Motives of the Elderly for the Use of Technology in their Daily Lives

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The subject of aging and technology has become increasingly important in both the research and public sectors. Many experts are convinced that some of the challenges caused by the demographic shift can be overcome with the use of technical equipment. However, technological development is often orientated more on innovation than on user demands. The focus is on the feasibility of the technology, while the perspective of the user is often a neglected factor. One of the consequences of this neglect is that many products which are created for the elderly are in turn rejected by them (e.g. Technische Universität Berlin 2011; Pelizäus-Hoffmeister 2013). Based on the findings and concepts of several sociological technology studies (see Rammert 2007, 1988; Wengenroth 2001; Woolgar 1991; Hörning 1988, 1989), one may assume that a device will only be accepted by the elderly and integrated into their daily lives when their interpretations of technology are taken into account during the technology's development (cf. Giesecke 2003: 10).

This chapter focuses on the meanings and ideas which elderly often connect with the devices in their daily life. The findings presented here are a result of a qualitative-orientated research study conducted in Munich (cf. Pelizäus-Hoffmeister 2013). The aim of this study was to describe and explain the different interpretations of technology by older people, while taking into account their individual behavior patterns as well as the social, structural, cultural, and individual context conditions. The purpose of conducting this analysis was to develop hypotheses regarding relations between context conditions and the interpretations of technology by the elderly.

The chapter is divided as follows: First, the four theses of Hörning (1988, 1989) about technology and its cultural meanings (1) will be explained. They are used as sensitizing concepts in the empirical aspect of this study. Next,

the study itself will be described, and the methodological approach taken will be explained (2). After that, the results in the form of a typology (3) will be presented. In the conclusion, the results will be evaluated in the context of future technological development (4).

1. Cultural Aspects of Technology

Since the 1980s, the topic of technology in everyday life has been paid increasing amounts of attention from researchers in the field of sociology. Two different research perspectives describe the relationship between technology and people in everyday life. The first perspective is focused on the structuring and regulating effect of technology in daily life, as described by Habermas' (1981) concept "colonization of the 'Lebenswelt'" (e.g. Bievert/Monse 1988; Joerges 1988). From the other perspective, technology is described as an element of the cultural sphere (e.g. Hennen 1992; Hörning 1988, 1989; Rammert 1988, 2007). Here it is emphasized that the use of technology is based less on its functions than on the meanings associated with it (cf. Hörning 1988). These perceptions are developed on the one hand by the people who produce, evaluate, and disseminate technology. On the other hand, they are also formed by the people who use the technology in their everyday lives (Hörning 1989: 91). In consequence, technology has lost its character as solely an instrument. Rather, consumers of technology associate with it a variety of individual meanings which do not necessarily match those of the producers. Their meanings are partially affected by culture and society, and also by their everyday applications (ibid: 117). From Hörning's perspective, devices cannot be attributed with meanings merely due to their materiality or functionality. He emphasizes that technology is interpreted with other meanings in addition to their strictly functionalist meanings. These meanings, produced by the users themselves, decide whether the device is purchased and used or not.

If this research perspective is recognized as a requirement in developing user-friendly and accepted technology for the elderly, we have to ask: How do various groups of elderly persons interpret technology based on their use in their everyday lives? Or more specifically: What are their motives for and against the use of technology?

Hörning describes four general models of orientation. In his opinion, they comprise the basis of using devices (cf. 1988: 73). First, he outlines the so-called *Control Orientation*. In this sense, technology is used to control

the environment, or at least allow the user to have the feeling that it can be controlled if necessary. The desire for joy and pleasure in the use of technology – for example motorcycling, to feel the "great freedom" – is labelled as an *Aesthetic-Expressive Orientation* (cf. ibid: 76). C*ognitive Orientation* is characterized by the desire to use technology as a means of empowering the user in dealing with the technical environment. According to Hörning, this interest is rooted in social pressure, using technology to appear "rational" or "intelligent" (ibid: 77). Lastly, Hörning attaches a special importance to the *Communicative Orientation*. He argues that in this orientation, the use of technology enables the user to integrate into a variety of communication systems and allows them to avoid marginalization in their social environment (ibid: 78). In summary, it can be assumed that the four models of orientation are often associated with each other, although it is possible that they differ in the individual depending on the specific device.

