

Communication Maintenance in *Longue Durée*

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8 We Are All Maintainers Everyday Practices of Media Maintenance in the Domestication of Technologies

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Everyday Practices of Media Maintenance in the Domestication of Technologies

*Corinna Peil**

Introduction

This chapter aims to provide an analytical understanding of everyday practices of media maintenance from a communication studies perspective. It intends to demonstrate, using domestication theory, that these practices are an essential aspect of all media usage, although they have received limited scholarly attention. To analyze these practices, I combine maintenance research with the domestication approach, which is particularly suited to focusing on everyday contexts and historical analyses. Using examples from older media such as radio and television, as well as contemporary digital-networked technologies, I illustrate the role of everyday practices of maintenance in the domestication process and how they have evolved with the changing media landscape.

The starting point for my reflections on the importance of maintenance in the domestication process is the observation that there is a notable discrepancy between the design, marketing, and public perception of digital media technologies and the actual everyday experiences of users. Although digital technologies are often promoted for their user-friendliness and intuitive use, the reality is that users regularly engage in seemingly peripheral yet often intricate technical, organizational, and administrative tasks. These tasks, which include frequent updates, app configurations, addressing error messages, responding to system inquiries, and the like, are essential for sustaining the media's smooth operation. While not necessarily flawed, digital media technologies require constant attention and input, both of which have become an integral and indispensable part of their use and accompany them in various ways and with different consequences.

I understand these heterogeneous practices as *everyday practices of media maintenance* because they are a necessary requirement for the “successful” use of media technologies. Through a historiographical perspective, I reveal that these maintenance practices have always been a crucial, albeit often overlooked, aspect of media usage; they have not solely emerged

as a consequence of digitalization. Over time and in the context of media change, however, the everyday practices of media maintenance have taken on new and more diverse forms. To explore this, I first situate my approach within the emerging field of maintenance research. Next, I illustrate how the domestication approach offers a theoretical framework for analyzing maintenance practices over time. The analytical section of this chapter initially addresses non-routine maintenance practices that are required during the appropriation phase of domestication, particularly in the early stages of new media technologies. However, media maintenance practices remain significant throughout the domestication process, especially with the growing need for maintenance during the further integration of media technologies into everyday life. Finally, I argue that in the case of digital technologies and applications with their specific infrastructures and production logics, the appropriation phase of domestication is constantly reactivated, leading users to be continuously confronted with the requirement to apply everyday practices of media maintenance. In conclusion, I summarize the insights gained and offer reflections for further consideration.

Maintenance and Repair: From Caring for Infrastructures and Fixing Failures to Everyday Practice

Maintenance and repair have gained increasing significance in contemporary society, driven among other things by the “maker” movement and a consumer-oriented focus on resource conservation and sustainability (Henke & Sims, 2020, p. 51). As a theoretical concept, method, and political agenda, maintenance has garnered considerable attention in various disciplines, including anthropology, urban studies, and science and technology studies (e.g., Mattern, 2018). In the field of media and communications, research endeavors and initiatives exploring the meaning of maintenance have been sporadic and relatively recent (e.g., Balbi & Leggero, 2020; Krebs & Weber, 2021b). The scholarly perspective on maintenance challenges the dominant paradigm of innovation – not only in various academic fields but also in design processes and product development. It shifts the focus from the creation of new things to the preservation of existing objects, technologies, and infrastructures through maintenance measures and examines their influence on subsequent developments (Henke & Sims, 2020; Weber & Krebs, 2021). Drawing on different epistemologies, methods, and objectives, existing research on maintenance and repair shares a common interest in the evolving relationship between humans and technologies, a relationship that is constantly renegotiated as materiality undergoes metamorphosis. Often, these studies are concerned with identifying the creative or resistant practices at play in the maintenance of technologies and how they are able to empower users, consumers, or repairers

by “acting on” (Kannengießer, 2020) the materiality of technologies (e.g., Jackson & Kang, 2014; Krebs & Weber, 2021a; Tanweer et al., 2016).

