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On "DOMESTICATION" or: Who is domesticating what or whom?

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Dear Reader! I can count…, but I left the decision I should have taken, namely what to skip, up to you. There are five points and you might easily concentrate on those ones of most interest to you.

1. Introduction

The "domestication" framework[1] is concerned with the incorporation of a certain technology, or product, into the daily life of a family or an individual user and its temporal-spatial and symbolical nexus. It involves cognitive work while acquiring knowledge about a "new" technology, as well as practical and symbolic work while using and becoming "familiar" with it.[2] Studies applying this framework originally stemmed from media and cultural studies on ICTs (information and communication technologies). By now, the concept is widely used in various consumer studies.[3]

The common grounds are firstly, the strong focus on the user; the main unit of analysis is the individual user or a small social group (e.g. a household, a club) while a potential feedback on production processes usually is not of concern. Secondly, domestication studies emphasise that users create their own practices and meanings. Methodologically, this corresponds with ethnographic and sociological research tools of micro-social studies. Thirdly, most studies focus on the user-technology-relationship of recently introduced technologies, which then is observed over a reasonable time-span, so that the evolution of practices and meanings from first acquisition to "final" integration into the practical-temporal-symbolical habitat can be described.[4]

In the following, I will address „domestication" with reference to further theories in STS and the history of technology. I will give empirical examples from the past development of consumer technologies, in particular ones that underpin the need to link the consumer sphere, where domestication happens, and the producer sphere, where technology is being constructed, designed and marketed, thus bringing the *co-construction of users and technology* to the fore.[5] The examples mainly stem from my PhD research on the mobile consumption of portable electronics which - after the so called "wireless revolution" at the end of the 20th century, often are seen as "blueprints" for 21st century consumer electronics.

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[1] Cf.: Silverstone, Roger; Hirsch, Eric (Eds): Consuming Technologies. Media and information in domestic spaces. London, New York 1992; Lie, Merete and Soerensen, Knut H. (Eds): Making Technology Our Own? Domesticating Technology into Everyday Life. Oslo, Stockholm, Copenhagen, Oxford, Boston 1996.

[2] Cf.: Oudshoorn, Nelly; Pinch, Trevor: Introduction. How Users and Non-Users Matter. In: Oudshoorn, Nelly; Pinch, Trevor (Eds): How Users Matter. The Co-Construction of Users and Technologies. Cambridge M.A., London 2004, pp. 1-25, here p. 14.

[3] For on overview on literature on 20th century consumption cf.: Bingle, Gwen; Weber, Heike: Mass Consumption and Usage of 20th Century Technologies - a Literature Review. Working Paper, Aug. 2002, http://www.zigt.ze.tu-muenchen.de/users/papers/literaturbericht08-16-2002.pdf.

[4] Silverstone et al. have discerned the following "steps" of domestication: acquisition which e.g. includes first thoughts about how to use the technology, the placing within a physical, symbolic, and mental space, the integration into the social practices, the different layers of meaning ascription.

[5] Cf. on co-construction: Oudshoorn / Pinch, 2004.

2. Playing on words: On "taming" producers, "wild" users, non-domestic domestication and the strengths and weaknesses of the domestication framework

Appropriation and *domestication* studies – in German, only the first term is used, translated as "*Technikaneignung*" – have strengths and weaknesses, as any theory does. In the following, after emphasising the strengths of the framework, I will challenge its research tradition, namely its predominant focus on the household and that part of consumption which spatially takes place inside this realm,[6] as well as its focus on actual users while excluding non-users, be it non-adopters, anti-users or dropouts.

Only a thorough analysis of the consumer context, including social, cultural, political and economic aspects as well as everyday practices, the user experience as such, meanings, status and lifestyle issues, public discourse etc., will be able to describe how e.g. the Sony Walkman from 1979 turned from a sign of anti-socialness into a cultural icon representing "freedom", "individualism", and "pleasure always at call".[7] While Sony, in its early advertising, presented the Walkman as a fun and sports tool which might even be used by two people in company, public discourse was dominated by sceptical cultural critics and adult anti-users that defined the Walkman as a „technology for a generation which has nothing to talk any more".[8] (cf. Pict. 1-2)

Pict. 1-2: PR-photography by Sony, showing cycling partners, and press coverage in a German newspaper, showing two shopping girls with headphones, 1981.

