDR tried to satisfy the desires of the population and at the same time promote the socialist system. With the increasing tendency towards a consumer goods market in the second half of the 1980s, the political leadership of the GDR also increased consumers' desires. The state leadership could not completely resist international changes in consumer

behaviour, even though the Western model of possession was opposed to the goals of the socialist idea (Merkel 2009).

The asymmetry between the FRG and the GDR can be relativized with regard to actual consumer practices, as similar ways of dealing with the new medium emerged. These similar consumption practices are particularly reflected in the distribution and use of numerous computer games. In a list from 1987, the State Security registered 253 computer games, mostly with English titles, which were shown and exchanged among the participants at the computer club in the *Haus der jungen Talente* ("House of Young Talents", HdjT) in East Berlin. This list illustrates the popularity and distribution of computer technology goods in the socialist state.[6] The role of computer technology in the GDR can also be demonstrated by the advent of computer magazines. In spite of a lack of paper, which in the GDR did indeed lead to a restriction in the range of print media (Meyen and Fiedler 2010), the subject of computers was not only dealt with in more general technical journals such as *Jugend+Technik (ju+te)* and *Der Funkamateur*. From 1987 onwards, the journals *Mikroprozessortechnik* and from 1988 onwards, *Bit Power,* provided further public platforms to promote and discuss computer technology or, in the latter case, computer games.

In the 1980s, prompted in part by a nationwide lack of supplies, there was an abundance of DIY practices in the GDR, including the soldering of circuit boards in order to build computers, as had already been done by hackers in the USA in the 1970s. A case in point is the *Amateur Computer* (AC 1), which could be built with the help of a manual distributed by the magazine *Der Funkamateur* (Der Funkamateur 12/1983). However, this practice of tinkering had its limits. As the magazine *Jugend + Technik*, which published the construction plan for a home computer in 1987, noted with regard to a kit called Z1013, the components for this 8-bit microprocessor were rarely available on the market (Jugend + Technik 5/1987, 322).

The impression of scarcity which results from the stories of tinkering and soldering in the East must not obscure the fact that computer technology was not necessarily common in West German teenagers' rooms either. Also, prices could be quite high, especially if peripheral devices such as floppy disk drives or printers were added to the home computer. Furthermore, DIY practices remained part of computing activities in both German states, especially among hackers, because they could adapt the computer technology to their own needs or overclock it with the aim to achieve a higher computing power. While the DIY practices of the GDR were

more a necessity than part of a subcultural ethos, the hackers' tinkering and programming were part of wider DIY movements in West Germany. It was a reaction to and rejection of a consumers' market, especially in regards to the commercialization of the software market (for the change in the software market see Ensmenger 2012, ch. 7.). Meanwhile, this comparison highlights the "contemporaneousness of the non-contemporaneous" (Bloch 1973, 104), which is immanent in the history of the use of technology, as historian of technology David Edgerton has notably pointed out in his groundbreaking book *The Shock of The Old* (Edgerton (2006) 2019, xii ff.).

In general, while comparing the hacker cultures of these two states one has to deal with an unequal infrastructure and different state-of-the-art of technology. While hackers from the FRG not only promoted bulletin board systems (BBSs) but could use them widely, hacking in the GDR did not include this particular practice. This was not only due to the fear of uncontrolled flow of information by the states leaders that prevented the private usage of online communication. The telephone network was in bad condition and poorly maintained, and its development lagged behind, thus telephone mainlines often had to be shared by multiple households. When telephone calls were necessary, one used the telephone of a neighbour or friend. Owning a telephone was rare, and such luxury in private households was often reserved for supporters of the regime. Still, there were some attempts by users either to produce home-built modems or to use modems imported from the West to connect one's computer to the telephone network. One GDR citizen, for example, used information from West German magazines to build an acoustic coupler.[7] The Ministry of State Security even recorded a case of a private connection being set up within the GDR using an acoustic coupler, and referred to a case where a connection was established from Poland to the Netherlands.[8]

In the FRG, one of the main goals of different hacker clubs and groups was to promote BBSs not only as a way of communicate with people worldwide, but also as a participative medium. The BHP, for example, stated: "We're here because there's DFUE [remote data transmission, J.G.E.]. Our engagement is the pleasure of going for a stroll in public and other data networks" (*Die Bayrische Hackerpost* 1984). One aim of the hackers of the Association to Promote Public Mobile and Immobile Data Traffic (Verein zur Förderung des öffentlichen bewegten und unbewegten Datenverkehrs, FoeBuD e.V.) from Bielefeld in North-Rhine-Westphalia was to develop their own BBS system called *BIONIC*. The club aimed at

promoting computer communication networks among social movements and non-governmental organizations and in doing so, it focused in its work on making technology accessible to non-technophile persons and groups. This meant, among other things, providing manuals and striving to avoid the technical jargon that was quite common in other hacker groups. The club's BBS was also supposed to contain less exchange about technology itself than about political, cultural and social matters (Pritlove 2009).