Maintenance and repair are frequently perceived as intertwined and the boundaries between them remain fluid. The following section delves into a more pronounced understanding of these two concepts, highlighting their respective accentuations. While the online *Oxford English Dictionary* includes maintenance and upkeep in its definition of *repair*, the presence of a defect is the primary starting point for the action associated with the term (“The action of repairing a damaged, worn, or faulty object or structure by replacing or fixing parts”¹). The study of repair is closely linked to a perspective for which Jackson (2014) coined the phrase “broken world thinking”. Broken world thinking takes disruptions and failures as the entry point for reflections on and (re-)assessments of the relationship between technology and society. By acknowledging “that things are constantly falling out of place” (Domínguez Rubio, 2016), broken world thinking “asks what happens when we take erosion, breakdown, and decay, rather than novelty, growth, and progress, as our starting points in thinking through the nature, use and effects of information technology and new media” (Jackson, 2014, p. 221). This perspective is about recognizing the visible limitations and fragility of the social world while directing attention to the creative actions that keep technological systems (re-)functioning and infrastructures restored. Broken world thinking demands taking a closer look at the instability of technologies and infrastructures, which are always breaking down and permanently depend on practices of restoration, improvisation, and reinvention – in other words, on acts of repair, from which something new and productive can emerge. Opposing a production bias focused on invention, broken world thinking uncovers innovative forces in the state of dissolving and in the subsequent acts of reconstruction rather than in the process of developing and designing products (Jackson, 2014). According to this understanding, breakdown is an everyday process and not an extraordinary event. It is fundamentally inscribed in technologies as Jackson illustrates with the example of the Internet which “grew by breaking” and is “organized around problems” (Jackson, 2014, p. 228). Repair work makes technology run again after shutdowns or disruptions; therefore, acts of repair provide stability. They not only serve to maintain complex socio-technical systems but also change their order and structure by incorporating different competencies, value systems, and frameworks into this work (Houston et al., 2016; Jackson, 2014; Jackson & Kang, 2014).

With respect to maintenance, the definition emphasizes that it is about keeping things running (“The action of upholding or keeping in being a cause, right, state of things”²). It goes beyond mere fixing of malfunctions and instead focuses on the continuous operation and overall efficiency of

the system or object in question. Krebs and Weber tie their definition of maintenance and repair to the different temporalities associated with them:

Repairs are often unscheduled and arise out of a need to eliminate faults and to make things which have broken down useful again. These criteria distinguish repairs from maintenance, which is a precautionary activity that is generally scheduled in advance.

(Krebs & Weber, 2021a, p. 28)

In his discussion of the materiality of artworks and their preservation, Domínguez Rubio describes maintenance as the “unspectacular” version of repair. He refers to the ongoing and often subtle routines that are performed to keep things in order, emphasizing that “maintenance and repair are not exceptional practices emerging in those critical moments when the normal state of affairs is interrupted but are indeed what makes any normal state of affairs possible in the first place” (p. 75). This maintenance approach is followed, among others, in recent discussions and studies of communication infrastructures and their long-term impact on subsequent technologies, standards, and uses (Balbi & Leggero, 2020; Henke & Sims, 2020; Schabacher, 2022; in the context of science and technology studies, see also Parks & Starosielski, 2015; Leigh Star, 1999). In her highly regarded study of undersea cable systems, for example, Starosielski (2015) makes clear how much of today’s networked digital media environment depends on material infrastructures, each of which must be understood in its specific cultural, economic, and geographic contextuality and is subject to permanent processes of negotiation and maintenance. Through their historical examination of telegraphy, Balbi and Leggero (2020) show that the scholarship of maintenance can help rethink the connections between communication and transportation infrastructures and better understand them as the foundation of modern Internet networks.

Both broken world thinking and maintenance studies bring into focus those actors who are all too often ignored or overlooked in the lifecycle of technologies and infrastructures: the repairers, fixers, and maintainers (Russell & Vinsel, 2016). When examining the work of these individuals, the focus often centers on professionals or semi-professionals. Jackson, for example, explores mobile phone repair communities in Uganda and Bangladesh (Houston et al., 2016) as well as workers who dismantle shipwrecks in Bangladesh and remove their reusable raw materials (Jackson, 2014). Their repair work involves acts of care aimed at preserving human values and guided by specific ethical principles (Jackson, 2014, p. 231). In a recent study, Sigrid Kannengießer (2020) analyzed repair processes in the institutionalized setting of repair cafés, where amateur fixers mend consumer electronics and promote engagement with the materiality of technologies.

In this context, the work of repairers and maintainers also raises important questions of power that emerge in the context of reassembling digital technologies and ensuring their being in working order. Russell and Vinsel (2016) adopt a broader perspective in their approach, as they consider maintenance to encompass activities undertaken by both professionals and ordinary individuals, occurring at both material and immaterial levels. In this context, they also address the concept of gendered reproductive labor taking place in the domestic sphere.