Teenagers, who were the main user group and who valued the new experience of listening while on the move, were seen as individualistic or even autistic. In addition, the West-German industry did not believe in the Walkman design: Who would buy this play-only unit, while the standard multifunctional radio cassette players could also record? and who would want to run around with headphones? Over the next years, the consumer context changed: During the „electronic 80s", further electronic leisure offers were introduced (e.g. satellite television, video games, VCR, PCs), individualized entertainment gained the upper hand over shared communal activities, and changing leisure patterns emphasized individuality as well as mobility. Since the mid-80s, also adults became fond of pocket stereos. The many ways users integrated them in their daily routines, e.g. while jogging, commuting, or while lying on the dentists` chair, endowed them with the meaning of a fashionable fun and also a potentially relaxing tool for an up-to-date, busy, yet

[6] Cf. e.g. Silverstone/Hirsch who define the family household as the "moral economy" of consumption.
[7] Headwords of a newspaper report, cf.: *F.A.Z.*, July 27, 1999. p. T1 f („Als die Töne laufen lernten").
[8] Cf. *Stereoplay*, No. 2, 1981, p. 13.

fit person. Besides, the wide appropriation of the Walkman prepared the grounds for further cyborg technologies such as the cell phone.

A further strength of the domestication framework is its close attention for different appropriation paths e.g. in distinct social groups or societies. In the U.S., it was not the creation of a discrete soundscape in public that stirred confusion, but the opposite, its absence: American contemporaries were annoyed by public boom box users. Thus, what was interpreted as an anti-social tool in West Germany, was perceived as a tool of social respectability in the U.S.[9] The American pendant to the German stereotype of the young male subway user listening to loud heavy metal music was the African-American ghetto dweller shouldering his boom box on every street corner. Both stereotypes ignored and deprecated the specific values and meanings that Walkman and boom box users expressed through their practices, and they also prevented certain user groups from using these portable technologies. Despite global designs then, there were local differences in consumption, due to prevailing norms regulating private and public behaviour and performance. Such differences later on could be found in the appropriation of the cell phone.

While domestication seems appropriate to grasp the complex socio-cultural dynamics of everyday life, such strengths go along with some weaknesses. Domesticating carries the semantics of converting something to "domestic" uses and of "taming". Some researchers play with the analogy of domesticating animals and crops: technologies are taken from a "wild" outside sphere into the domestic one, and they are „tamed" by (re)making them into something close or even personal. Thus, technology seems to be endowed with more of a life of its own than in the term "appropriation". To some extent this makes space for a mutual shaping of artefact and user, e.g. when it is said that "(t)his process of taming is characterized by reciprocal change."[10] Technology thus does something to users, users do something with and to technology. But then we have to ask: Who is actually taming what or whom? And what exactly does this mean? Is it a tinkering by users? Their experimenting with those features that allow for a creative arrangement? Is it a DIY practice or a re-assembling of a product, which can be done by users (thereby turning into "producers"), but more often is done by producers? Or giving a technology new symbolical meanings which, again, not only can be done by users, but also by non-users, by general discourse or via a given materiality, i.e. by producers via design?

In the given example, first of all, the term might not be suitable to grasp the spatial concepts at stake.[11] The usage of portable radios, stereos or cell phones crosses the border between private and public and creates its own, temporary-local "technoscapes". New forms of publicly displayed "conspicuous consumption" have arisen, since portable, and sometimes even "wearable" technologies (Bluetooth, headphones etc.) are used as lifestyle markers and show-off-artefacts. Mobile technologies have become a distinct element of both our domestic routines and of urban culture. Rather than "domestication", we here have forms of a "public-ization" of technology-bound practices, which previously had been considered as private, domestic ones. In more general words, new kinds of localities have come to the fore in consumption history: mobile consumption spaces, new relationships between the domestic and non-domestic; between private and public; between the locality of consumption and the globality of production.

