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WARM EXPERTS FOR ELDERLY USERS: WHO ARE THEY AND WHAT DO THEY DO?

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Abstract: *This paper examines "warm experts"—that is, nonprofessional persons who help inexperienced users come to terms with digital devices—and their significance for the use of digital media in everyday life by elderly Swedes. We analyze data from a national survey (N = 1264) and from qualitative, semistructured interviews with 18 elderly Swedes (aged 65+). Our data reveal that the warm expert usually is a closely-related person, often a child or grandchild, who is strongly involved in nearly every stage of technology domestication, from appropriation (i.e., identifying the need, buying the item, and installing and adjusting it) to incorporation (i.e., choosing and downloading suitable apps, teaching how to use them, and solving technical problems). Although the clear majority of elderly Swedes have been online for more than a decade, the need for continuous assistance from warm experts seems to persist also among experienced users.*

Keywords: *warm experts, elderly, digital media, domestication, survey, interviews.*

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INTRODUCTION

In 2005, media researcher Maria Bakardjieva (2005) published her book *Internet Society: The Internet in Everyday Life.* Her results and analyses were derived from longstanding, ethnographically inspired research on the use of and perceptions about computers and Internet connections in Canadian households. Her insights were based largely on in-depth interviews with a great variety of users of the then-new information and communication technologies (ICTs), conducted in the years before and after the turn of the millennium. Theoretically, the book was inspired by a number of interrelated research traditions. It was, for instance, inspired by Andrew Feenberg's (1991) critical theory of technology, especially regarding the role of human agency vis-à-vis technological systems. The book also drew on semiotic approaches to technology (Woolgar, 1996), which treat technology as at least partially open texts, possible for users to interpret and reinterpret. In order to theoretically grasp users' everyday life in general and technology's place within it in particular, Bakardjieva also drew on Henri Lefebvre in order to attend to "the productive work…performed by users through and around the Internet" (Bakardjieva, 2005, p. 55). Among the many rich insights her book offered about how everyday users both make sense of and use ICTs in their everyday lives, her notion of "warm experts" (Bakardjieva, 2005, p. 98) stood out as a particularly useful contribution.

Bakardjieva's (2005) notion of warm experts highlighted the important role that informal, nonprofessional "experts" play in helping inexperienced users come to terms with their home computers and Internet connections. These experts were important for getting people started using new ICTs and helping them feel comfortable in the new, emerging online environment. In Bakardjieva's theoretically inspired description, the warm expert "mediates between the technological universal and the concrete situation, needs and background of the novice user with whom he is in a close personal relationship" (Bakardjieva, 2005, p. 99). In the late 1990s and early 2000s, at the time when Bakardjieva conducted her empirical studies, the warm expert was typically a family member, relative, friend, or someone else within the new user's social network who happened to know a bit more about ICTs than the computer and Internet beginners did. As this was at an early stage in the development of everyday Internet usage, the warm experts identified in Bakardjieva's studies were often involved in tasks related to installing computer equipment (i.e., setting up an Internet connection) and getting people familiar with the Internet by identifying online areas of interest to them. In a way, the warm experts mainly served as resources to get novice users going, offering them an entrance to everyday use of online media.

Everyday ICTs are, however, in a state of constant change. During the time of Maria Bakardjieva's empirical studies, everyday Internet use at home was something being played out mainly on stationary home computers. These computers were most often connected to the Internet through a fixed telecommunications network. Since the early 2000s, however, users have experienced the continual introduction of new devices, for instance, laptops, smartphones, and tablets. Together with the fact that users nowadays get online access mainly via wireless connections, these devices have made Internet usage a more personal, portable, and mobile experience. Apart from offering convenience, this reality also complicates Internet usage for some everyday users and potentially adds a number of new items to the list of tasks for warm experts to help with. This is especially true as the technological development has been accompanied by the digitization of all kinds of societal services—commercial as well as public

ones. In short, both ICTs themselves and Internet-based services of all kinds have become far more ubiquitous today compared to the early 2000s. To us, this points to the need for research to examine what kinds of tasks contemporary warm experts are performing. Further, as the character of users' digital environments is changing, it also is interesting to investigate the identity of these warm experts: Who are they and what relationships do they typically have with the users that they help?

Sweden is a good case for such a study. As we have shown elsewhere (Olsson, Samuelsson, & Viscovi, 2019), the level of access to ICTs in Sweden is high compared to the rest of the Western world (World Internet Project, 2016), and this includes elderly users. The proportion of older people in Sweden with access to ICTs is significantly higher than in, for example, Switzerland (Friemel, 2016, p. 324) and Spain (Tirado-Morueta, Hernando-Gómez, & Ignacio Aguaded-Gomez, 2016), to compare Sweden with some other European countries. Eighty percent of Swedes in the age span of 65 to 85 years have an online connection. They also use their digital devices frequently. The average individual aged 65 to 85 must be considered a regular user of the Internet (Olsson, Samuelsson, & Viscovi, 2018). Hence, emerging patterns of digital inclusion and exclusion among senior citizens in Sweden today—as well as elderly Swedes' need for warm experts—can, to some extent, serve as a harbinger of possible future developments in other digitizing societies.