Building on these considerations, I propose conceptualizing the ongoing activities and tasks that accompany media usage and ensure its smooth functioning as *everyday practices of media maintenance*. This interpretation of such practices as a form of maintenance is driven mainly by the fact that they are routine and recurring activities, often carried out inconspicuously and only attracting attention during prolonged interruptions. In her book on working on and with infrastructures, Schabacher (2022, p. 149) points out that the stability of infrastructures is based on their standardization, their embedding in existing structures, and their everyday use. However, in the case of networked media technologies, I argue that everyday use also implies everyday practices of maintenance that are essential for stabilization. Everyday practices of media maintenance are largely undertaken by the users themselves, making each of us a maintainer who must invest care and time to keep the media ensemble running. Though professional repairers and maintainers remain critical in managing infrastructures and addressing significant failures, the focus here is on users as executors of maintenance and repair, as well as their repetitive efforts and problem-solving activities that facilitate the appropriation, customization, and ultimate benefit of media use tailored to individual needs. These practices encompass not only activities relevant in exceptional cases or during technological breakdowns but also daily actions aimed at ensuring the desired functionality of media. The everyday practices of media maintenance did not become necessary only with the advent of digital media but have always been inherent in media usage. However, due to the proliferation of networked, software-based media, an increasing number of maintenance tasks now come under the user's purview and responsibility. This results in a tension within a seemingly streamlined, user-friendly, and everyday-focused media environment. This environment, although less technology-centered, is confronted with the constant and sometimes technically demanding acts of care that users must invest in to fully benefit from their daily connection with the media.

The following section introduces the domestication approach and emphasizes its usefulness in examining everyday practices of media maintenance. This approach aptly illustrates that these practices are not a recent development and have diverse functions and consequences in technology usage.

Domestication as an Analytical Lens for Grasping Everyday Practices of Media Maintenance

By their very nature, the concepts of maintenance and repair are predominantly examined from a process-oriented perspective. The focus in related scholarly discourse often revolves around the lifespan or lifecycle of objects and technologies. In this context, maintenance and repair are considered practices that have the potential to prolong the existence of objects, ensuring their sustained utilization over an extended period (Weber & Krebs, 2021, p. 14). Krebs and Weber (2021a, pp. 36–40) critically engage with anthropomorphic metaphors that imply a biography of things, aptly highlighting that conventional understanding of the lifecycle of a technology, from its acquisition to its disposal from the household, provides an incomplete definition. In reality, objects do not conform to a linear lifecycle model; instead, they undergo breakdowns, await repairs, are stored away, or find themselves relegated to the basement, only to be rediscovered and repurposed later. Additionally, objects may enter recycling or second-hand cycles, leading to a dynamic afterlife marked by diverse applications. As such, the life of an object exhibits a far more intricate and adaptive trajectory than a simplistic linear progression.

In this exploration of everyday practices of media maintenance, I propose not to start from the objects themselves, but rather from the practices, routines, and social constellations around using and taking care of technologies. By doing so, I seek to illuminate the wider context in which media maintenance activities are embedded, including the interactions that impact how maintenance is carried out in daily life. I thus position my theoretical foundation within the research paradigm of the social shaping of technologies, which emphasizes the cultural, social, and historical situatedness of media technologies. Contrary to technologically deterministic views, which claim that media technologies have an immediate and deterministic impact, this school of thought emphasizes the dynamic interrelationship between technology and society (Hynes & Richardson, 2009). The inclusion of historical perspectives in the study of contemporary phenomena seems especially useful in this context. After all, media-related practices seldom exhibit radically new or transformative patterns of usage, and they can be better understood when viewed through the lens of the *Longue Durée* (Balbi & Magaouda, 2018). Originating from the work of French historian Fernand Braudel (2008), this temporal perspective enables recognition of the continuities and evolutions of media practices over time, illuminating how past experiences and socio-material structures contribute to shaping present-day media technologies and their usages. While Braudel's conception of the *Longue Durée* typically encompasses developments unfolding over centuries, influenced by enduring geographical, environmental, and

social structures, I follow Balbi's and Magaudda's (2018, pp. 1–2) notation in applying this idea to shorter time frames. This approach is particularly pertinent to my research subject: the usage and maintenance of electronic and digital media over time, which spans merely a century. In line with Braudel's original concept, the focus remains on the slowness of change and the recurrent nature of specific processes, along with their long-term impact. When exploring the usage of (digital) media, contemporary analyses often highlight immediate changes and predict a swift, transformative future. This view can overlook the complexity of media development, which involves both change and continuity (Röser et al., 2019, pp. 30–32). A historical perspective offers a more measured understanding, acknowledging that media evolution is shaped by both new developments and existing structures. This approach reveals that, despite rapid technological progress, persisting patterns in media consumption and its broader implications remain significant.