But even though the FRG was a liberal nation, hackers here still had to deal with restrictions. While in the USA for example, the choice of a modem for computer networking was free and consequently, there was an open market where computer users could choose the model according to price and function, this was not permitted in the Federal Republic of Germany due to the postal monopoly. Based on the Telecommunications Ordinance of 1971 (§8(a) Fernmeldeordnung, 1971), the Federal Post Office was able to determine which devices would be allowed to be connected to the telephone network. Liberalisation, as in the USA, progressed slowly in the Federal Republic, but was already decided upon in 1982. It was not until 1996 that the monopoly fell entirely (Trute, Spoerr, and Bosch 2001, 4). Therefore, the networking of computer systems in the FRG coincided with a phase in which the Post Ministry had to fulfill its role as a monopolist, but at the same time to execute a certain opening towards a deregulated market. As the historian Matthias Röhr pointed out, digital technology increasingly weakened the basis of the legitimacy of the state monopoly (Röhr 2018, 269), which also manifested itself in numerous conflicts with hackers. Distributing and producing instructions "for cheap and universal modems" (*Die Datenschleuder* 1984) was one of the central concerns of these hackers due to their antagonism against the Post Ministry.

This emphasizes the fact that in both countries hackers had to deal with restriction, even if they were of different severity, and that hackers had to cross legal boundaries: The West German hackers used self-made modems, which – at least in theory – could at worst lead to a five-year prison sentence (Röhr 2018, 252), while the East German computer freaks tried to dial into international networks and thus were prone to being accused of contacts to the "enemy". After the opening of the border and even before the reunification in autumn 1990, hackers from the FRG helped to set up BBSs in the East, as GDR activists saw an urgent need to be able to use this way of networking ("Nun sind die Haecksen auf dem Vormarsch" 1990). In the first half of 1990, already five BBSs were running in East Berlin. Here, the computer amateurs also used self-made acoustic couplers to dial in.

III. The integrative and educational role of computer clubs

The sub- and countercultural appropriation of computer technology was often a social, interpersonal activity in both countries (Erdogan 2018). Aside from financial reasons, the practices of exchange among each other – including knowledge as well as software – and of showcasing one's own skills led to collective computer usage and the formation of clubs. In 1986, the East German State Security stated that "as a rule, owners of computer technology are continuously interested in establishing and expanding contacts with their peers".[9] Beyond that, some of the East German computer fans even became members of clubs in West Germany.[10] This membership worked on the basis of exchange of programs and printed information.

Documents from the State Security show that not only various Western computer brands were used in the GDR, but also that there existed a substantial number of private computer users in general, of which 1200 were under observation in 1988.[11] Despite this surveillance, which was mainly motivated by the state's distrust of private associations and possible relationships to countries abroad, computer users remained largely untroubled. They were even given a great deal of freedom, because they participated in the promotion of computer technology. With regard to the computer games mentioned above, of which many were even explicitly banned in the GDR, no punitive consequences are known from the available sources. Furthermore, the club of the HdjT did not carry out any attendance control, neither did it register what the participants, who occasionally brought their own computer to the meetings, actually did during their attendance at the club premises.[12] This was actually a thorn in the side of the authorities, but did not challenge the club's continued existence. In fact, the club leader set up regulations himself: He did not prohibit the exchange of software entirely, but he threatened to denounce those who sold games and software in the club, regardless of whether they were self-programmed or copied. The computer club in the HdjT was not to be used for individual enrichment. Instead, the focus was on exchange and learning from each other.

The maxim of freedom of information can thus also be found among active computer users in the GDR. With a code of values that prohibited the theft and alteration of data, the West German CCC attempted to steer these practices, too. Thus, the Club declared: "We are the

opposite of computer criminals who, for their own financial advantage, penetrate computer systems and sell data, just as we clearly dissociate ourselves from people who copy software and then resell it" (Chaos Computer Club 1985). Financial enrichment by selling information was thus frowned upon in computer clubs on both sides of the Wall. Also, at the first West and East German KoKon meeting in February 1990, one of the most intensely discussed issues was the question of the free exchange of information and the idea of freely accessible software (Tolksdorf 1990). The CCC also set up a copy centre at this congress, which enabled GDR citizens to obtain copies of hacker magazines and other Western computer magazines free of charge. The possession of a copier had been forbidden in the GDR until the fall of the Wall, and printers could only be obtained with a registration (Wolle 2013, 231).