From Domestication to Warm Experts: A Theoretical Reflection

In this context, we tentatively define warm experts as nonprofessional persons who help more inexperienced users to come to terms with digital devices and services. The concept of warm experts can be situated within a wider theoretical context: domestication research. The theoretical notion of domestication was first established in the 1990s (Silverstone, 1994; Silverstone & Haddon, 1996; Silverstone & Hirsch, 1992). Domestication was inspired by and is intimately related to various strands of research within the humanities and social sciences, notably the general paradigm of social shaping of technologies (SST; cf. Lie & Sørensen, 1996; Mackenzie & Wajcman, 1999; Woolgar, 1996) and some instances of media research (cf. Bausinger, 1984; Brosveet & Sørensen, 2000; Olsson, 2006; Williams, 1974), as well as studies of consumption (cf. Du Gay, 1997). The notion of domestication shares with these traditions the conviction that technologies are not drivers of social change. Rather, technologies are always understood to be social and cultural artifacts: The invention as well as the diffusion and use of technologies must be unpacked as social and cultural phenomena. Hence, domestication research stands in opposition to technologically deterministic views of the relationship between technology and society/culture.

An important focus in research about the domestication of ICTs is the users themselves and how they socially and culturally shape (i.e., understand, make use of) ICTs in their everyday lives (cf. Haddon, 2016). Or, to put it in slightly more theoretical terms, how do everyday users negotiate with the technological affordances (Hutchby, 2001). Domestication research began in the 1990s with a specific ambition to understand and analyze in-home use of media, and research usually was analytically centered on television (Silverstone, 1994). Since then, research has expanded to include emerging media technologies, such as computers (cf. Berker, Hartmann, Punie, & Ward, 2005) and mobile phones (cf. Green & Haddon, 2009).

Early studies of domestication inspired further conceptual development (Haddon, 2016). Four concepts appeared to be particularly useful for increasing the understanding of how new ICTs became part of everyday life: appropriation, objectification, incorporation and conversion. In his recent overview of domestication research, one of the field's most prominent figures, Leslie Haddon, offered an insightful and handy explanation of these more fine-grained concepts. He referred to appropriation as the household's negotiations leading to the acquisition of a new ICT. The notion of objectification deals with space: that is, how new ICTs are spatially organized within the household as they arrive. The notion of incorporation draws attention to "how people [use] them and more specifically how that use [fits] into people's routines and hence their time structures" (Haddon, 2016, p. 20). Lastly, conversation relates to how households present themselves and their ICT practices to others: how they talk about technologies and display them.

These concepts help call attention to important aspects of domestication. Researchers are alerted to discussions within and around the household concerning whether the new ICT should be acquired (appropriation). They also point to the importance of everyday spatial organization of the home (objectification), as well as everyday routines (incorporation). Additionally, researchers become aware of symbolic aspect of ICTs and how ICTs become part of the household's negotiation of identity (conversion).

Social networks play an important role in all these phases. This was made clear very early in the history of domestication research (Murdock, Hartmann, & Grey, 1992), for instance, with the concept of social resources (cf. Olsson et al., 2018, 2019). The social dynamics within households (wife–husband, children–adults, among siblings, etc.), as well as the dynamics between households and their wider social network (friends, relatives, colleagues, etc.), are important components in shaping both perceptions about and use of ICTs. This thread—the impact of social networks on a household's domestication of ICTs—is what Maria Bakardjieva (2005) picked up and developed further with her concept of warm experts. It very clearly highlights the social and cultural character of domestication in general and the part played by people's social networks in particular.

One indication of the usefulness of the concept of warm experts is the simple and obvious fact that other researchers have made good use of it. Drawing on in-depth interviews with elderly Norwegians, Lüders and Gjevjon (2017) argued that social life is important for elderly ICT-users in several different ways. They noted that users "with a richer social life…tend to experience a double benefit: both having people to communicate with online and having close people acting as warm experts" (Lüders & Gjevjon, 2017, p. 72). In recent studies informed by the concept, researchers have also explored the identity of warm experts, that is, who performs this role. For example, Comunello, Fernándèz Ardevol, and Mulargia (2017) referred to "young relatives and young people in [the] relational network" (p. 806) as elderly users' warm experts (see also Barrantes Cáceres & Cozzubo Chaparo, 2017), which points to an intergenerational exchange between elderly users and younger warm experts. Examining the kinds of tasks that warm experts become involved in executing, Leong (2017) noted similarities between warm experts and "warm gatekeepers" in China. Similar to how gatekeepers (Katz & Lazarsfeld, 1955) are identified in the literature—as friends and acquaintances who introduce news and new innovations within their social networks—warm experts are described as being involved in introducing programs or applications. According to Leong (2017), warm experts are sometimes very concretely involved in the actual downloading and installation of applications. However,

Oreglia and Ling (2018) noted that they also are important assets when it comes to "digital-imagination." Oreglia and Ling defined this as "the process by which individuals within a society develop an understanding of the potentials, the limitations, and eventually the threats of digital technology" (p. 2). In this regard, warm experts play a role in framing what technologies are and how they can be used.