The domestication of media technologies approach aligns closely with a historical perspective that emphasizes the importance of routine, everyday actions. It can serve as a theoretical framework to explore the everyday practices involved in media maintenance. Developed within British cultural media Studies and conceived by Silverstone et al. (1992), the approach offers a valuable framework for examining and understanding the evolving usage patterns of media technologies in everyday life. It enables description and analysis of the process in which media technologies are introduced into the domestic sphere and become part of domestic routines, interactions, and meaning-making (Berker et al., 2006; Hartmann, 2023; Peil & Röser, 2012; Silverstone et al., 1992). This process is characterized by a dynamic interrelationship between users and technologies, wherein users attempt to adapt a technology to their own life phases, daily rhythms, and needs, but at the same time, the technology also provides impulses for (re)shaping the social world that surrounds them. Notably, the domestication perspective underscores the active role of users in defining and shaping technologies, negotiating their meanings, developing distinctive habits of use, and integrating them into various everyday contexts (Peil & Röser, 2012; Silverstone & Haddon, 1996).

The domestication of a new technology usually goes through four phases: appropriation, objectification, integration, and conversion (Silverstone & Haddon, 1996; Silverstone et al., 1992). *Appropriation* is a “pre-adoption” phase wherein users begin to imagine possible usefulness and application of the technology before purchase and adoption. Once adopted, the technology is spatially and temporally integrated into the sociotechnical settings of the user's life, referred to as *objectification* (physical arrangements of the technological artifact) and *integration* (temporal integration of the technological functionalities into daily routines). In the

last phase, *conversion*, the technology is inscribed with personal meanings and articulates the user's identities to the external world. The process of domesticating new media technologies typically spans a long period and is never completely finished. However, there are phases of "normalization" in which media technologies become routine and are integrated almost seamlessly into daily life. Nevertheless, these phases can be interrupted and re-invigorated in processes of re-domestication (Peil & Röser, 2023), leading to different and even deeper forms of integration of media technologies into daily life.

The domestication of media technologies approach was originally conceptualized in the early 1990s in the context of emerging information and communication technologies, such as home computers. Although developed in a specific historical context and with regard to a particular media technology, this approach offers general applicability and timeless relevance. It has been used for studies on mobile media and their appropriation in a non-domestic context (e.g., Lim & Fernandez, 2023; Matassi et al., 2019) as well as for historical studies that enable comparisons of the implementation and appropriation of new media technologies over time (Röser, 2007, p. 26). Historical research into the domestication of the radio (e.g., Moores, 1988) indicates that comparable patterns of adoption and usage can be seen in earlier media technologies, much like what is observed in contemporary times with the Internet and mobile phones. This suggests that the core principles of domestication are not exclusive to the present-day media environment. By examining long-term patterns and developments in the domestication of media technologies, it is possible to gain a deeper understanding of how these technologies become embedded in socioeconomic and cultural structures and how their significance evolves over time.

Maintenance practices have always played a role in studies of the domestication of media technologies; however, their multiple manifestations and significance throughout the domestication trajectory have not been explicitly identified or systematically studied. Looking at everyday practices of media maintenance through the lens of the domestication approach offers the possibility of conceptualizing maintenance and repair not only beginning from the end, as broken world thinking suggests, but as integral components of idiosyncratic and nonlinear domestication processes. This perspective does not solely revolve around the technology itself but embraces an appropriation-oriented view that extends beyond the moment of actual use. It also takes into account overarching cultural and situational contexts, social constellations, and, to some extent, technical materialities. Its comprehensive approach allows for a more holistic understanding of the complex dynamics involved in the domestication of media technologies, recognizing the interplay between human agency and technology within a broader socio-cultural context.

Non-Routine Practices of Maintenance During the Early Phase of New Media Technologies

In the original conceptualization of the domestication approach, the term “maintenance” does not appear (Silverstone et al., 1992). However, practices related to media maintenance are implicitly considered and are of interest in the process of domestication, especially in the appropriation phase. This phase is about transferring technology from the world of commodities to the domestic sphere. The focus is on preparing and setting up the technology so that it can find a proper use at home. Often coupled with a fascination for the technology and an admiration of the new, users are inevitably confronted with the materiality and functionality of the new medium requiring maintenance in the household. Especially in this first phase of domestication, maintenance is a necessary part of making a technology usable, as it may be still unfinished and unstable, or even needs to be assembled by users first (Moore, 2000, p. 43).

This is especially evident when examining the early days of radio and the experience of newness that accompanied it (Moore, 2000; Spigel, 2008). Users often had to buy individual parts and put them together using kits, which were prevalent at the time (Brown & Dennison, 1998, p. 2; Moore, 2000, p. 43). This adoption necessarily laid open every technological component of the radio. Although attempts were made to hide the technology in cases and cabinets, technology still imposed itself in other components that were still visible:

By 1924 the RCA “Radiola 20” enclosed the radio components out of sight in a plain rectangular box, but the listener was still required to hook up an array of accessories, including the headphones or a speaker, an antenna, and a number of batteries, all supplied by a booming accessories business.