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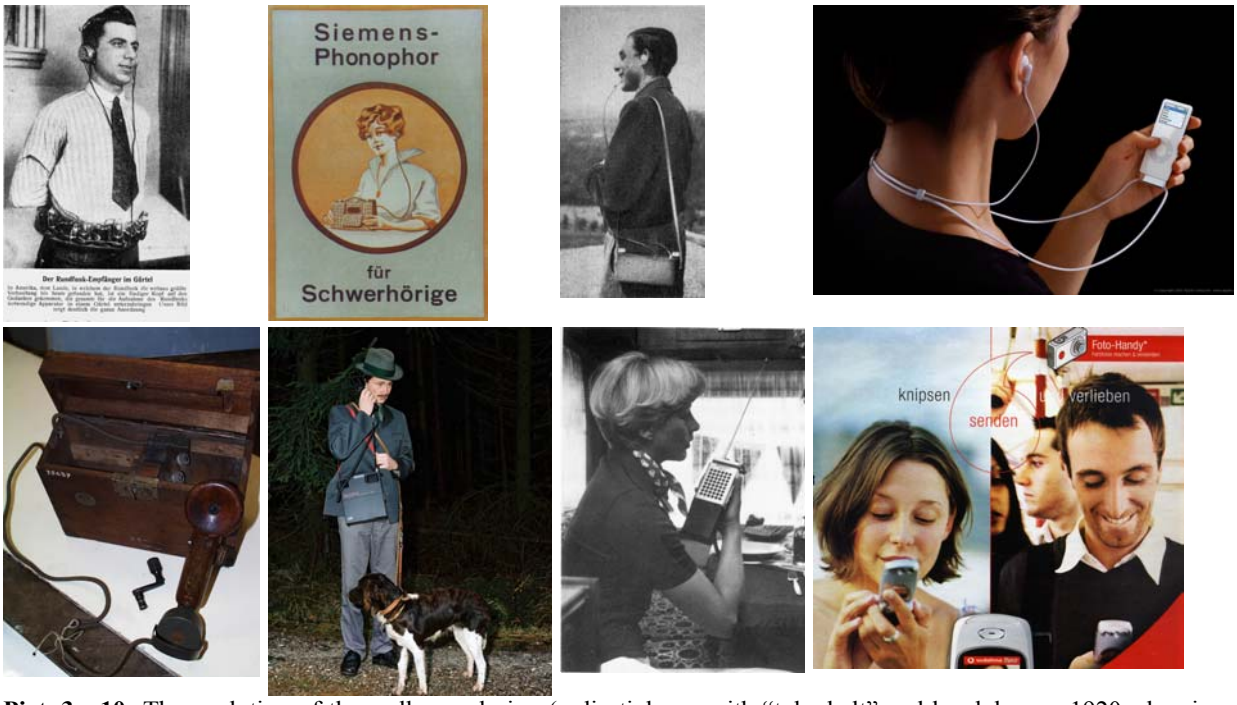
[9] The *New York Times* hailed the Walkman as "a civilized alternative to the portable radio-cassette players that blare on streets and subways." Cf.: New York Times, April 17, 1981, p. B 4 ("Private Music and Public Silence").

[10] Cf. Lie & Soerensen, p. 8

[11] Leslie Haddon, in constrast, tries to include these new phenomena of mobile usage into the domestication framework, cf.: Haddon, Leslie: Information and communication technologies in everyday life. A concise introduction and research guide. Oxford 2004.

Secondly, the connotation of taming might be confusing. It was the youths of the Afro-Caribbean-American ghettos, which seemingly made the boom box "unruly" by their non-domestic use of it. They turned it into a cultural icon and were re-enforced in doing so by new powerful models marketed to them. Conversely, one could say that, e.g. with the slim-line, pastel coloured boom box models of the mid-80s, producers "domesticated" the boom box so that grandmas could accept a box in their homes. Similarly, with hifi-quality pocket stereos encased in silver boxes, producers "domesticated" the Walkman and appropriated it for adult audiophiles.