In recent years, contemporary warm experts have been the subject of research that has produced some important insights; however, this does not mitigate the need for further work. Rather, we agree with the view expressed by Courtois and Verdegem (2016) in the conclusion to their article on social support and digital inequality: "More specifically, we urge further research to explore these social networks and identify warm experts, their skills' levels and ways of offering support, which allows understanding its social dynamics" (Courtois & Verdegem, 2016, p. 1524).

Aim and Research Questions

Our goal in this article is to contribute to research on the role and identity of contemporary warm experts. To do so, we draw on two sets of data covering Swedish senior citizens (aged 65+ years). The results and analyses make use of (a) data from a large Swedish survey (N = 1,264, response rate 63%) and (b) data from interviews with elderly Swedish users. We pose two overarching research questions for this article:

1. For what purposes do elderly Swedish ICT users need warm experts?
2. Who are elderly Swedes' warm experts?

The first question directs attention to the kinds of ICT problems that elderly Swedes experience in their everyday lives, that is, the problems for which they need help. Hence, it also points toward some of the actual practices that are part of the role of warm expert. The second question focuses on the warm experts themselves, in particular their identity and relationship to the elderly user.

For each research question, we use both kinds of data, that is, survey data as well interview data. The data and analyses are discussed in detail below.

METHODS

The research presented in this paper is based on two different types of empirical material: (a) a postal survey and, more importantly, (b) semistructured interviews. Apart from being a complement to a field dominated by qualitative studies, the survey data helped us to understand to some extent the needs for warm experts and certainly helped us to reveal the prevalence of warm experts, elucidating and ranking their social relations to the elderly. The interviews, inspired by Selwyn's (2004) thinking about technological histories, make it possible to analyze warm experts' involvement within and throughout the domestication process, thereby contributing to the research on domestication as well as warm experts.

Prior to the collection of the data, interviews were conducted with experienced instructors and mentors at SeniorNet Sweden, a nonprofit organization that supports ICT-usage among elderly Swedes. These interviews provided information about common problems seniors have with computers, tablets, smartphones, and so forth, and the questions they ask about them. This

information was used as inspiration in the construction of survey items and interview guides for the semistructured interviews.

Survey data were collected in the autumn of 2015. A simple random sample consisting of 2,000 individuals between the ages of 65 and 85[1] was drawn from the SPAR register (*Statens personadressregister*), which is administered by the Swedish Tax Authority and includes every resident living in Sweden. A postal questionnaire was distributed to these 2,000 individuals, who were given the option of responding either by mail or digitally (an option only 64 individuals took advantage of). A total of 1,264 questionnaires were returned, giving a gross response rate of 63%. Eighty percent of respondents (i.e., 1,011 individuals) reported access to digital devices. (The nonusers, the remaining 20%, representing 253 individuals, are not included in the analysis below.)

Overall, the representativeness of the sample in relation to the age group in question—65 to 85—is satisfactory and meets the standards usually accepted in Swedish surveys (cf. Bové, 2017). However, we identified a slight overrepresentation of women among respondents in the lower end of the age range and underrepresentation of both men and women with a medium level of education (see the Appendix).

Between March 2015 and June 2017, semistructured interviews were conducted. The interviews mainly took place in the participants' homes, most often at their kitchen tables, but occasionally in other, more public venues. In our selection of interviewees (snowball selection), the ambition was to obtain variation in age, income, education, civil status, and residence. Thus, couples as well as singles where interviewed, elderly in both rural and urban areas, elderly with shorter formal education and elderly academics, and newly retired persons and "experienced" pensioners. We note that all interviewees were in good health: They lived in their own homes and managed everyday life without the assistance of home care and similar services.

Altogether, 18 individuals (9 men and 9 women) were interviewed for 60 to 90 minutes. In six cases, couples were interviewed together. The interviews where recorded on smartphones—which sometimes served to enrich the interviews with discussions about the device's many capabilities—and then transcribed verbatim. All interviews were conducted in Swedish by Swedish interviewers. The quotes in English in this paper have been translated from Swedish by the researchers. Only comments that were obviously digressions have been left out. The shortest transcriptions were 9,000 words, the longest about 15,000.

The interview guide was informed by Selwyn's (2004) thinking about technological histories. Thus, the interviewees were asked to talk about when they first handled computers and digital technology. Most of them mentioned experiences from their working life, although they also clearly remembered their first cell phone, home computer, and so forth.

The interviews also covered respondents' broader media repertoires, as well as their online repertoires. Discussions focused on devices that the interviewees have access to and use in their everyday lives. These topics more or less naturally raised the issue of the presence and/or absence of warm experts and their roles.