In the FRG, especially since the 1970s, the membership numbers in citizens' clubs and associations rose sharply. Thereby hobby clubs had gained importance. There was an increase in the number of associations characterized by political and social commitment as well as those which provided consultative services to citizens (Werner and Zimmermann 2002, 11). Most hacker associations combined all these purposes: On the one hand, they served as organizations where the hobby of computing could be practiced, but on the other hand they formed counter- and subcultural spaces. In contrast to given structures such as families, clubs and associations represent an alternative form of community (Zimmer 1996, 11). Ulrich Beck discovered in the declining significance of classical communities, such as family or class, a loss of security that accompanied this process (Beck 1986, 206). The social movements, clubs and associations addressed these insecurities and created spaces of community, which nevertheless satisfied the demands of the individuals for their own performance and the pursuit of special interests (Effinger 2013, 338). The statement of the West-German hacker and virus expert Bernd Fix in an oral history interview about the moment when he heard of the CCC for the first time stands for both this communal and individual aspects in particular: "But I didn't know that what I was doing was called hacking. Or that there are also people who do the same, or who even join together to form such a group. That was a real revelation for me – to know that I am not crazy. That there are others who do the same."[13]

Besides pointing out the variety of hacker cultures in different national or regional contexts, it can also be useful to put the different computer subcultures into close comparison. The recent works on different computer subcultures show numerous similarities despite the differences in actors and contexts. Jaroslav Švlech, for example, points out that gamers in

Czechoslovakia also used techniques of bricolage similar to hackers (Švelch 2018, xxxvi. and ch. 6). Numerous works also show the role and importance of clubs additionally to that of private initiatives during the computerization of the private sphere (see e.g. Jakic 2014; Wasiak 2014; Švelch 2018, 95ff; Veraart 2014; Lekkas 2014).

Apart from developing pioneering technical solutions, hackers took on an important role on the social and cultural level. In my research I therefore stress the role of hacker cultures as *space-creating instances*. The hacker clubs enabled both contact zones with the new technology and designed spaces for computer use. By physical spaces I primarily mean club and association rooms. In addition, through conferences and congresses on both sides of the Wall, they created temporary places for exchange and socializing. But not only did the peer group benefit from the meetings, they also offered opportunities to get to know an almost unknown medium – far away from the opportunities provided by the state or the market. The club in the HdjT did not explicitly see itself as an institution for educational training, but as an opportunity for living and learning from a hobby („Haus der jungen Talente hat jetzt Computerklub", *Berliner Zeitung, 23.1.1986*). The interest of the participants in the Computer Club of the HdjT laid in graphics programs, computer games, creating music, or simply calculating and text production (*Ibid.*). The hackers from the CCC saw the club as an opportunity to learn critical and creative computer usage, too: "The Chaos Computer Club is a galactic association without fixed structures. After us the future: diverse and varied through training and practice in the correct use of computers, often referred to as 'hacking'" (*Die Datenschleuder* 1984). This was accompanied by the fact that the approach to computers in these spaces was more open, and new possibilities of application and even ways of a counterculture developed through playful exploration in these spaces.

Jaroslav Švelch, who also argues for more comparative perspectives (Švelch 2018, 221), comes to a similar conclusion in his study of the gaming communities in Czechoslovakia. He emphasizes the role of computer clubs in training in the early period of home computing. In this case "the state itself did not claim the territory of home computers, its socialist organizations granted patronage to clubs. […] Clubs in turn offered services that were otherwise (in the capitalist contexts) mostly performed by commercial companies." (Švelch 2018, 215) The East-West-German comparison provides a more nuanced picture concerning the role of capitalist and communist systems' impact on home computing.

In the case of the GDR, the state leadership was strongly involved in home computerization. Reports to the Ministry of Higher Education and Technical Education testify that microelectronics had gained in importance in the school and extracurricular youth institutions at the end of the 1980s.[14] A report criticized, however, that above all the lack of equipment and access restrictions prevent the exploratory appropriation of the new technology. This illustrates that in the GDR the use of computers was not only to be promoted, but that playful learning was also of interest. And this function of clubs also applied to the capitalist West. A lot of letters addressed to the CCC around the year 1984 show that computer users saw the club as an important source of information on computing. The hacker club provided more of what state or business organizations offered less. For example, one letter said that "conventional clubs" did not provide the necessary information about security or networks for an experienced computer amateur.[15] Another student wrote that it would be boring to do only reasonable things with a computer,[16] and that is why he made contact with the hacker club.

