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Christina Haralanova

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Abstract

Mobile phones: everybody hates them, but many people have one. As one of the most ubiquitous and intimate gadgets, mobile phones stay close to their owner, in the pocket or purse – always at arm's reach. With the arrival of the mobile phone, the philosophy of telephony has changed: phones have gone from being household appliances to highly personalized communication mediums (Green et al., 2001). As mini devices with multiple features, mobile phones are associated with a number of first priority functionalities, such as continuous connection, instant communication, mobility, and problem-solving capacity (Barkhus and Dey, 2003).

People often personalize the places and objects that surround them, and mobile phones are no exception, despite their short lifespan and disposability. Personalization or customization is closely related to the way the phone is perceived by its owner: the practice combines one's attachment to the device, the role it plays in one's everyday life, its uses, and the representations invested in it. And while some people do not stress

personalization practices, others consider them an important process for improved interaction and appropriation of their mobile devices.

This article examines some of these personalization practices by users for whom the ability to make mobile technology unique and representative of their own personality is an important asset in their choice of device. It will place particular emphasis on advanced users, referred to as "DIY hackers," whose philosophy, principles, and ethics are rooted in values of freedom to use and shape their device by learning from it, adapting it, and modifying it to their own needs. This paper will provide examples from four such users in order to illustrate the "hacker ethic" as applied to mobile phone technology use.

Defining Mobile Phones Personalization

In their "theory of personalization," Green, Harper, Murtagh and Cooper (2001) describe how people commonly personalize places and objects in their surroundings. Blom and Monk (2003) add that people personalize in order to take control of the places they inhabit and the objects they use, both for practical and aesthetic reasons. In addition, the authors note that electronic products, including computer desktops and mobile phones, are among the most commonly personalized items.

Barkhus and Dey (2003) define personalization as a process in which applications are designed to let the user specify her or his own settings for how the application should behave in a given situation. In "Personalization: A Taxonomy," Blom (2000) explains

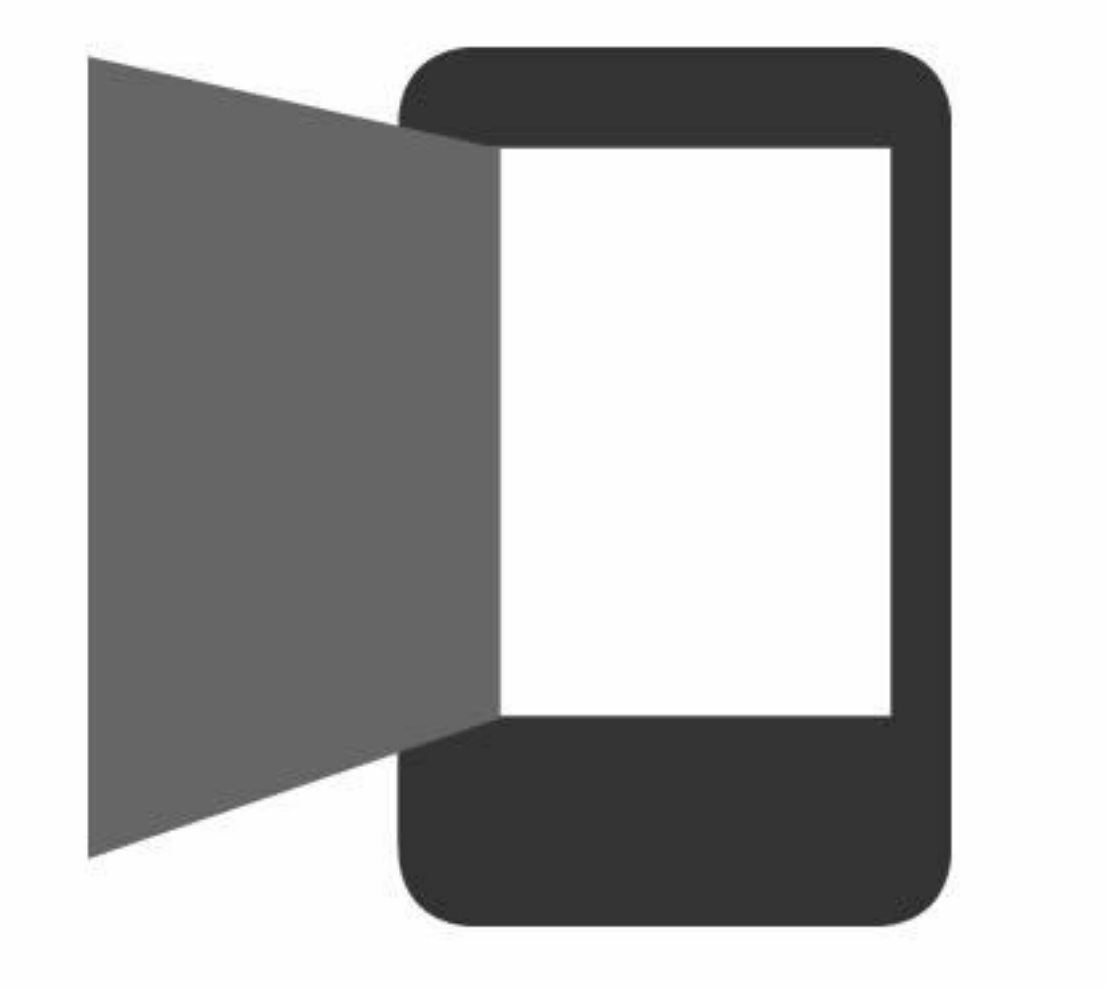
that this is a process that changes the functionality, interface, information content, or distinctiveness of a system to increase its personal relevance to an individual. In addition, the effects of the changes should persist across use sessions, otherwise everything that a user does with the device would be considered as personalization. Blom argues that this process can be user- or system-associated, but that most often it is performed in collaboration between the user and the system. Further, Blom describes two main reasons behind personalization: to facilitate work and to accommodate social requirements. In other words, the phone's functionality and its appearance constitute the main concerns of most users who engage in personalization.