The analysis, which was conducted manually, started with careful readings of the transcriptions. The next round of readings served to identify the presence and absence of warm experts. The extracts on warm experts were then coded in light of the theoretical notion of domestication, more specifically by help of the subconcepts appropriation, objectification, incorporation, and conversion. This phase of analysis revealed that the interview data was not

very thick regarding objectification and conversion, but very rich regarding both appropriation and incorporation. Hence, the article focuses on these first two processes. Overall, the analytical procedures are in line with Willis and Trondman's (2000) ideas about theoretically informed analysis, as well as John B. Thompson's (1990) methodology of interpretation.

RESULTS

Who are the Warm Experts and Why are They Needed?

The tasks for which warm experts are enlisted can, of course, vary greatly. Table 1 lists some of the technical problems that the users experienced more or less often and that might generate a need for assistance and help.

The critical reader could question whether the data in Table 1 says anything substantial about the frequency and types of technical problems that elderly users actually face. First, the scales are relative: "Often" for one person could mean "rarely" for another, and vice versa. In hindsight the wording in the survey items was rather vague, clearly not in accord with professional terminology. For instance, the phrase "the computer feels sluggish" could mean just about anything. Nevertheless, 39% of respondents agreed that their computer often or quite often feels sluggish, while 82% (39% + 43%) said that this happens sometimes (albeit rarely, according to 43%). Similarly, 71% said they have experienced network malfunctions, 70% browser malfunctions, and so on.

Even if these figures only approximately inform about the exact nature of technical problems experienced by elderly users, the data taken together reveal that, for many of them, dealing with digital media is associated with obvious practical difficulties. By comparison, if elderly people were asked about other kinds of home technology—for instance, their washing machines or radios—would the results be similar? Most likely no, they would not: The "never" responses would be much higher. Notably, the number of people who answered "I don't know"

Table 1. Percentage of Perceived Frequency of Technical Problems from the Mailed Survey Respondents Who Used Technology (n = 1,011).

	Often, quite often	Rarely	Never	I don't Know	*n* =
Computer feels sluggish	39	43	11	7	966
Network malfunctions	13	59	14	14	942
Browser malfunctions	10	60	17	13	954
Computer turns itself off	5	40	47	8	953
Updates do not work	6	59	21	14	963
Cannot download app/program	6	46	21	27	949
Virus problems	3	46	41	10	965

Note. Question asked: "Sometimes technology does not work as it should. How often does the following occur? Very often, quite often, rarely, never or I don't know."

is rather high. In one case—downloading apps and programs—fully 27% responded so. This general uncertainty suggests that digital media are perceived as difficult and/or elusive.

Thus, the overall picture shows that the survey respondents are generally untutored and possess a rather limited technological literacy[2] and that they feel unsure and insecure about handling digital media. This, in turn, can at least partly explain the need for and role of warm experts—which 67% of respondents said they engage very or quite often.[3]

As in Table 1, the possible answers in Table 2 are expressed as a relative scale, which means that we know little about actual frequencies. However, we do get information about the perceived need for warm experts and are able to rank them in terms of importance. Looking at the first column, which includes all respondents, we see that respondents first and foremost rely on their social networks, particularly persons they are closely related to, for help and support. Children are the most frequently engaged as warm experts, followed by one's partner. In third and fourth place are a grandchild and friend, respectively. Professional supporters—that is, people who provide services that can be bought on the market—are at the bottom of the list. However, these are conventional experts rather than warm experts. Thus, Table 2 shows that elderly people are like most technology users in that they prefer warm experts—related persons—over professionals for assistance. Another important note is that 11% report they have no one to consult if problems occur.

The second column includes only couples with children and grandchildren, which essentially captures the subset of respondents that, at least theoretically, has options regarding who to ask for help. However, as the table shows, this does not change the preference ordering, although the status of friend is slightly weaker and the status of partner, children and grandchildren is slightly higher.

The third column, which is limited to singles without family, shows that singles must rely on friends—and 49% report that they do so. Nonetheless, they are no more willing to buy service on the market than couples are (cf. 11% and 9%). Among singles, 29% have nobody to ask for help. This finding is in line with both Lüders and Gjevjon (2017), who argued that a richer social life increases the likelihood that one is in favor of warm experts, and Olsson et al.

Table 2. Percentage of Reported Technological Support from Warm Experts and Professionals by the Respondents of the Mail Survey (n = 1,011).

	All		Couple with Children and Grandchildren		Single Without Children	
	%	*n*	%	*n*	%	*n*
Child	52	899	55	617	—	—
Partner	30	802	36	562	—	—
Grandchild	23	813	26	561	—	—
Friend	21	789	17	526	49	37
Professional support	10	821	9	561	11	28
No one to ask	11	747	9	516	29	18

Note. Question asked: "When you have problems with your digital devices, who do you ask? Very often, quite often, rarely, never." The figures in Table 2 present the responses of "very often" and "quite often."