In this study, Hörning's theoretical assumptions are used as sensitizing concepts, as described by Kelle and Kluge (1999: 25). They help to draw attention to the different and varied meanings of technology to the elderly, but they are not interpreted as limitations to the aspects described above.

2. Methodical Approach

The author of this study interviewed thirty-one men and women. All respondents were at least sixty years of age (cf. Pelizäus-Hoffmeister 2013). Although it is clear that biological age is an insufficient metric, this age limit was chosen for pragmatic reasons based on the definition of the World Health Organization (see WHO 2002: 4). There are significant differences between people of the same age in their health, participation, degree of independence, etc. (cf. ibid.). It is also worth noting that the number of women interviewed was slightly greater than that of men.

The interview method developed by Kaufmann (1999), the "verstehende" interview, was used to conduct this study, in addition to a written questionnaire (cf. Hopf 1991: 177; Witzel 2000). Based on the narrations of those interviewed, the different forms of technology use are described here, as well as the meanings which interviewees associated with technology. From this, the aim was to discover the individual, social, structural, and cultural conditions that lead to a successful or unsuccessful utilization of technology. The questions were limited to the use of technology in the home

of the elderly, on the one hand to keep this complex issue workable, and on the other hand due to the high value of the home for the elderly (see Kreibich 2004: 12; cf. Backes/Clemens 2003: 230; Saup 1993).

The interviews were digitally recorded and then transcribed. The data analysis was based on the Grounded Theory Method, developed by Strauss and Corbin (1996). The aim in doing so was to construct a *Gegenstandsorientierte Theory*, which identifies interrelationships between meanings of technology, the use of technology, and other context conditions. The author of this study developed a typology from a comparative analysis of the individual cases. Although the results are not statistically representative, they could potentially show how the user-associated meanings of technology influence the use of technology and vice versa. The types are not to be understood as personal types, but rather as interpretative models (*Deutungsmuster*). Accordingly, a person can be assigned to several types if he or she follows different motives in the use of technology.

3. Interpretative Models of Technology – Motives For and Against the Use of Technology

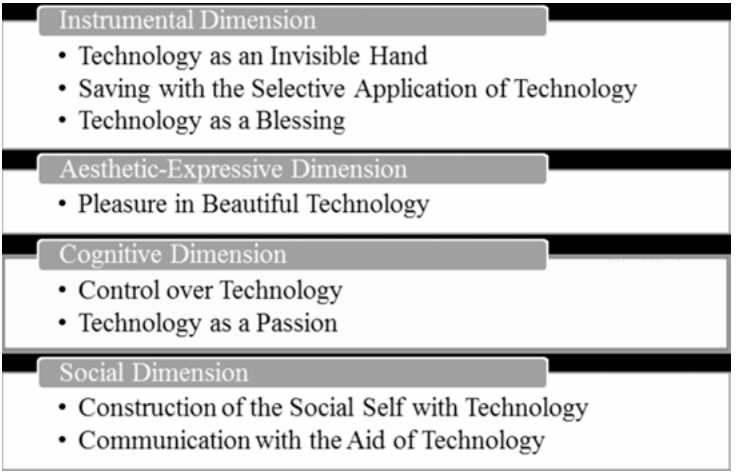
In this study, Hörning's theoretical assumptions were used as sensitizing concepts. The interpretative models of technology being developed – respective to the motives of the elderly for or against the use of technology – were assigned to the following more general dimensions, which partly correspond with Hörning's orientation models: the Instrumental Dimension, the Aesthetic-Expressive Dimension, the Cognitive Dimension, and the Social Dimension. This may be seen in Figure 1 below.

The interpretative models of technology were constructed as action types in order to more effectively outline their specific characteristics. They are not to be understood as types of people, but rather as typical actions and interpretation models. Eight different models to represent the motives of elderly for and against the use of technology were developed.

