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Energy Research & Social Science

journal homepage: www.elsevier.com/locate/erss



Original research article

Mobile phones, batteries and power consumption: An analysis of social practices in Portugal

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ARTICLE INFO

Article history:

Received 2 April 2015
Received in revised form
27 November 2015
Accepted 30 November 2015
Available online xxx

Keywords:

Energy sociology
Theories of practice
Distributed agency
Information and communication
technologies
Youth
Everyday life

ABSTRACT

The article examines how social practices of charging and managing the power of mobile phones are formed. The usefulness of the concept of distributed agency as a tool for the understanding of the dimensions that constitute social practices related to energy consumption is explored. Based on findings from interviews and a survey conducted with adolescents, three moments in the formation of these practices are identified: emergence of elementary battery use, acceleration of rhythm and establishment of links, and normalization. The article provides empirical evidence of the distributed agency of bodies, objects, and socio-cultural contexts in the development of these practices.

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1. Introduction

Mobile communication devices have spread rapidly and are becoming ubiquitous in everyday life. Despite uneven dissemination across the world, mobile telephone subscriptions have nearly reached the number of people on Earth [30]. Concomitantly, the overall energy consumption related to mobile phones has been growing [68]. It is estimated that the global CO₂ emissions of mobile communications may almost triple between 2007 and 2020 [16]. A growing body of literature points out several factors as contributors to the rise of energy consumption related to mobile phones: increasing ownership and rapid replacement of older devices (stimulated by marketing strategies and product design); growing data traffic due to the common use of applications relying on the internet (web browsing, gaming, and especially video streaming, requiring powerful servers and data centers which need cooling); an increasing number of sites of mobile network infrastructure; wide and bright screens; inefficiency during the charging process; standby consumption of battery chargers; among others [8,68,25,41,59].

Notwithstanding recent efficiency improvements to the battery chargers of mobile phones, these still have energy losses, which are increased by the fact that chargers still consume energy when they are left plugged into the grid [28,25].

Few studies focus on human–battery interaction, and these indicate that the way users relate to mobile phones may increase the energy consumption associated with these devices [3,26]. Moreover, Rahmati and Zhong [45] observed that power-saving settings of mobile phones are designed in ways that are hard for users to employ them. These studies have been conducted mostly in the field of computer engineering, often trying to assess models of increasing energy efficiency (mainly by providing more information to users). Thus, they do not offer analysis of how the power requirement of mobile phone batteries is entangled in everyday life practices.

Some studies have analyzed sociological aspects of energy consumption related to the use of information and communication technologies [20,21,15,31,48,47,13,49,50,44,11]. These studies provide insightful and valuable contributions to the analysis of energy consumption related to these technologies. However, none of these studies focuses exclusively on mobile phones.

The energy consumption involved in charging the batteries of mobile phones is a small contributor to the global challenges related to the current energy transition. However, analysis of the social practices of charging and managing the batteries of mobile

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phones sheds light on how these energy-using technologies are embedded in society. This analysis may therefore contribute to the understanding of energy as an “ingredient” of the everyday life practices of which societies are composed [57].

From this perspective, this article seeks to analyze the energy consumption related to mobile phone use by focusing on the practices of charging and managing the power of mobile phones. With this purpose in mind we draw on theories of practice [46,63,64,56,57] and explore the concept of distributed agency [65,66,51] as a useful tool for the understanding of the dimensions that constitute these social practices.

The pervasiveness and embeddedness of mobile phones in young people’s daily lives make adolescents a preferential group of practitioners for analysis of the practices of charging and managing mobile phone batteries. Indeed, the adoption and use of mobile phones are higher among young people [38,39]. In recent years social science has produced knowledge of several aspects of the diffusion and appropriation of mobile phones by young people (e.g., [35,60,14,18]). However, the topic of mobile phones’ energy consumption has generally been overlooked. In a recent review of research on young people’s use of mobile phones, Haddon [24] observed that most studies have focused on their relations with parents and peers. Regarding the relationships between parents and their children, research has shown that the former usually provide mobile phones to the latter and subsequently finance their use. Although this is sometimes a way for parents to monitor children, the mobile phone may also be a means whereby children achieve some privacy and autonomy [24]. On the subject of the relations between peers, research has highlighted the symbolic dimension of mobile phones in young people’s presentation of self, as these devices are often used as indicators of trendiness and popularity [24]. Research has also pointed to youth’s openness to new technologies, pioneering uses and ability to appropriate mobile phones for their own purposes [9]. Our study adds to this literature by explaining how adolescents are recruited to the practices of charging and managing the power of mobile phones. In doing so, we contribute to the understanding of energy consumption in the everyday life of adolescents.