(2018, 2019), who argued that social networks are crucial for the elderly's access to digital media and the range of their online repertoires.

In summary, the respondents generally associated digital media with practical difficulties and insecurity, and thus felt in need of assistance. For this, they turned to warm experts rather than professional ones. In the overall picture regarding choice of warm experts, the respondents preferred to involve their children, followed by their partner. Their third-place preference is their grandchildren, and in fourth place are friends.

At least some readers might regard the findings reported thus far to be more or less self-evident. The elderly are almost routinely regarded as late adopters and novice users, and for that simple reason they need assistance. In fact, however, this is not true. Our survey results indicate that 74% of the respondents in the sample have been online since 2005—a decade or longer.[4] In that sense, the vast majority of respondents represents experienced users, not inexperienced ones (cf. Bakardjieva, 2005). Nonetheless, they still need warm experts, which raises the overarching question for the next section: What do they need them for?

Warm Experts for Appropriation

The conventional understanding of the appropriation of digital media more or less presupposes an individual household that, for its own sake, recognizes an object of desire (Silverstone & Hirsch, 1992) and eventually acquires the artifact in question. However, this is not the only way it can occur. As will be shown, grown children might identify for their parent(s) a need for the object and its potential benefits.

Britt, 74, is a widow and lives alone. When her laptop—which her son once helped her buy second-hand—started to become outdated and unmanageable, her daughter acted and bought her a tablet: *"I actually got, from my daughter, this tablet for Christmas, 2 or 3 years ago."* At the time, Britt had limited knowledge of the different options offered by the devices on the market. In practice, her daughter made the decision for her. As it turned out, the choice was to Britt's satisfaction: *"I think it works great."*

As this example illustrates, warm experts are more than support technicians who solve problems of a technical nature, which Table 1 might suggest. Rather, they also function as initiators and advocates for new ICTs. Bengt, 75, and Inga's, 70, explanation of how they got a tablet and their cell phones is a good illustration:

> Interviewer: *How did you get the idea of the tablet?*
>
> Inga: *Well, it was probably Mia* [daughter] *who thought I might be needing one. I was retired, I think, something like that, and she thought that it could be useful for me.*
>
> Bengt [husband]*: And you said, "No, why should I have one?"* …
>
> Inga: *It was the same thing with our cell phones, in the beginning. It was also our children who pushed us and said that, 'Of course you should have a cell phone when you're out driving and things like that.'"*

Eva, 77, who is a widow, gets new smartphones regularly. She reported, "*I have a phone, like that one* [smartphone]*; I haven't bought any for myself … Sara* [daughter] *buys new ones quite often. Then I get her* [old one]*."*

The younger generation, represented by the children, has already passed all the phases of the domestication process. From there, they go on to identify needs—sometimes latent or

potential needs—for their parents (cf. Östlund, 2011). In that sense, the parents are passive. The younger generation provides the devices yet understands that they cannot just hand them over without installing and adjusting them so they are usable. Thus, in a sensitive way, they make the devices meaningful in the context of their parents' everyday lives (Oreglia & Ling, 2018).

Downloading and installing different kinds of software can be understood in a similar way. The warm expert identifies a need and then acts on his or her "client's" behalf. For instance, Bo, 71, has a huge interest in sports and therefore uses an app for football and ice hockey results. He stated, *"Yes, I have it on the phone…. It was Simon who added it—my grandson."*

Britt's daughter not only bought her a tablet for Christmas, as mentioned above, she also set it up so it was ready to use. She prepared it technically by connecting it to a Wi-Fi network, and she set it up "repertoire-wise" by installing apps for bank ID, Blocket (a Swedish site similar to eBay), e-mail, SvtPlay (a streaming public service TV), online magazines that Britt regularly reads as well as an app for weather forecasts. These pleased Britt, who said, *"It is Christina who has installed all this. She did it almost immediately when we got it."*

Britt's daughter was familiar with her mother's main interests and off-line media repertoire, so she downloaded and set up relevant apps and taught her mother how they worked. In that sense, her daughter successfully helped bringing the tablet into Britt's everyday life and routines. In other words, she helped make them meaningful.

Warm Experts in Incorporation

Our interviews indicate that one of the everyday challenges with digital media experienced by the elderly is that media tend to need continuous support and adjustment. Only in marketing communication are everyday technologies like computers, tablets, smartphones, and so on, really "plug-and-play" (i.e., devices that a consumer can just plug in and start using, and that continue functioning properly until they simply wear out). In real life, digital media do not work like this. As our survey data have already revealed, ICTs actually create a fair number of everyday problems that need to be solved.

The previous subsection presented how the very acquisition of technology was supported by warm experts, who also play an important role in helping elderly users to start making use of their new digital devices. Beyond this, the incorporation of ICTs into everyday life tends to demand continuous efforts, both from users themselves and from warm experts. The list of things that users (or their warm experts) need to attend to in order to ensure that digital media continue to function properly includes installation of new hardware (e.g., installing a new printer), software updates (e.g., renewing an antivirus program), and updating applications (e.g., reinstalling a digital ID).