(Brown & Dennison, 1998, p. 3)

Maintaining the radio and its individual components was not only necessary but also hazardous. The batteries used were similar in size and shape to cans, and at least six of them were required. They needed to be refilled with acid for recharging (p. 3).

According to Moore (2000), radio was seen as an “unruly guest” (p. 43), a device that caused irritation not only by producing a haunting proximity to far away events and sounds but also because of the visibility of technology, which invited users to constantly think about the technological novelty of the medium. Users had to maintain an unstable technology; successful reception of sound was seen as a small miracle: “Listening was a technological adventure” (p. 43). Schmidt and Pater (1997, p. 22)

refer to these early stages of radio use as the dedicated and concentrated work of science, turning the home into some kind of laboratory to receive sounds without interference.

A focus on technology and a certain fascination with how it works – already evident in early experiences of cinema (Gunning, 1990) – is also reflected in the introduction of television in the 1940s and 1950s. Lisa Parks (2019, p. 226) cites an advertisement for early TV enumerating the many single parts and referring to the medium as “the most complex gadget ever to get in the front door”. By the mid-1960s, perceptions seemed to have changed, as a manual published in West Germany refers to the medium with the blurb: “Television? . . . nothing simpler than that!” (Aisberg, 1965, translated from German). However, as simple as television was supposed to have become, the manual still deals exclusively with the technology of television. In an effort to break with this approach, it uses amusing comic-style illustrations and the casual style of a dialogue between two experts discussing all the details of the television apparatus. It begins with a confession by one of them: “I am interested in the operation and function of television as much as I am interested in the program” (Aisberg, 1965, p. 7, translated from German). However, programs are not mentioned again; owning a television seems to revolve solely around taking care of the set and understanding the associated transmission technologies. This perspective on television reflects the fact that it could not hide its technology because of the many problems people had with this new medium. Parks refers to the early years of television that made it necessary to “crack open the set” since the unstable technology was in constant need of maintenance. The author describes a complex maintenance network involving male experts as early adopters, TV repair technicians, TV shops, and female users. The gendered nature of technology becomes apparent with compendiums and manuals that explicitly address male users and encourage them to “tinker with the technology” (p. 228) – it was explicitly coded as a masculine activity (p. 229). Moreover, Parks alludes to a particular kind of heroism that TV repairmen embody through their frequent visits to the homes of TV users. “In some popular representations the TV repairman is figured as a gallant knight, coming to the rescue of a housewife in distress” (p. 229).

Interest in technology also played a role in early computer culture, as the first personal computers were sold as kits, much like radio kits in the early days of radio. The SIM8-01 paved the way for home computer technology in the early 1970s as the first commercially available 8-bit microcomputer, introduced as a kit with individual components (Stachniak, 2007, p. 34). Even with the advent of home computers, the initial purchases of these devices were mainly driven by the technical curiosity of male users who sought to acquire this technology and experiment with

it to comprehend its workings (Peil & Röser, 2012; Röser & Peil, 2010). Although intended for home use, getting the technology operational and configuring it required challenging maintenance activities at the time; these were mainly attempted by users who were interested in technology and keen to experiment.

In summary, the process of domesticating new media technologies involves challenging maintenance tasks during the appropriation phase, which are aimed at getting the technology up and running. This is particularly true in the early stages of a new media technology, when the technology is physically introduced into the home as new hardware, rather than as a software update or incremental development. The associated form of maintenance is by no means ordinary but involves special tasks and challenges and can therefore be considered extraordinary. It is characterized by a visibility of materiality, a predominantly male user group consisting of technology enthusiasts and hobbyists, and a fascination with the complex components of the hardware. Only in the further domestication process, as the technology is increasingly integrated into everyday life, does the use shift from technology-oriented people to ordinary users, leading to a reduction in social differences in access and use (Peil & Röser, 2012; Röser & Peil, 2010, p. 483).