An increase in the device's functionality can result in obtaining information more quickly (adding shortcuts to applications), adjusting calendars and reminders specific to the personal agenda, or switching the phone to a silent mode when entering a meeting. Blom and Monk (2003) provide two examples of functionality personalization, according to whether it is user- or system-initiated. User-initiated personalization could be to increase font size to accommodate visual impairment, while system-initiated would be memorizing actions, or the system proposing to optimize aspects of the software such as remembering passwords, or offering a software upgrade (the latter often needs a confirmation from the user before such changes are applied).

Appearance-related personalization, on the other hand, concerns the motivation of expressing the user's identity and relates to activities such as changing the physical

characteristics of the phone according to personal and momentary emotions, customizing the device's appearance to show relevance to a group or community, and so on. Examples of user-initiated personalization of appearance could be tp change the mobile phone cover or the ringtone with respect to the user's mood. Blom and Monk affirm that such personalization is related to exciting emotional responses without making the phone's use more efficient. Such actions incorporate users' values into their devices, and help create better links and personal associations between users and their mobile phones (Blom & Monk, 2003).

In addition to the benefits of personalization, some drawbacks include the fact that personalization takes time, which many consider wasted time. Therefore, a functionality or work-based customization may become a priority for most users, as opposed to spending an equivalent amount of time customizing the appearance of the phone. Yet, the reverse may be true for younger mobile phone users, for whom the mobile device is a key part of their identity and fashion, where the device is positioned as a source of both social relevance and fun (Blom & Monk, 2003). In addition to the time it requires, personalization is often related to monetary costs for the user, where adding many applications, ringtones or cases and covers can become expensive. Similarly, technical constraints can also limit the personalization of the device, for example, the software and hardware limitations of older phones, finite memory space, and so on.



Mobile Phones, Personalization, and the Means of Empowerment

Studies on mobile phone personalization show that the ability to modify certain features within the device provides a feeling of ownership and empowerment; and the fact that the device responds more closely to the individual's needs triggers feelings of better appropriation and closeness between the technology and the user (Bull, 2005; Barkhus & Dey, 2003; Blom & Monk, 2003). Such observations counter the perception that possessing a mobile phone in itself constitutes a loss of control for the users who can be reached anywhere at any time. While users might thus exert less control over their availability and independence, they are simultaneously aware that this is the cost of

becoming more interactive at any time and any place (Green et al., 2001). Therefore, the possession and personalization of the mobile phone represent flexible measures: how much control is one ready to give away in order to possess a mobile phone, and how much of this control can be regained by customizing certain features on the device in order to better adapt it to the user's needs?