In addition to these more technologically-oriented tasks, the elderly need to continually learn new things as new services and applications develop. For instance, Ove, 71, and Siv, 67, wanted to sell their old gadgets on Blocket, an online consumer-to-consumer sales site. According to Ove, *"We got some help in the beginning, but then I did it myself."* He managed to photograph the objects, write the copy, and upload the ad. *"I sold everything, goddammit!"*

The extent to which the need to continually update digital devices creates problems for our interviewees varies greatly. Some users have a low level of technological literacy and limited online repertoires, while others are more literate and broader in their usage. Regardless of the magnitude of their repertoire and literacy, however, users emphasized the

importance of having warm experts in their social networks. Sooner or later, and more or less often, everyone seemed to require a helping hand.

Some of the interviewees found that they were capable of taking care of the continuous updates on their own, at least as a couple. For instance, overall, Inger and Karl, both 68 years old, seemed satisfied with and confident about the devices they own: smartphones, tablets, and laptops. Problems rarely occur for them, and they can solve most of those that do, either individually or by working together. Inger and her husband offered a quite telling example.

> Interviewer: *If you get problems, what do you do?*
>
> Inger: *We solve them ourselves, most of the time. But then, sometimes things happen that are a bit trickier, and you have to ask the children…. But if it's something more specific, that we find really hard, we can always ask them. But it isn't very often, not really, no.*

Inger and her husband live in a prosperous area of Sweden and have retired rather recently. They now spend a lot of time with friends and on various leisure activities. Both had occupations that brought them into contact with computers and mobile phones during their working lives. Hence, they developed a great deal of knowledge about how to use them and possible ways of solving a variety of typical problems—so they do not encounter too many problems in digitalized everyday life. Nevertheless, they occasionally need a helping hand; in such situations, they are fortunate to have their grown children living nearby who can help them.

While Inger and her husband are rather independent as a couple, other interviewees needed support from their warm experts more often. Among several of our respondents, the children—who often acted as initiators of the acquisition of a smartphone, tablet, or computer—also became the preferred helping hand for all kinds of ICT problems. They remain important as warm experts in helping maintain their parents' ICT-skills.

In Bo, 71, and Maj's, 68, case, the children in general, and their son John in particular, remain very important in their roles as warm experts, even after the appropriation of new ICTs. Their son lives nearby and can help them rather easily, and Bo and Maj do not hesitate to ask him for advice and concrete support. They see his role as their warm expert as part of a reciprocal exchange of services—they help him (and have helped him) with other things. John's role as warm expert has become part of a social exchange of services between the grown children and their elderly parents. The exchange makes it possible for Bo and Maj to maintain their level of online connectivity.

> Interviewer*: If things don't work, who do you ask?*
>
> Bo*: John* [son], *he lives in the neighborhood.*
>
> Interviewer*: He is your unpaid IT-support?*
>
> Maj*: One could say that, yes.*
>
> Bo*: Well, we have done a lot of unpaid work for them* [their three children].... *I think it was last week: I couldn't send any emails or whatever it was.*
>
> Interviewer*: And he* [John] *could take a look at it?*
>
> Bo*: He fixed it.*
>
> Maj*: Yes.*
>
> Bo*: But what he actually did, only the devil knows. But it worked, anyway.*
>
> Maj*: It's easier if they* [the children] *can come and have a look at it.*

> Bo*: If you have a good relationship with your children, you know, and all the carpentry I have done for them ….*

However, our quantitative data reveal that not all elderly users have grown children who act as warm experts. Some elderly have no children, or their children do not live nearby. Some interviewees in this situation looked for warm experts elsewhere within their social network, for instance among their neighbors. Lars, 70, and his wife, Sara, 68, live in a village in southern Sweden. Lars has a degree from the prestigious KTH Royal Institute of Technology in Stockholm and is a well-educated and experienced user who helps others—that is, takes on the role of warm expert—more often than others help him. Among his group of close friends, he is often the one that people contact to get help with their digital devices. Lars is generally very interested and knows a lot about ICTs. Nevertheless, even Lars might occasionally need somebody to help him:

> Lars*: I have one, just across the street, who's a real expert, you know.*
>
> Interviewer*: In what way?*
>
> Lars*: Regarding computers and how computers work. He's an old IBM person who has run a computer consulting business half his life. So, if you want real help, you go to him. It's a totally different level.*

In summary, warm experts are important, regardless of an individual's skill level and technical literacy. Lasting relationships with warm experts provide stability in daily use—technical difficulties can be solved and new things learned. In addition, they contribute to a feeling of safety. This becomes even more obvious when we analyzed what an absence of warm experts can mean.

Lack of Warm Experts

Saga, 84, a widow and retired nurse who runs a small chiropody firm, is an illuminating example of what a lack of warm experts can entail. Saga has a great interest in digital media. As far back as the early 1960s, she worked with computers in a Swedish department store chain, and in the 1980s, as a nurse, she handled digital medical records.