In the following we present a brief introduction to the theories of practice, paying more attention to the three dimensions highlighted by the concept of distributed agency (bodies, objects and socio-cultural contexts) and how they constitute social practices. After presenting the materials and methods used in our study, we analyze the emergence and normalization of the practices of charging and managing mobile phone batteries among adolescents.

2. Understanding practices related to energy consumption

A key idea in the development of the sociology of energy is the acknowledgement of the relevance of understanding mundane consumption. Unlike other things that are consumed in a clearly visible way, energy use is mostly invisible, and derives from services, such as heating, lighting, cleaning [67,54] or connectivity with others. Indeed, electricity and other forms of energy “are essential but, if brought to mind at all, tend to be considered subordinate, instrumental to a more meaningful activity” [23,pp. 4–5]. In the “mobile network society” [9], more and more objects of everyday life consume energy. This consumption is often surreptitious and imperceptible. In order to understand energy consumption, attention should therefore be given to embodied habits, routines, and modes of use of energy services. How these services become configured and appropriated at a societal level as normal practice should thus be analyzed [54]. In this thread, social conventions have a strong influence on the demand for energy services, but as

these services are provided by technologies, attention should also be given to material contexts and conditions of use, such as users’ competences [27].

In this perspective, theories of practice provide a valuable background for the analysis of energy consumption. In spite of being rather heterogeneous and with multiple versions, it can be said that practice theory (shorthand for theories of practice henceforth) is based on the work of Giddens [19] and Bourdieu [5], as recently revived with the contributions of Schatzki and Reckwitz [52], [46] and, in particular within consumption studies, of Warde [63], and Shove et al. [56], among others. In our account we are also especially drawing on Wilhite [66].

Practice theory enables us to understand the complexity of inconspicuous routines by examining how combinations of elements such as materials (things, technologies), competences (skills, know-how) and meanings (conventions, ideas, aspirations), co-evolve, and how these are enacted in the form of patterns of practices, which are carried out by individuals in the course of their normal everyday life and embedded in social dynamics and historical and material contexts [56]. According to Reckwitz [46,p. 249], a practice “is a routinized type of behavior which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, ‘things’ and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge.” It seems worthwhile to highlight some of these elements, namely by referring to the fact that practices are thus seen as skillful movements of bodies, or “routinized bodily performances”, as in the case of walking a dog, cooking or talking on the phone; moreover, these performances require “certain routinized ways of understanding the world, of desiring something, of knowing how to do something”, and are enabled or limited by things [46,pp. 251–252]. Despite the acknowledgement of the relevance of these elements, the roles played by bodies and things in habits and routines still need clarification [64].

In line with this theoretical framework, energy consumption should not be considered as “something performed by individuals” but a “result of the interaction between things, people, knowledge, and social contexts” [66,p.67]. This standpoint can be expanded further through the concept of distributed agency [66], which seems to condense some of the major threads of practice theory. Understanding agency as capacity to influence acts ([40] cit. in [66]), distributed agency means that the capacity of forming a particular practice is shared by agentive aspects across three dimensions of practices: bodies, objects and social contexts [66,51]. By putting forward agency—and not agents—at the center of analysis, rational choice and individual attitudes are minimized. Inasmuch as rational choice theories have conquered a stronghold in the wider consumption studies field, they have failed to take proper account of social and material contexts. Indeed, in the “praxeological family of theories” [46] where we can include practice theory, action should be considered a “conglomerate of many surprising sets of agencies” rather than being fully controlled by consciousness [32,p. 44].

2.1. Bodies and embodied skills

As mentioned above, the body is one of these sets of agencies. In this perspective, the traditional Cartesian distinction between mind and body is supplanted by a conception of an indissoluble mind-body that is immersed in particular social and material environments. According to the anthropologist Ingold [29], the relationships experienced by agents within these environments become embodied as capacities of awareness and response, or skills. The fact that these skills can be considered embodied dispositions for action has similarities with Bourdieu’s concept of habitus. As Bourdieu [6,7] states, lived experiences inscribe habitus

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