Thirdly, enlarging this line of thought on the timeline, the current embracing of electronic wearables is the result of a gradual and long-term socio-cultural appropriation over the course of the 20th century, during which also the designs, thus the "material culture" of the artefacts, changed, namely from awkward prostheses, e.g. pocket radios reminding of hearing aids, into fashionable accessories (cf. pict. 3 - 10). These century-spanning "artefact biographies" are difficult to grasp in micro-studies; besides – maybe due to its origin in media studies – the domestication framework does not put a particular emphasis on the materiality and the specific design of the things being used.



Pict. 3 - 10: The evolution of the walkman design (radio tinkerer with "tube belt" and headphones, 1920s, hearing prosthesis, 1930s, radio tinkerer, 1950s, iPod, 2005) and of the mobile phone design (military phone, beginning of the 20th century, mobile phone with shoulder strap, 1980s, CB radio handset, around 1980, recent cell phone ad)

Lastly, I often have the feeling that the term domestication, both with its connotations of a "wild" technology that is tamed and cultivated by the users and of a technology taken from outside into the home, somehow descends from an old-fashioned and slightly negative attitude towards technology. It is society itself which produces (and thus also has to account for) its technology, and vice versa, "technology is society made durable", to quote Latour.[12]

[12] Latour, Bruno: Technology is society made durable. In: Law, John (Ed.): A Sociology of Monsters. Essays on Power, Technology, and Domination. London 1991, pp. 103-131.

In this reciprocal process, a "taming" already happens on the producer's side, when producers try to "design the user experience" (cf. Workshop 2005). E.g., by the strategy of black boxing, producers decide which scientific/technical aspects they take out of consumers' sight and experience, leaving the black parts of technology in the power of the producers; they inscribe a certain „script" (Akrich) into technology, thereby affording certain practices; they design multiple models and features (cf. Norman's featuritis) to satisfy different lifestyles; they design interfaces, that ultimately constitute the main point of user-technology-interaction; they purposefully design surfaces that might enhance the aesthetic or haptic sensations of the user. Balancing between black boxing and featuritis, they either favour a simple or a complicated user interaction and allow for a different degree of user creativity. Seen in the long run, it was also producers who "domesticated" the once mobile radio technology and turned the (male) tinker toy into an electrical and domestic consumer product. Producers recasted the many technical parts of the radio (antenna, tubes, horn, etc.) and designed furniture-like and sealed radio boxes, which could be manufactured in mass, which promised an easy and safe use, and which aesthetically fulfilled the norms of domesticity. The boxing of technical artefacts tries to match the aesthetics of the assumed spaces of usage (be it the domestic radio set or the pocket-sized cell-phone, whose casing not only fits our pockets, but also explores our tactile senses…), but it also hides parts of the technological functioning and reduces the scope of the user-technology-interaction, be it tinkering, repairing or any material re-assemblage. Though over the course of the 20th century, consumer technologies turned into complex high-tech and science-based artefacts, simplicity of use, so-called intuitive understanding, aesthetics as well as lifestyle issues became leading design paradigms. „Technology should be as uncomplicated as the packaging around it", e.g. a recent advertising slogan by Philips proclaimed, and cell phones or walkmans are not only used, but also designed as fashionable garments and expressive accessories.

3. "Domestication" and its theoretical place in the history of technology

The domestication framework had been thought provoking for the discipline of the history of technology, since consumers were conceptualized as actors in their own rights and with their own rules, rather than irrelevant variables, dependent on production. Referring to the concept of the *machine as a text* and further *semiotic approaches*, e.g. the term *user script* was coined to emphasize that users always write, so to say, their own agendas.[13] Domestication studies showed that the consumption of technology is not so much driven by efficiency imperatives as by users' impulses to shape their identity, to organise their lives, or to subvert or support cultural norms. Thus, it seemed rather the rule than the exception that the agendas of consumers differed from those producers initially had in mind when designing their products, be it Edison's phonograph (which, in his mind, should have been used as dictation equipment), the recorder (which was used by teenagers to cheaply copy favourite pop music instead of e.g. creating a family voice album as producers for a long time advertised them), or the answering machine (which, once the mass consumer appropriated it around 1990, was not only used to record a caller message, as promoted, but also to filter calls). Inspired by Michel de CERTEAU, many authors described such practices as *subversive* uses.