When her husband was still alive, they had a rather broad online repertoire. For instance, they used Skype, in particular, to communicate with their many friends abroad.

> Saga*: You see, my husband connected it. We have old friends in Frankfurt…. And I said, "You must have Skype, you see." And it was really fun. But later, when my husband passed away, well, I hadn't learned it…. I don't know when you call…. How should I know that you Skyped me? Or how it can reach my computer. I don't know it.*

The difficulties do not stop there. Saga described a situation characterized by aging hardware and software and a decreasing online repertoire, a consequence of the absence of competent warm experts who can introduce new products, perform installations, and provide support. Her children live far away, and in the village where Saga lives—which has only 600 inhabitants—she has not, despite her efforts, been able to develop a relationship with a reliable person who can be her warm expert.

An acquaintance that Saga sought help from accidentally erased music and genealogical data from her hard drive, something that greatly disappointed her: "*A bright idiot*," she called him. Another person, Mikael, provided some assistance, but Saga called him an "*amateur*."

> Interviewer*: What do you do when you need help? Do you have your children nearby?*
>
> Saga*: One is in Stockholm, one is at sea and lives in Viken, close to Helsingborg. And then I have one in Öland and one down here, what's the name, Norje, yes. It is in the neighborhood of Sölvesborg.…*
>
> *But I have a guy, though he's an amateur. But I, I'm probably* [not] *"world champion" in computers—I have realized that. I sat at the computer and tinkered and was* [trying] *to turn it on. And all icons disappeared! I just sat there and stared at a black screen.*
>
> *Now, I have torn off three icons, and I don't know how to get them back. I don't know, no, no. It's hopeless. Yes, Mikael, maybe he can help me: He put them there. No, I get mad at this. I'm afraid of pushing the buttons. And the new keyboard that I bought, the keys stick. It has become a mess. I'm very annoyed at that.*

Saga's children live far away. The closest is more than 100 km away; visits are rare and irregular. Despite her attempts, Saga has trouble finding a warm expert, a person with sufficient technical literacy and sensitivity in relation to her needs and preferences. Mikael has helped her by installing icons, but Saga obviously needs more training and assistance to be able to handle them. Finally, the newly-purchased keyboard does not work as she had hoped. Without knowledge about the devices she already has—brand, model, and so on—it is not easy to purchase compatible components. Also, even if components are appropriate, they must be installed and adjusted correctly, as well as explained and contextualized (Oreglia & Ling, 2018).

In short, Saga had been a quite satisfied and regular user of ICTs, but since her husband's death, she has been unable engage a warm expert. Her online repertoire is therefore in decline. Unfortunately, there is a risk that, over time, Saga might become one of Sweden's over 400,000 elderly nonusers of technology (cf. Olsson et al., 2019).

Occasionally, interviewees expressed their thoughts about aging and what it might lead to—even those who have a completely satisfactory social and economic situation, including people who act as warm experts. During a long career working in the field of social insurance, Siv (age 72) came into contact with many vulnerable people. These experiences lead her to reflect about older and lonely people, as well as her own situation, in relation to digital media:

> *Siv: What's the help for them to get? That's what you think about then. It is with some mixed emotions that you look to the future. If technology is going to rush on, as it does today, and it does seem to continue to do so, it is important to keep up with it.*

Warm experts are crucial for many of the interviewees and important for all of them. For users with limited skills, the absence of warm experts can be almost devastating, as in Saga's case. But even for those in more favorable situations—people who might manage fairly well without them—warm experts play vital roles in their everyday life with digital media.

DISCUSSION

As we noted in the beginning of this article, research generally views domestication as a process with four phases (Haddon, 2016): appropriation, objectification, incorporation, and

conversion. In order to understand the role and identity of contemporary warm experts, and based on the findings from our data, two of these appear to be of particular relevance, namely, appropriation and incorporation.

Appropriation directs attention towards the early stages of domestication, stages at which a new ICT is about to enter the household, but also the initial phase after its entrance. Our data generally, and the interview data specifically, reveal the importance of warm experts in elderly users' appropriation. The warm experts, typically a son or daughter (sometimes a grandchild) help identify potential ICT needs that the parents might have. While doing so, they also help identify potential areas of usage. They initiate discussions about ICT with their elderly parents, arguing for its usability and explaining opportunities for acquiring it. Subsequently, they often are involved in the acquisition of the ICT, for instance, buying it as a gift for their parents or offering to give them their own, previously-used equipment. Once they have helped with the acquisition of an ICT, they become involved in setting it up. For example, they connect it to the Internet and install necessary software and useful applications.