Personalization measures designed into mobile devices by producers (such as Apple, Nokia or Sony-Ericsson) rely on the stimulation of positive feelings such as empowerment and enjoyment in users. For example, the current top-of-the-range Nokia phone model offers more than ten features that allow the phone to be personalized. These include changing the color cover of the phone, choosing a ringtone (from an online database on the Nokia website with thousands of ringtone options), turning the volume on or off, assigning shortcuts to most used applications, etc. However, it could be argued that this personalization, mostly based on aesthetic improvements, offers users a superficial feeling of empowerment, limited to what the machine "allows" the user to do in terms of software and hardware (including design and operator's limits). Barkhus and Dey (2003) argue that such surface personalization provides enjoyment through the construction of attachments between users and their phones, where people might refer to their mobile devices as living creatures, for example, by giving them names or the status of a pet.

While emotional attachments cultivated through superficial personalization are thus encouraged by the design of the devices, mobile technologies are not typically intended to be personalized in deeper functional ways such as being put to alternative uses, or by being customized for better utility. Mobile devices are designed for specific and largely inflexible use-patterns, with interfaces which tend to ignore or discourage the possibility of heavy customization or modification. [1]

Yet with the increasing complexity of mobile devices that combine telephony with various computational functions, increased options for personalization are required to enable users to personalize the functionality of their devices. For instance, for users to be able to connect to bigger and more powerful computer networks, or to synchronize data and customizations, the design of devices would have to open up to allow for deeper modifications. And on fact, the current limitations on end-user customization and adaptation of the mobile phone's functions do not stop all users from finding ways to personalize their phones beyond the standard features provided. This struggle for control that users often experience in relation to mobile phone producers and service providers reflects the way that users value their autonomy from producers of the technology and how they use mobile devices not only for practical reasons, but also for the enjoyment of experimenting with and learning from technology.

Mobile DIY Hacking Practices

The principles of personalization, customization, and empowerment through usage can be traced back to a 1950s movement of hackers: groups of people who enjoyed building, improving, modifying or repairing things themselves. Known as Do-It-Yourself (DIY) practices in technology and machinery, the term "hacking" refers to activities like creating and repairing gadgets, and experimenting with technology mostly for the purposes of enjoyment and discovery. DIY, and in particular the hacker culture centered on technology, follows these principles and ethics through its socio-technical practices (Coleman, 2008; Thomas, 2002).

Adopting a DIY approach to usage (and design) ensures a distinct advantage in the customization of gadgets in order to add and improve features that are not offered with commercial technology (Sharidan et al., 2009). Sharidan, Tompkin, Maciel, and Roussos argue that this is particularly apparent with regard to highly specialized equipment and strictly controlled platforms, which typically limit user-initiated functionality customization, as has been recently highlighted by the severe restrictions placed on extending mobile phone hardware, for example.

Indeed, mobile phones represent much more restricted devices compared to computer desktops and laptops or other technical equipment and machinery. One aspect of their limitations comes from their small size and the resulting lack of ports that would allow for phones, particularly older models, to interface with computers. Another aspect is that phones are typically designed to be used for only a brief period, where users

requiring additional functionality are encouraged to buy newer models rather than modify their existing devices. Even with such restrictions, however, hacking mobile devices remains a common practice for many users. Hacking in mobile phone practice can be done in a number of ways: improving or repairing the device's hardware, unlocking the phone from one service provider to be used with another, or breaking into the operating system software through "jailbreaking." Jailbreaking allows users to access to features and programs beyond the ones authorized by the manufacturer (for example, Apple or Google) or network provider (for example, Bell or Rogers), to use features and applications on the phone that were initially blocked by the service provider (for example, tethering[2]).

To be precise, jailbreaking is a common term when referring specifically to "unlocking" Apple iPhones and iPod Touch devices because of the computer application used to perform this process (called JailbreakMe[3]). The term "rooting" is used when referring to Android phones, meaning that the user obtains the administrative access (root) to the phone, allowing him or her to change system files and programs that are normally marked as read-only on the device. There is also a third type of phone modification using free and open source software (such as the Nokia N900 model) with the administrative password (root) available to the users by default (therefore with no need for jailbreaking, since these phones provide the same type of access as a jailbroken phone). All of these practices could be classified as examples of DIY hacking.