From Extra-Ordinary Maintenance to Mundane Digital Housekeeping

While maintenance practices are an integral part of the initial domestication phase, essentially acting as a kick-off for the further course of domestication, this type of technical care work seems to play a lesser role in the subsequent phases of domestication. During the phases of objectification and integration, technology is increasingly integrated into everyday life. It becomes more and more invisible and is used naturally, without causing much disruption. Particularly in the case of older media such as radio or television, these phases tend to be associated with stability – though regular maintenance is still required, albeit not as visibly and (semi-)professionally as in the initial phase. Instead, it takes the form of everyday corrective interventions, such as adjusting the antenna for better radio reception or replacing worn components. Maintenance activities can also be linked to the conversion phase, for example, when interventions and improvements to media devices are ostentatiously displayed to the outside world in order to demonstrate expertise and agency – for instance, as exemplified by the radio innovator delineated by Lloyd (2023), who takes great pride in her mastery of early radio technology and the installation of substantial antennas. Overall, however, it can be stated that the associated maintenance practices have not been treated very centrally in empirical domestication studies.

With digital technologies, forms of everyday maintenance – broadly defined as ensuring the “continuous operation” of media technologies – have received renewed attention in domestication research, especially in *warm expert* studies.³ For example, Olsson and Viscovi (2018) show that throughout the domestication process of digital devices, older users rely on support from relatives, helping with software installation, adjustments, and technical issues (see also Hänninen et al., 2021; Taipale, 2019) – tasks that can be considered maintenance even if not explicitly labeled as such.

Although warm expert studies typically focus on older users and emphasize the social interactions between the actors involved, they highlight that the use of digital media requires ongoing maintenance practices that are not always self-explanatory and unchallenging. This is supported by the fact that the users in Olsson and Viscovi’s study who needed assistance were not novices to the Internet, but had considerable experience of using it.

The insights of empirical studies regarding *digital housekeeping* also support the idea that maintenance is not limited to the appropriation phase but that it becomes as much a part of everyday life throughout the domestication process as the technology itself. Digital housekeeping has become established in describing recurring tasks associated with the use of digital media technologies that are performed like other chores for the common good of the household. While this field of research emerged in the context of computer science and design studies, it increasingly contains media and cultural studies perspectives (e.g., Kennedy et al., 2015; Strengers & Nicholls, 2018; Taipale, 2019). Key questions include how networked media technologies are managed and maintained in the home, who is responsible for their upkeep, and what social interactions are involved in these routine activities. With the concept of digital housekeeping, Kennedy et al. shed light on the constant obligation to maintain digital media. Maintenance is thus seen as work, as the construction of a media ecology in the home, dealing with the hardware of Wi-Fi and how it is placed in the home (or, at best, hidden so that the necessary equipment components are not even visible), the synchronization of media devices, and the management of data. The study by Kennedy et al. (2015) shows that digital media use is far from seamless. Even the supposedly smooth interoperability of Apple devices turns out to be a myth in the homes of Apple owners, as one couple found that music could no longer be streamed to their TV when they switched from an Apple computer to a Mac Book.

Tolmie et al. (2007, p. 342) understand digital housekeeping as routine activities, such as providing network access, ensuring the functioning of digital devices in the home, and clearing out “digital clutter” in the sense of organizing and tidying up digital material by sorting, deleting, and storing. Based on an empirical investigation, Horst and Sinanan (2021, p. 834) identify three central practices of digital housekeeping: “tidying”,

“spring cleaning”, and “moving house” – reflecting “different scales and temporalities of moving, storing and shedding data” (p. 838). The studies indicate that there are numerous maintenance requirements, especially in connection with extensive personal digital archives – one’s own “digital mess” (Pink et al., 2018) – and their management, which have only arisen with digital transformation. Pink et al. (2018) have analyzed mundane routines and strategies around data saving and storage, such as duplication, redundancy, or repair, and underlined the contingencies and improvisatory activities needed for the handling of digital material. Digital material is almost inevitably involved and produced when using digital media technologies, and it is important to consider its temporary nature, which is always in the making and requires constant action and ongoing care, as do the technologies and their applications themselves.

All the studies mentioned point to a number of different, often barely noticeable practices that regularly accompany the use of digital technologies and affect quite different levels (e.g., application level, network level, and content level). They must be understood in the context of people’s individual capacities and their embeddedness in social structures and power relations. However, the label “digital housekeeping” might obscure the fact that many of these tasks are difficult and cannot be done as easily as doing laundry or cleaning the house. To conceptualize them as everyday practices of media maintenance and as part of the domestication process entails recognizing that these aspects of media usage can also be challenging and, at times, pivotal. Moreover, it acknowledges their transformative potential, as it is “precisely in moments of breakdown that we learn to see and engage our technologies in new and sometimes surprising ways” (Jackson, 2014, p. 230).

Appropriation Phase in the Loop: Everyday Practices of Media Maintenance in the Light of Deconverging Technologies

The preceding discussion has shown that everyday practices of media maintenance occur, albeit to varying degrees, at each stage of the domestication of media technologies. With the digitization of the media environment, these practices have become more numerous and diverse. This section focuses on a specific form of user maintenance practices related to the fact that digital media exist in a state of “perpetual beta” (Helles, 2016, cited in Kaufmann, 2018), constantly affected by rapid cycles of production and innovation that result in constant change. As a consequence, users experience what I would like to term a “continuous reactivation” of the appropriation phase, albeit under different conditions.