The Instrumental Dimension includes the models *Technology as an Invisible Hand*, *Saving with the Selective Application of Technology,* and *Technology as a Blessing*. These three models of elderly classified in this dimension are focused especially on the labor-saving functions of technology. Here, technology is seen as an instrument that can improve or support the user's natural abilities and skills. Through the use of technology, house-

work can be done faster, easier, more efficiently, and more economically. The model *Pleasure in Beautiful Technology* belongs to the Aesthetic-Expressive Dimension. For this user type, the use of technology is often associated with the emotions of joy and pleasure. *Control over Technology* and *Technology as a Passion* are models which belong to the Cognitive Dimension. These are quite different from the models which fall in the first two general dimensions. The occupation with technology itself rises to a prominent role for these users. The aim of the elderly is, for example, to understand the options and functions of technology, and in this way train their cognitive skills. The Social Dimension also includes two models from this study. One is named *Construction of the Social Self with Technology*, and the other is titled *Communication with the Aid of Technology*. The focus of the users here is on his or her own social needs. On one hand, the use of technology can assist the elderly to feel integrated into their social circle, who are also generally interested in new technology. On the other hand, the user can be connected with their greater social network using new communication media.

Figure 1: Interpretive Models of Technology



These interpretive models are presented as follows: First they are described briefly. Then the – not always conscious – motives and actions based on these categories are presented. Lastly, the author discusses the search for links between these actions, interpretative models, and the context conditions such as generation, gender, education, social participation, etc.

Technology as an Invisible Hand

The respondents, who were assigned to this model, see the use of technology as a chance to do their housework better, faster, and easier. They also assess technology as merely a means to an end. In their eyes, it has no value in itself. Technology should be like an invisible assistant, expressed in a metaphorical sense. It should not be the focal point in their everyday lives. The normative character of this interpretative model points out the desire of the elderly to minimize their handling of technology.

What are the motives behind this attitude? Two main motives (I, II), which are congruent in a certain sense, but also differ to some extent, are evident for those who use technology as an "Invisible Hand." The people of both subtypes have in common that they wish to devote as little time as possible to conducting their housework. They prefer to spend their time with other activities such as meeting friends, reading, walking, or playing with their pets. If technology can be helpful to do the "annoying everyday stuff" more quickly, as some participants put it, it is accepted and incorporated into daily life. These elderly associate technology with their unpopular housework. Therefore, it stands in contrast to the "brighter side of life," and should require as little time and space as possible.

For the people of Subtype I, another reason exists for the wish of "invisible" technology. Especially with the use of new technology, these elderly people often associate many difficulties, troubles, and a lack of their own competence in dealing with it. The elderly of Subtype II, however, are convinced of their own high expertise in dealing with technology. At the same time, they are not interested in technology in itself, so they avoid it as well, if possible, despite their perceived proficiency.

Based on this interpretative model, the elderly with these motivations use particularly well-known and simple[1] devices in their daily lives. The use of new devices is avoided if possible, because they are associated with a certain degree of involvement with the technology itself. Moreover, the elderly of Subtype I avoid new devices because they do not want to be confronted with

1 | Remarkable is the difference in their identification of "simple" devices. People who are convinced that they have little skill in using technology describe only classical technology – such as the washing machine, cooker, and mixer (cf. Tully 2003) – as simple. On the contrary, people with a lot of experiences in using technology add the PC, the mobile phone, and the Internet to this list.

their perceived lack of skill with technology. These elderly prefer devices they have already been used in their household for a long time. As viewed through theoretical concepts, it means that the acceptance of technology is accordingly limited to the so-called "*veralltäglichte*" technology (Hörning 1988: 51). This means that these devices are often not even consciously perceived as technology because they have been effortlessly integrated in the household.

Sackmann and Weymann (1994) suppose that the interpretative models of technology differ due to the varying experiences the various age groups make in their youth. Based on this study, the model *Technology as an Invisible Hand* can be found across all age groups. Accordingly, it can be assumed that age cohorts do not play a relevant role for persons belonging to this type. In addition, the personal perception of competence in using technology seems to have no influence, because this type is represented by people of both categories of self-described competence in technology use, low and high. Despite this, we can also see that the feeling of having a lack of competence can increase within this model. Based on this, the author assumes that women particularly can be assigned to this type, because they often associate with a lack of technical competence, which in turn influences their self-image (Ahrens 2009; Beisenherz 1989; Collmer 1997; Hargittai/Shafer 2006).

Saving with the Selective Application of Technology

The functionality of technology is at the central motivation for this model as well. The use of technology must save resources of all kinds. Household work is considered from the perspective of their rationalization. The representatives of this type are constantly looking for means of optimizing this; they use technology when it appears economically. Otherwise, and preferably, they avoid it.