Principles of Hacking Technoculture

There is often a set of values espoused by DIY hackers that promote the virtues of sharing and pedagogy; as well as the freedom to use, modify, and experiment with technologies (Coleman, 2008). With regard to mobile phones, DIY hacking thus tends to be directed toward striking a balance between standard, locked-in personalization options and making the device serve better, last longer and answer particular users' needs. Unlike relying on more superficial means of empowerment provided by designers and producers, in the terms of DIY hackers, empowerment means obtaining the full control over the machine by the user. This can be perceived in terms of looking for customizable functions of the phone, and not limiting oneself to the personalization patterns offered by the manufacturer at the time of the purchase. In this context, three of the main principles of the hacker ethic can be applied to mobile device appropriation: obtaining the full control over the machine; learning about the way it works (open the black box of the device); and providing to the potential to make modifications in accordance with the user's needs.

(1) Ownership and control. The first principle relates to the freedom to use technical artifacts. Similar to the Free Software definition[4] (which can be seen as a derivative of the hacker movement worldwide), people should be able to use freely their device and do with it whatever they want. Thus the closed nature of mobile devices contradicts the ethic of hacker and DIY culture, with user-limiting design and functionalities locked in by manufacturers, service providers, and network operators. For this reason many

members of DIY hacking communities would jailbreak their phone in order to obtain full control over it, and to enjoy the activities of personalization and customization of their phones in the broadest possible aspect. Such users also strongly value the idea that their data and customized settings persist, and do not disappear every time that a phone breaks and/or needs replacement. Moreover, the philosophy of customization often traverses mediums and is common across an individual's many gadgets: personal computer, mobile phone, tablet, etc.

(2) Learning by doing. The second principle incorporates the aspect of learning from the use of the mobile device, with the aim of adapting it to one's own needs. The famous quote: "if you can't open it, you don't own it," from the Maker's Bill of Rights,5 is used by hackers to indicate that the technology can be opened for play, repair or learning about its functioning (Haralanova & Megelas, 2011). Such hacking represents an alternative education, disconnected from formal schooling. When hackers remove hardware cover plates to learn how to fix or modify their device, it is an act that challenges the predominant discourse around technology. Technology becomes more accessible, demystified, and better adopted. In this sense, opening or jailbreaking a mobile device often means voiding the warranty provided by the manufacturer, which allows the provider to refuse repairing or exchanging a jailbroken phone, even if the phone has a manufacturing defect. However, the hacker principle shows that more is gained in knowledge than lost in security by opening the machine.

(3) The principle of the three Rs. The third principle considers repairing, reusing, and repurposing mobile devices as an act against the disposability paradigm and consumerist system of regular hardware upgrades that characterizes the mobile industry of today. According to a 2007 study, American consumers use their mobile phones on average for only 17.[5] months (Huang & Truong, 2008). Apart from the economic reasons behind this disposability, including discounts and better contracts with the service provider, participants in Huang and Truong's research point out that missing features and functionality aspects are among the main reasons to change mobile phones. However, the same study shows that people become attached to their phones and perceive them as personal gadgets to the extent that they do not throw them away even after they have stopped using them. Therefore, if those users would be able to add new functionalities, improve customized performance, or repair parts of their devices when broken, they would certainly keep their devices longer. Similarly, hackers and DIY makers value their devices in terms of personalization and functionality, in the sense that if a device is adapted perfectly to their needs, they do not like to change it often. In this sense, practices of repairing, adapting, customizing, and modifying are the exact opposite in principle to the disposability of typical consumer electronics. In result, many hackers have also proposed solutions for reusing old mobile devices by turning them into museum guides, devices for giving presentations, and game consoles.

These three principles, closely associated with the hacker technoculture, provide the basis for customization and personalization of the mobile phones by advanced users who are members of this community. However, one does not need to be a hacker to apply the hacker ethic in her or his use of the mobile phone.

Hackers and Makers – Evidence from the Field

The following section offers several examples of DIY hacker practices and the points-of-view of DIY hackers, in order to illustrate their motivations and ways that hacking (and in particular jailbreaking/rooting) is performed by advanced mobile phone users. These examples will also describe how hacker principles are applied to mobile device use. Aimed at providing illustrative evidence from the field rather than representative data, the examples presented below comprise an exploratory study of how the theory of personalization might describe DIY hacker practices that revolve around the concepts of control and empowerment, both within hacker culture and with respect to the mobile phone.