While domestication studies need not analyse the "making of technology", STS as well as the history of technology aim to explain the specific development of a technology. Thus, the

[13] Gjoeen, Heidi; Haard, Mikael: Cultural Politics in Action: Developing User Scripts in Relation to the Electric Vehicle. In: Science, Technology & Human Values, 27, 2002, pp. 262-281.

question arises how much power and influence users have in the shaping of technology, e.g. what influences their specific domestication might have had on design and functions. If we focus on 20th century mass consumption technologies – be it soap, cereal or consumer electronics – , it is less than clear how users could influence "technology in the making", as the rising consumer society is characterized by an ever increasing gap between producers and users – due to e.g. innovations being multilayered and globally dispersed processes; due to the diversification of offers; due to the cultural and local gap between producers and consumers which only seem to be linked by the technical artefact. Domestication studies then, at first thought, might be wise to analyze users in their own right, without speculating on how domestication and production might relate. Thereby, they "go beyond a rhetoric of designers' being in control", as Oudshoorn and Pinch recently emphasised (p. 15).

In history of technology, at first, the described gap enforced the tendency to configure producers as the main agents. With the metaphor of the *consumption junction*, Ruth Schwartz COWAN transformed the "passive" consumers into active agents. With it, she suggested a network concept by analysing the web of technical alternatives as well as social relations and constraints at a certain point in time and space, within which the consumer makes his or her choice.[14] This choice then and the consumption practices (i.e., avant la lettre, domestication) affected which technology was further developed; users became the agents of the diffusion of technology. While the "consumption junction" hardly crossed the border to the making of technology, the theory of the *social construction of technology* explained the latter: Technology was defined as the outcome of a negotiation process among so-called "relevant social groups" with an interest in the technology at hand, be it engineers, or users. Trevor PINCH and Ronald KLINE demonstrated the role of users for the case of American farmers, who appropriated the cars and telephones on the market according to their needs. Since producers reacted to this with corresponding offers, the farmers had even turned into *co-producers* of technology.[15]

The framing of users as – sort of pervasive, yet mostly oblique - co-constructors of technology became explicit in the recent *mediation* approach. Mediators are defined as any institution or actor, be it advertisers, market researchers or retailers, who speak on behalf of either users or producers and which mediate their different agendas. Thus, mediation takes place in this continuum between the spheres of production and consumption. Many recent STS studies define mediating as the "missing link" to explain the mutual shaping of society / users and technology: E.g. Johan Schot and his co-authors use the term *mediation junction* to refer to that point, „at which consumers, mediators, and producers meet to negotiate, articulate, and align specific technical choices and user needs."[16] In this perspective then, consumers turn into co-producers, once e.g. marketing observes their domestication and provides the feed-back-loop to producers. In the next part, I will ask rather critically to what extend GSM cell phone users then co-produced this technology by way of their unexpected domestication.

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[14] Cf.: Cowan, Ruth Schwartz: The Consumption Junction: A Proposal for Research Strategies in the Sociology of Technology. In: Bijker, Wiebe E.; Hughes, Thomas P.; Pinch, Trevor (Eds): The Social Construction of Technological Systems. New Directions in the Sociology and History of Technology. Cambridge M.A., London 1987, pp. 261-280.

[15] Cf.: Kline, Ronald; Pinch, Trevor: Users as Agents of Technological Change : The Social Construction of the Automobile in the Rural United States. In: Technology and Culture, 37, 1996, pp. 763-95

[16] Cf.: Schot, Johan; de la Bruheze, Adri A.: The Mediated Design of Products, Consumption, and Consumers in the Twentieth Century. In: Oudshoorn / Pinch, pp. 229ff; Oldenziel, Ruth; de la Bruhèze, Adri A.; de Wit, Onno: Europe`s Mediation Junction: Technology and Consumer Society in the 20th Century. In: History and Technology, 21, 2005, pp. 107-139.