These tasks are not, in themselves, technologically advanced: Most average users would be able to perform them. However, as regards the importance of knowledge about the elderly users themselves, the tasks performed by the warm expert are indeed complex. These tasks demand concrete insight into the elderly users' personal interests and demands. They require knowledge about the elderly users' established repertoires of media usage (Hasebrink & Domeyer, 2012; Hasebrink & Popp, 2006; Olsson et al., 2018) and their everyday lives more generally. In addition to these rather concrete insights about elderly users' lives, allowing another person to become involved in these processes presupposes the existence of a high degree of trust. In other words, to be able to function as champions for new ICTs vis-à-vis elderly users, it seems necessary that the experts are close and highly trusted partners in a joint effort to domesticate new ICTs.

The warm experts are also needed at the incorporation stage, when the new ICT is becoming part of the elderly user's everyday routines. They are needed for continuous support—updates, installations, reinstallations (e.g., Bank ID, antivirus programs, etc.). They also play an important role in suggesting and concretely pointing toward possible new areas of usage. Even these types of support require a level of trust between users and warm experts. As a result, this is not the kind of help that just anyone can provide. Furthermore, these efforts also seem to demand geographical proximity and accessibility. Our interviews reveal that these tasks are mostly undertaken by a relative who lives nearby—a son, daughter, or grandchild who can come on a short notice. The preferred way to provide such support appears to be face-to-face, one-on-one instruction. In essence, these services have the character of a family affair.

CONCLUSIONS

The need for and existence of warm experts highlights the fact that digital media are considerably different from older, previously domesticated media technology such as the telephone, radio, and television. None of these required continuous assistance and support of the kind and level that is characteristic of new ICT devices. For this reason, their users were not equally dependent on access to social networks.

In the 1980s, during the early days of home computing, Murdock et al. (1992, p. 150) underlined "the centrality of networks" and pointed out that "contacts can play an important role in providing back-up support at key moments." A little more than a decade later, Bakardjieva (2005) reaffirmed the importance of social networks and even created a new concept: the warm expert, who "mediates between the technological universal and the concrete situation, needs and background of the novice user with whom he is in a close personal relationship" (Bakardjieva, 2005, p. 99).

Maybe the underlying assumptions in Murdock et al. (1992) and Bakardjieva (2005) supposed that the conditions they analyzed were likely to be temporary and transient insofar as the technology they analyzed was rather new. However, a decade or two later, our survey and interview data support the conclusion that digital media remain difficult to handle, even if the users had been engaging the technology for many years. In fact, contemporary technologies might be perceived to be even more difficult to handle, in that the digital media environment persists in a state of constant change. This change includes new devices, new software and, not the least, the expectation to become involved in a large variety of digital services, commercial as well as public ones. As a consequence, the warm expert remains needed and plays a pivotal role, at least in the everyday digital media lives of elderly people. Moreover, based on the data presented in this paper, we dare to claim that, a decade from now, the warm expert will still be playing an important role.

IMPLICATIONS FOR RESEARCH, APPLICATION, OR POLICY

Our research confirms that elderly users, even some with prior experience in technology, are forced to rely on others—here named warm experts—in order to take on, manage, and use various ICTs. Therefore, the plans made by governments to widely implement technologies as a way to work easier and to enhance health and public services may be overly optimistic and also hasty. Despite the good intention to make various services and information more available, digitalizing them might actually make them less available for elderly people. This is particularly true because some elderly do not have access to warm experts to help them out in their everyday encounters with ICTs. Decisions by policy makers to emphasize online services could negatively impact elderly users from accessing needed services as well as their participation in society more generally.

ENDNOTES

1. The upper limit of the interval, 85 years, has practical reasons and is motivated by the fact that response rate decreases with increasing age. Until 2000, 80 years was the standard upper limit in Swedish postal surveys. However, with a higher average life expectancy, it has been adjusted to 85 Bové (2017, p. 622).
2. This is supported also by the fact that 38% (n = 358) of the responding users reported they do not know what it means "to clear the cache memory" and 25% (n = 238) do not know what "clearing browse history" is. See also Tables 6, 7, & 8 in Olsson et al. (2019).

3. The figure 67% (n = 695) is calculated by filtering out—that is, subtracting—users who report they rarely or never consult a warm expert (i.e., child, partner, etc.). If professional experts are included, the figure rises to 70% (n = 716).
4. Survey question: "*When did you start using the Internet?*" (n = 947).

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Appendix

Table A1. Age and Gender Distribution and Educational Level in Sample and Swedish Population (percentage).

		Men		Women	
		Survey Respondents	**Swedish Cohort**	**Survey Respondents**	**Swedish Cohort**
Age	65-60	42	45	39	43
	71-75	28	27	27	30
	76-80	18	17	19	16
	81-85	12	11	15	11
Education	Low (Compulsory)	38	48	35	35
	Medium (Vocational, folk high school, etc.)	23	12	34	12
	High (Upper secondary & higher)	39	39	39	39

Note. Age and gender distribution and educational level in the sample are compared with data describing the whole population of Swedes between 65 and 85 years. Downloaded from Statistics Sweden 2016. The sample includes one women aged 64, who is included in the age group 65-70.