For the purpose of this paper, I conducted several interviews with DIY hackers and mobile phone users for whom these devices represent quite a limited tool in terms of harware and software (compared to, for example, personal computers which allow much more flexibility in modifying and hacking). As these users emphasize, their need for personalization tends to be significantly higher than that of the average user. Ringtone modification and display options do not constitute sufficient personalization methods for these users, many of whom expressed particular needs related to software programming (adding/removing software or hardware), or (inter) connecting their phones to other electronic equipment (computer, tablet, etc.).

(A) Methods and General Description of the Participants

The two central methods employed for this study were: four semi-structured interviews with jailbreakers and owners of free software mobile phones from Montreal; and direct observations on the uses and personalization practices of their phones. The methodology used draws from Kaufmann's comprehensive interview method, aiming to interpret and provide explanations of the collected data. This approach reflects comprehensive sociology field, which is based on the idea that individuals are not "mere agents carrying structures, but active producers of social reality, therefore the carriers of important knowledge" (Kaufmann, 2007: 23). Therefore, the goal of this study will be to "understand" the collection of data, facts and reactions of the participants.

The selection criteria for the interviews was mostly based on how much emphasis users placed on personalizing their phones in a more advanced way (challenging producers' ways of personalization), and on how much they sought diversity in their devices and combinations of software and hardware. Therefore, the aim was mostly to get as many different examples as possible related to advanced personalization, with as many different devices possible. I conducted more than four interviews, but this number, even if small, offers rich evidence, and mostly covers the types of phones on the market: a basic Nokia phone (not a smart phone), an Android phone, an iPhone, and a Free Software based Nokia N900 (with software called Maimo).

The four interviewed participants are all male, in their late twenties and early-to-mid thirties.[6] None of them works with mobile phones in their professions. The majority

have had mobile phones for eight or more years; one participant has used a mobile phone for only two years. Participants discussed four different types of practices related to four different mobile phones, most of which had been used for only a year or less (except for the older, non-smart Nokia phone).

The interviews were conducted in Montreal with locals, many of whom referred to technology as their passion, hobby, interest, or profession. In terms of socio-economic status, all of the participants represented mid-range income brackets for Canada. Two of the participants do not work in programming or engineering but have strong interests in these fields. All four participants are highly educated (one is a student, the others had either bachelors or higher degree), and reported being knowledgeable in technology, but not necessarily in mobile technology. However, all had an understanding of hacking principles, including exerting control over technology, improving or adapting it to their own needs, and using it for learning.

The following section will present the users' discourses regarding the meaning they give to their phones, as well as their personalization practices, particularly jailbreaking as a way to obtain full control over the device. Subsequently, I will conclude by offering some analysis and discussing ways of extending the research into the future.

(B) Mobile Phone Use

The participants were asked to explain what the mobile phone meant for them in their everyday lives, and among the rest of their gadgets. To summarize the results, all of the

participants declared that the mobile phone for them represents mostly a communication tool or a personal organizer, and a useful, portable complement to the rest of the computerized equipment that they have. The main purpose of the mobile phone is to serve for emergency communication, to instantly communicate and coordinate with people, and to connect to the internet when outside of home (all ad hoc needs). As one of the participants commented, "it is something I would always have on me. Similarly to keys, my mobile device allows me to get into places."

Moreover, the mobile phone is perceived more as an obligatory than an entertainment device: "it's difficult without a mobile phone when you need it, it has to be there." Among the communication tools used on the mobile phone were the standard telephony function, and also internet relay chat (IRC), Google talk, and Voice over Internet Protocol (VoIP). The majority of users (3/4) did not report that voice telephony was their preferred use of the phone, but rather SMS, e-mail and internet. Internet navigation, calendars, and GPS navigation were among the preferred non-communicative uses of the mobile phones. One participant declared it was also an entertainment device for playing games. In conclusion, the mobile phone is perceived by the participants as a useful portable gadget, in that it was helpful in solving unexpected problems. The mobile's uses by this group were thus less commonly for voice communication and more often for internet-based services and functionalities.