4. How past domestication shaped technology: The example of the GSM cell phone

While the GSM planners envisioned the short message service as a tool for concise textual business communication and as a method to mass distribute short bits of information on traffic, weather or stock prices, it was users who began to send brief texts as a means of everyday coordination and as intimate and often emotional communication. The suppliers of cellular radio did not foresee this use at all, because, in their eyes, the keypad of a cell phone was too awkward and clumsy for this. Thus, when the SMS was introduced in 1994, German network companies established special call centres where an operator would accept the oral message and then, tape and send it. However, producers were fast to react to the unforeseen domestication of the SMS: New SMS-based services were implemented; the T9 software was included in cell phones to facilitate the key input. Furthermore, cell phone interfaces were designed differently (cf. pict. 10 - 13). Interfaces in general can be said to shape both the symbolical meaning of technology as well as our bodily gestures. When GSM phones were introduced in 1992, due to the state-of-the-art technology, they were quite big. Buttons were arranged with a lot of spacing between them – an ergonomic design option designers had chosen due to the popularity of phoning while in the car. The increasing use of cell phones in everyday life went along with sizes designed to be small enough for the pocket and later on, for a one-handed use. This again went hand in hand with the fact that most users, and in particular younger ones familiar with the Gameboy, began to operate their phones with the thumb rather than the index finger.



Pict. 10 – 13: Cell phone user, 1993; finger input, 2005; advertising the recent "thumb culture", 2004

Thus, one could argue that teenagers and adults – by way of producing texts and using thumbs – shaped a part of the GSM cell phone; industry and designers had realized their domestication patterns and optimized (immaterial) offers and (material) artefacts accordingly; the specific mobile communication cultures co-evolved with this technology. In my view then, domestication should be linked back to the production sphere - but without losing critical acuteness. One should keep in mind that producers, inspired by the domestication of the SMS, created a vast array of new mobile services, ranging from ring tones to pornographic screen savers, which can be downloaded via SMS. Yes, marketing does obverse users in their domestication – but such processes should not be valued as co-construction. Rather, they should be marked out as corporate instruments that serve to generate powerful *user images* that try to anticipate future domestication, and that also often also intend to actively shape this upcoming user culture.

At this point then, we have entered the tightrope walk where producers', or more specifically designers', endeavor to take user wishes and user cultures into account at the same time also means that producers follow their commercial imperative to make profit and, since the last decades, increasingly have been intruding previously unobserved private realms. Which perspective should we take?

5. Some last remarks on design and domestication, on "products and practices"

Designers, for a long time (and some even do today), saw themselves as capable to find the "optimal form" (in German: "die gute Form") while conceptualizing themselves as guards and connoisseurs of user wishes or even as immediate user representatives (cf. the so-called „I-Methodology").[17] „Real" users seldom were included in the first design processes, as users – in accordance with prevalent economics literature – were seen as unable to generate new and visionary uses.[18] If users were studied more thoroughly, is was the group of „early adopters", which, according to Roger's theory of diffusion, are seen as open-minded enthusiasts of technology.[19] Some companies like Sony, with its company imperative „do what has never been done before", developed a cult around creating new artefacts without relying on user studies. Yet, having a closer look, Paul Kunkel showed that Sony designers were lead by a rather rigid "product-user-lifecycle" model, which associated the product/user/domestication-stages with the daily course of the sun (sunrise to sunset). While Sony designers, at sunrise, hurry to get out a first version, later on, they would differentiate a product according to changing user expectations.