The materiality of a technology is no longer as obvious to users as it was in the early stages of radio, television, and computer. This is because, in the digital age, innovation is not primarily introduced to the

home through new devices but through constant incremental advances and innovations, such as new platforms and applications, program updates, and changing software architectures. While these changes regularly require an increased level of maintenance, characteristic of the first phase of domestication, they lack the visibility and sense of adventure associated with the discovery of a new technology at the time of its first implementation.

The following example illustrates how digital media reactivate the appropriation phase of new media technologies with forms of maintenance but differ significantly in how feelings and practices are elicited by this appropriation: purchasing a new computer may seem routine for regular users who are expected to handle tasks such as data transfers and program installations. However, it often feels like anything but routine but, instead, a journey into unfamiliar territory, challenging consumers to reconsider their usage habits. One need only think of the absence of older storage media such as DVD drives, the dramatic reduction in the number of USB slots that force users to adapt to completely new arrangements of digital infrastructures with cloud services, or even basic programs that can no longer be accessed or run without a Wi-Fi connection to the cloud. Such “innovations” or modifications demand substantial maintenance efforts, involving a need to adapt to changes in both hardware (such as the absence of DVD drives in recent models) and software (such as programs migrating to the cloud) as well as time, patience, and technical understanding to effectively configure the technology for everyday, intuitive, and personalized use. However, the process seems to be more about adapting to change rather than genuinely embracing a new technology. Faced with issues such as programs ceasing to function on their computers, users are not necessarily seeking novel and improved alternatives (such as cloud-based software); instead, they would often prefer returning to the familiar functioning of their previous model.

The constant reactivation of the domestication’s appropriation phase can be seen as a symptom of “media deconvergence” (Sparviero et al., 2017) that emphasizes the progressive divergence of technologies and applications and highlights the hardships it poses for users. Deconvergence focuses on the messiness of digital technologies that are often not interoperable with each other, require constant adaptation and care work, and must always be kept up to date. The concept dispels the myth of converging, streamlined, and perfectly coordinated media environments in which every user has access to a clear and tidy media and data ensemble from anywhere (Peil & Sparviero, 2017, p. 13). A main feature of digital media which supports the concept of deconvergence is that they expose users to a constant stream of innovations. This increases the frequency of maintenance requirements, which can become a potential burden.

In their exploration of the Internet of Things, Meikle and Bunz (2018) draw a comparison between appropriating a Raspberry Pi that “makes the user smarter” and devices optimized for an effortless user experience: “In contrast, the Apple iPads user-friendly touch-screen point-and-click entertainment platform . . . saves its user the trouble of learning and understanding anything about how it works” (p. 16). Maintenance, as a form of caring for technology and learning how it works, is considered by Meikle and Bunz to remain in the background as programs take over the tasks of appropriating new digital technologies. However, it is not that simple. In his article “Domestication as user-led infrastructuring”, Thomas Berker (2023) draws attention to the fact that our lives are now so deeply embedded in sociotechnical arrangements that we have to do articulation work on technologies and micro-infrastructures on a daily basis (p. 29). Although the sensation of obtaining something new may diminish over time, the ongoing innovations and transformations in media technologies necessitate a continual need for appropriation. This requirement also extends to older media, as Berker notes (p. 32), citing Keilbach and Stauff and their reflections on the ongoing newness of television (2013). These older media remain novel because they constantly reappear in new technological forms and configurations, often disrupting familiar ways of using them. “For users, this means continuous adoption and adaptation, which through sheer force of repetition loses its meaning as deliberate work, easing the tension between the old and the new” (Berker, 2023, p. 32).

While it can be agreed with Berker that the daily maintenance practices associated with media technologies may not always be consciously recognized as “work” – primarily due to their inherent familiarity and resulting invisibility – it is important to note that they might not be self-explanatory and are not made obsolete by automation mechanisms or the potential of artificial intelligence. Even seemingly frictionless applications like video call platforms, which were embraced during the COVID-19 pandemic to facilitate remote social interactions in response to stay-at-home requirements (Chambers, 2023), can be problematic and require ongoing maintenance. To benefit from Zoom, Webex, or Skype in periods of lockdown, a proper Internet connection was essential, leading many household users to purchase and install complex devices like new repeaters to amplify the signal throughout their homes. We are all maintainers, not erecting antennas in the garden in an exciting search for radio signals, but instead installing small antennas and routers in our homes in a desperate search for the fragile resource of stable Wi-Fi signals.