(C) Personalization Practices

As the general use of the mobile phone shows, the participants consider their devices foremost as "useful gadgets." Therefore, the preferred type of personalization for the users in this study revolves around functionality. Personalization for appearance is not a priority for any of the interviewed participants; as one expressed, "no one sees my phone anyway." Another reason provided for not engaging in appearance personalization was the disposability and the short lifespan of the mobile phones, which leads to an idea that there is no need to personalize them too much ("not a life-long commitment"). However, one of the participants had a protection case for his phone, and another one had changed the background of the screen to look more "colorful."

All participants indicated that they tend to personalize their phones immediately upon purchase, performing only necessary improvements afterwards. They also considered personalization as a time-consuming activity: the majority referred to personalization as "playing with the telephone" and therefore a question of having free time to waste for that purpose. The most commonly personalized items include ensuring easier access to certain applications (creating shortcuts, arranging the applications on the screen), changing the background and the icon images, changing the ringing and SMS tones, switching the phone on vibrate, and adding an application for the local weather.

(D) Jailbreaking as Personalization

The majority of the participants referred to jailbreaking, rooting and using admin functions on their phones as the first thing to do when they buy them (even before performing other types of personalization). The main reason for this is to obtain access

to better functions and customizations when they are not otherwise available. Why jailbreak? “Because all the best applications are not provided by default.” When jailbreaking the device, users get free applications and other features that are otherwise not available.

One of the participants made the parallel between mobile phones of today and aftermarket personalization of cars in the 1970s, when people who wanted more powerful and better looking cars had to adapt them with their own “hacks” according to personal knowledge and skills. The whole idea behind jailbreaking the phone, according to the participants, is the ability to install more features and make customization modifications – in other words, to make the mobile phone more useful to the user, especially when users know the fuller capacities of the device.

Examples of what the mobile phones of the participants have provided in terms of customized options after they were jailbroken include: a free Chinese keyboard for the iPhone (which would otherwise cost five to ten dollars); a program called Multicleaner, used to close any background applications running; a proxy to limit broadband usage; and an application that silences the phone (“Silence now”) in the moment of picking it up to allow the user to get out of the room and not disturb others nearby. Other functionalities added enable the creation of complete backups including data, customized settings and already downloaded applications, a lock screen feature, and many others.

(E) Jailbreaking as a Value

Jailbreaking represents not only a matter of supplementing missing features, but it is also a question of principles. All of the participants in the research indicated that they had researched their phones on the Web before purchase, in order to find a phone that can be jailbroken (or one that can run Free Software). As one participant explained, "I buy it, therefore I own it, and therefore I should be able to do whatever I want with it. If I don't have access to the root, I cannot do that. Therefore if I don't root it, I don't own it. I don't really own it."

Even on a basic mobile phone, jailbreaking was the only option when one user tried to add a preferred ringtone from the soundtrack of the film Blade Runner. The same user also added a program to track the schedule of the next bus leaving from his workplace late at night. He commented: "I own my phone, and I own my program. But without jailbreaking the phone, I can't add one to the other."

Using a Free Software mobile phone such as the Nokia N900 represents a matter of principles, too. This participant had to look for such a particular phone on the Web, to find online sellers and to order it from another country, as no Canadian service provider would sell it on the market. Therefore, he also needed cash to pay for the device, and there was no option to buy it with a contract:

It's less shiny, less easy to use. It is also very little advertised. You see it recommended all the time on the online forums of the free software community, but not on the TV. People with the same values as me, they opt for this phone. What you get is open formats for your data, for the application, and everything that you use.

In other words, the N900 is a more secure device, with no need for jailbreaking, and which does not lock user data so that the user can easily control what the phone does and does not from the background.

One of the participants mentioned that it was insulting for him that mobile phone providers describe users who wish to control their devices with such a pejorative term as "jailbreakers":

I refuse to be intimidated by the term jailbreaker. The whole process of locking the phone is offensive for the users. They call us jailbreakers for using the whole potential of the phone and refusing to enter the limits of the network operators or the sellers of the devices. Companies monotype the features, they lock everything down, and thus make it extremely difficult to use. In the end, we pay for the device, then we pay for the access to the network, and finally each time we want to use this network (ex. make a phone call, use the internet, change the ringtone) we have to pay to get it, again. It is unfair.