Computers and computing practices were intrinsically linked to processes of identity formation. Computer enthusiasts in both countries were interested in more than simply having the latest and best computer model. At least since the opening of the borders, their own cultural practices became threatened by an uncertain future, also in computer usage. The KoKon meeting showed that it was not only the pure performance of the devices which was a decisive criterion for the potential users. Some GDR computer fans warned that the Western technological advantage should not lead to the total exclusion of devices and especially user practices from the GDR. While East German users could be content with computer technology being delivered from the West, they still wanted to determine the modes of usage themselves. Under no circumstances did they see themselves as beggars.[17] Some GDR citizens, despite the unquestionably more advanced technology in the West, took a critical stance towards Western computers and did refer to their own technologies and practices with pride. From their point of view, the computer dominated in the West as a consumer good. This was a development they wanted to avoid by all means for the GDR.[18] However, similar concerns had already been expressed by the West German CCC in 1981, which warned against considering computers as pure consumer goods. In the announcement for their first meeting it criticised "that 'the personal computer' in Germany is now to be sold to the video-saturated BMW driver" and pointed out that a "useful" computer approach should be followed instead (Twiddlebit et al 1981). For both states, it can be said that hobbyists

came together and wanted to use computer technology far aside from a purely rationalist or consumerist approach. Creativity and fun were particularly in the focus of these enthusiasts, and this way of exploring and using computer technology was mainly realized in clubs which offered free spaces.

Conclusion

Of course one can question the usefulness of a comparison between West and East Germany. Would it not make more sense to compare the FRG with other liberal states or the GDR with other countries of the Eastern Bloc, where access to consumer goods or the possibilities of the expression of opinion would be more alike? And these concerns have their legitimacy, as such studies are also needed. After numerous case studies, there is a lack of comparisons to emphasize commonalities as well as differences, and thus the diversity of computer subcultures. How, for example, to explain the difference between the FRG, where hackers were able to establish a very positive image of themselves and follow their practices quite freely, and its similarly liberal and democratic neighbor, France, where hackers went underground because they were severely persecuted and punished harshly since the 1980s (Ankara 2007; „Manifeste pour la création d'une organisation hacker en France" 2009)? Socialist countries of the Soviet bloc also display interesting differences, as the results from Jaroslav Švelch concerning the state's involvement in private computer usage show in contrast to the GDR.

But it is precisely in these differences, in the comparison of different political and cultural frameworks, that such an approach is beneficial. It may show us what role the technology itself plays in its use and how, on the other hand, national political, cultural and economic frameworks influenced computer practices, or how similar practices were pursued across borders. Since the GDR was lagging behind Western standards on the technical level of production and supply of computer technology, a comparison between East and West is able to avoid the common mistakes of writing the history of technology as a history of progress. This history, on the contrary, emphasizes that the use of technologies can be marked by particular identities and apparently intersecting practices in technology use and consumption. Soldering one's own circuit boards, which has become increasingly obsolete due to the establishment of a market for computers and computer parts, remained for instances. Through this approach it becomes more apparent that practices of computing are temporally

overlapping and not only superseding. And this does not only apply to the GDR or less developed countries, but is also reflected, for example, in the emergence of hacker cultures in the FRG in contrast to the USA. In this case, it can also be seen that hackers in West Germany developed their own values, which not only adapted the original hacker ethic, but extended it from the outset. The approach also helps to understand that hacking is not only a Western phenomenon, as well as to emphasize the offline aspects of this computer culture. The comparison of different countries also stresses the role of communities in the course of private computerization, and allows us to write a history of home computing from the bottom up. Last but not least, comparing subcultural computer usage in different contexts not only generates new insights on computing history, but also on social and cultural history.

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All links verified 16.6.2020

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Notes

[1] At the Leibniz Centre for Contemporary History Potsdam a project started in 2014 researching exactly the entanglement, parallelism and similarities of computerization in the two German states. It deals with the computerization of the police and intelligence services, the banking system, the pension planning, the military and my own project on the sub- and countercultural use of computers by hackers: https://zzf-potsdam.de/en/forschung/linien/departure-towards-digital-society-computerisation-and-social-regimes-west-and-east.

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