Continuous incremental innovation in technology inevitably gives rise to conflicts, problems, and disruptions, which draw attention to these technologies and compel individuals to interact with them. Consequently, users continue to rely on knowledgeable experts to flawlessly install and

maintain what may appear as user-friendly software and to understand its functions (Peil, 2021, p. 66). Although the era of traditional user manuals and brochures, prevalent in the early days of radio and television, has passed, contemporary equivalents exist in the form of online forums and tutorials. Maintenance, as portrayed here in relation to the constant reactivation of the appropriation phase in the domestication process, remains a form of caring for technology. However, it feels different: there is now limited interest in the underlying technology of digital media, and sustainable expertise is no longer required as innovation follows innovation, rendering mastery of one medium insufficient once another modification, platform, or software is introduced. Instead, it has become a rushed and often stressful yet everyday form of maintenance, obliging users to keep pace with numerous minor and major innovations, updates, and modifications. Accordingly, maintenance occupies a peculiar state of casual awareness in the process of appropriating technologies: not overt enough to provide users with a feeling of complete mastery, yet not inconspicuous enough to afford users the benefit of easy, smooth, and almost undetectable appropriation. Steven Jackson (2014, p. 233) expresses hope that, from repair culture and the efforts of those maintaining the infrastructures of digital media, an ethics of care may emerge. However, the question remains regarding how such an ethics of care can be developed amid the constant flow of technological innovation.

Conclusion

The aim of this article was to analytically grasp everyday practices of media maintenance from a communication studies perspective and to demonstrate, by drawing on domestication theory, that these practices are inherent to all media usage. Despite their prevalence, these practices have received limited scholarly attention. Contrary to popular belief, the importance of maintenance and repair has not diminished in the context of mass production, the throwaway society, and planned obsolescence; rather, as Krebs and Weber (2021a, p. 30) point out, cultures of repair have changed. Interventions in the physical materiality of media technologies at the hardware level might have become less possible due to fixed components like batteries and memory. Jackson notes that Apple produced the MacBook Pro, which he referred to as the “least repairable laptop” (2014, p. 235), in 2012. Nevertheless, with digitalization, incremental developments of technology at the software level, shorter innovation cycles, complicated production logics that limit interoperability, and applications that remain in a permanent beta state, the occasions, objects, and contexts for maintenance are not decreasing. This chapter has described the constant need to adapt to new media offerings and to customize them through everyday practices of maintenance in order to meet individual needs and preserve established

routines as a consequence of the constant reactivation of the appropriation phase of domestication. This initial stage typically involves an increased demand for maintenance, as historical studies on the domestication of radio, television, and computers have shown. However, this form of maintenance does not foreground the visibility of technology's materiality and is not associated with the fascination of novelty; rather, it often only serves to sustain cherished routines when existing functions are no longer available or have significantly changed.

The domestication perspective helps to view everyday practices of media maintenance as persistent and existing over time, emphasizes their continuity, and paves the way for future studies. It highlights social interactions surrounding the use of media technologies, addressing questions of mutual support, conflicts, and power struggles. In this context, warm expert studies are particularly enlightening and should be further explored as well as extended to groups beyond older users. It should also be noted that the domestication of media technologies is often accompanied by processes of re-domestication (Peil & Röser, 2023) or de-domestication wherein domestication trajectories intensify, wane, or take unexpected turns. In this sense, it would be intriguing to explore how everyday practices of maintenance can (re)set the course of the domestication process – for example, when inadequate or neglected maintenance tasks lead to technologies no longer being used, when technologies undergo a complete reassessment in the course of maintenance practices, or when the accomplishment of maintenance practices leads to an increase in technical capabilities and a resulting greater integration of the technology into everyday life.

Finally, it is worth mentioning that the study of maintenance is intrinsically political, where marginalized perspectives or “muffled voices” are highlighted to reveal structures and actions that often remain hidden despite their significance (Balbi & Leggero, 2020, p. 15). Thus, focusing on everyday practices of maintenance also invites critical questioning of why media landscapes and digital infrastructures are the way they are, how they are sustained, which forms of maintenance are made the responsibility of users, and how this affects our understanding of and experiences with technologies.

Notes

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1 www.oed.com/dictionary/repair_n2?tl=true

2 www.oed.com/search/dictionary/?scope=Entries&q=maintenance

3 The term was coined by Maria Bakardjieva (2005, p. 99), who used it to describe the people in a person's immediate social environment who are asked for support when installing and using a computer for the first time and who help with problems because they have comparatively more knowledge.

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