This example clearly illustrates how the hacker principle of freedom to use technology in general can be applied to mobile phones. For these users, jailbreaking represents the cheapest and most accessible way to obtain applications and features on their mobile phones.

In terms of values, another participant expressed how "it [the jailbroken mobile phone] simply does more for me. I would have changed it long ago if I would not be able to personalize it in the way I wanted." Similarly, another participant said:

For me the choice of mobile phone is related to 'sustainable development' – your data must live on. You don't want to reinvent the wheel every one to two years when your phone breaks. You want this data, personal settings, files, and downloaded apps to live on, not to break and replace them constantly. But you need the proper standards for this aim [referring to open standards, provided by Free Software] and full access to your phone.

This example shows that even on such small devices considered as disposable, the participants are still intending to preserve their data and the personalization settings they had made into the future. Their settings and preferences are in fact more persistent than the life of the mobile phone itself.

Conclusions and Discussion

This paper illustrates the connection between the process of personalization and customization of mobile media devices through hacker principles and the method of jailbreaking. One key observation to be made from this preliminary study is that mobile phone DIY hacking is not an exception to the practice of technology hacking, but is specific in terms of the devices' size, shape, technical limits, and rapid development. While it may be common sense to describe the mobile phone as a limited technology just because it is a telephone by origin, today's mobile devices more closely resemble small computers, with relatively huge data capacities – although their potential in this regard is typically unavailable to ordinary users who maintain their devices' factory settings.

Another interesting observation to consider in this study is that one does not need to be a hacker to jailbreak her or his phone, but will nonetheless tap into hackers' principles

by modifying the technology: particularly the ideology of obtaining full control over the use of the device, the possibility of learning through using it, and the option to repurpose mobile technology, extending its lifespan in terms of hardware, software, data, and practices. In these terms, hacking represents a particular philosophy rather than membership in a specific group or community.

Given that this paper represents an exploratory study, it leaves behind a number of unresolved research questions. Moreover, the dearth of literature in social sciences and humanities fields on the issues of personalization and jailbreaking offers an indication that there is more research to be made in the field. There is also a lack of in-depth comparative analysis between users who jailbreak and those who do not, in terms of their different perceptions on jailbreaking and personalization. How are their views different? What are the values and the leading principles that shape their particular mobile uses?

Another question that would be important to address in future research is the question of who jailbreaks? Are these amateurs, experts, programmers, hackers, or "ordinary" users who have higher requirements related to the use of their phones? What are the missing functionalities that users seek when jailbreaking? Apart from jailbreaking, what other ways of hacking the mobile phones exist (for example, hardware hacking), and how do these practices compare? How might DIY hacking make an intervention into the dominant positioning of users as passive consumers by providers promoting mobile phone replacements as soon as new models come out on the market? These and other questions will comprise the agendas of scholars who wish to bring this topic further.

Indeed, users shape technology: they personalize it and make their own uses of it. As described in the social shaping of technology approach (McKenzie & Wajcman, 1985), users do play an important role in technology development and their agency cannot and should not be ignored. Apple, Google, Nokia and other mobile phone manufacturers will have to change their policies in order to accept innovation by the users if they wish to remain competitive. Apple already uses and profits from the informal community of and market for jailbroken applications. Because without the jailbreakers, the informal developers of applications, and all those who work close to the user, there will not be such an intensive technological development and innovation.

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Footnotes

1. For more information, see Jonathan Zittrain's glossary, explaining the limits of technologies such as the iPhone or TiVo, which "to do not have the capacity to produce user-driven change." http://futureoftheinternet.org/glossary ^
2. Tethering: using the mobile phone to supply Internet access for another device which is otherwise unconnected, using the mobile device as a modem ^
3. http://www.jailbreakme.com/ ^
4. The Free Software definition defines four freedoms of Free Software: the freedom to run the program, to study the program, to modify it for whatever purposes, as well as to redistribute copies of this program. More information is available on the Free Software Foundation (FSF) website: http://www.gnu.org/philosophy/free-sw.html ^
5. The Maker's Bill of Rights, known also as the Owner's Manifesto is available online: http://cdn.makezine.com/make/MAKERS_RIGHTS.pdf ^
6. Despite my will, I did not manage to find a female jailbreaker to invite to participate to this preliminary research. ^

christina.haralanova@gmail.com