Recent design theory underlined that consumers take the functioning of an artefact for granted, thus, designing its aesthetic and symbolic expressions is seen as highly important, even more so, while digitalization, the de-materialization of products and computer-aided design increasingly detach designers from material constraints as well as the long-behold „form follows function" paradigm.[20] Design handbooks seem to emphasise the need of detailed empirical user studies. Nokia usually serves as a "success story": This company employs ethnologists who research the user behaviour around the globe and whose research results are systematically fed into to the innovation and design process. Nokia-designers nowadays use a design approach which includes the so-called "Contextual Inquiry" (CI):[21] CI observes users with ethnographic methods in concrete everyday situations, as it is assumed that routine practices hardly can be explored by just interviewing people about their behaviour. A main focus of Nokia design, by the way, lies on the user interface: „(...) the heads of the superpowers, *industry* and the *consumer*, meet in a user interface", Nokia-authors postulated.[22]

In his latest book, Leslie Haddon emphasises that also industry, e.g. ICT companies, should participate in and will gain useful insights by domestication studies. Besides, in a new

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[17] Vgl.: Oudshoorn, Nelly; Rommes, Els; Stienstra, Marcelle: Configuring the User as Everybody: Gender and Design Cultures in Information and Communication Technologies. In: Science, Technology, & Human Values, 29, 2004, S. 30-63.

[18] „Users are not inherently innovative. On the contrary, involvement of users (...) can also result in a situation of inflexibility and lock-in", conclude Hoogma and Schot in a study on the introduction of the electrical car, cf.: Hoogma, Remco; Schot, Johan: How innovative are users? A critique of learning-by-doing and -using. In: Coombs, Rod; Green, Ken; Richards, Albert; Walsh, Vivien (Eds): Technology and the Market. Demand, Users and Innovation. Cheltenham, Northampton 2001, pp. 216-233, here p. 230. The same tenor can be found in: Hamel, Gary; Prahalad, C. K.: Competing for the Future. Boston 1994, here pp. 99-103.

[19] Cf. Haddon, Leslie; Paul, Gerd: Design in the IT industry: the role of users. In: Coombs / Green / Richards / Walsh, pp. 201-215. Also Sony was said to gain the early consumer feedback mainly be observing the early adopters in their main stores, called Sony Centres. Cf. on this: Kunkel, Paul: Digital Dreams: the Work of the Sony Design Center. Kempten 1999.

[20] Cf. Steffen, Dagmar: Design als Produktsprache. Der "Offenbacher Ansatz" in Theorie und Praxis. Frankfurt a.M. 2000, p. 6.

[21] The classic literature they refer to is: Beyer, Hugh; Holtzblatt, Karen: Contextual inquiry. Defining Customer-Centered Systems. San Francisco u.a. 1998. Cf.: Lindholm / Keinonen / Kiljander: Mobile usability: How Nokia changed the face of the mobile phone. New York, London 2003.

[22] Vgl. Keinonen, Turkka: Introduction. Mobile Distinctions. In: Lindholm / Keinonen / Kiljander, pp. 1-7, here p. 2.

book edited by him and others, users are described as "Everyday Innovators".[23] Practices and products then are increasingly seen as interrelated, and industry's awareness of the user has arisen dramatically. Researchers, in my view, however, should be sceptical about such nice storylines of users co-producing their technology. E.g. in the cell phone business, quotes by industrials, marketers, and designers that the user decides about success and failure and has to be respected, abound, and on a second look, they have turned into a threadbare rhetoric. Recently, Oudshoorn and Pinch warned that semiotic approaches – and they subsumed e.g. the "configured user" of innovation studies under this header – "conceptualize the successes and failures of technologies mainly in terms of the extent to which designers adequately anticipate users' skills and behavior. (…) users tend to be degraded to objects of innovators' strategies." (p. 15) Producers have spent an increasing amount of effort, money and work force on usability trials, design, marketing or advertising. It might be good news then that users, as most of the aforementioned examples have demonstrated, have been and will be unpredictable agents in the shaping of mass consumption technologies, precisely because they construct their own unforeseeable practices and experiences as in particular domestication studies have highlighted.

[23] Cf. the upcoming book: Haddon, Leslie / Mante, Enid / Sapio, Bartolomeo / Kommonen, Kari-Hans / Fortunati, Leopoldina / Kant, Annevi: Everyday Innovators.