What motives determine this interpretative model? Here we discover a strong orientation towards values such as efficiency, performance, and thrift. These elderly persons attempt to organize their daily activities in such a manner so as to complete them as simply, quickly, cheaply, and efficiently as possible. The motive of "saving" seems almost to be an end in itself, which determines many behaviors throughout the lives of those associated with this model (see also: Rammert 1988: 192). For them, the use of technology makes sense only if it helps to save time, money, energy, effort, or other resources. However, their main focus seems to be using technology only when its use cannot be avoided. How can this be explained?

The motive of rationalization implies a strong desire for control. From the perspective of these elderly, their ability to control things is threatened by the use of technology. They perceive technology as a threat to their control options, as it would determine their daily schedules, and therefore their whole lives. Especially with new, digital, and complex technologies, these older individuals associate a variety of risks which limit their control. For example, one interviewee claims to avoid the use of computers because he is afraid of becoming overwhelmed by its many functions. Moreover, he fears he would require a great deal of outside support due to his lack of competence in using this technology, which would further reduce his perceived control.

Nevertheless, the use of select technology in daily life remains a necessity for these elderly. They use common classical devices such as televisions, washing machines, cookers, and telephones. Even regarding these devices though, they raise occasional concerns. Especially when a device is defect and requires repair, they devote a good deal of time in thinking about ways of avoiding its replacement. These people remain skeptical in their use of technology.

Who are the people belonging to this type? These elderly have rather low technical competence, which can be traced back to a lack of professional experience with new technologies earlier in their lives. It could also be an effect of a life beyond employment, which is characterized by a low use of new technology in the majority of cases. The latter usually affects older women, who were mainly responsible for child care and housework during their working years. Accordingly, this technology skepticism and the rejection of use of new technology can be attributed to a lack of biographical experiences with it.

Technology as a Blessing

In this type as well, the functions of technology are at the center of motivation. Technology should support the individual in completing daily tasks, especially those requiring high amounts of physical stress. In addition, the elderly associated with this model assess technology as absolutely positive. Moreover, it is worth noting that technical problems do not play a pivotal role in their daily lives. These elderly people are convinced of their ability to master their technical equipment to a competent level.

What is the subjective basis for their absolutely positive perception of technology and their feeling of technical competence? Furthermore, what context conditions allow these interpretations? These elderly persons asso-

ciate only advantages with the use of technology because they compare their lives in the past with those in the present. The past generally relates to their youth, when housework was associated with high physical stress because labor-saving devices were hardly available. Based on these past experiences, it is plausible that current household appliances with widespread, labor-saving capabilities are welcomed with great openness, enthusiasm, and appreciation.

In addition, the positive interpretation of technology can further be attributed to the fact that these older people do not desire to understand their devices' working methods or their implicit logics and functions; they only wish to utilize them. A preoccupation with technology in itself is not a factor for these individuals, with the result that many potential problems and risks which may be associated with new digital technology are not perceived. Moreover, they associate technical competence with the ability to use technology, which results in the effect that they perceive themselves as technically competent despite their actual low level of skill.

What context conditions allow this interpretative model of technology? The elderly of this type are characterized by the fact that they have a reliable social network, which provides them with necessary devices. Moreover, it ensures the elderly can use the devices without significant issues. When problems do occur, their social network ensures fast troubleshooting.

On this basis, it is not surprising that these elderly use a variety of both classic and new digital devices. One older female interviewee, for example, often carries a mobile phone when she walks her dog in order to call for help if necessary. She also uses the clothes dryer, an example of classic technology, to avoid having to hang dry her laundry. All this time, she utilizes the devices without apprehension because she is convinced that she is able to use them competently.

In this study sample, this interpretative model was represented only by seniors of advanced age. Sackmann and Weymann (1994) call them the "pre-technological generation." These people can be characterized by the fact that, in their childhood, electricity and electric light was already present in households, but radios were the only complex device they knew for many years. In this respect, it is obvious that the above-described comparison between the past and present leads to their conclusion that labor-saving technology is always an enrichment in their lives.

The very old age of the respondents in this model may also be a result of the fact that they especially appreciate devices which reduce physical effort. This is likely because the occurrence of physical impairments increases with

age. All respondents of this type possessed little technical knowledge, which is also due to their advanced age and therefore fewer opportunities to learn how to use the new digital technologies. It could as well be the reason for their lack of desire to understand the inner logic of new technology.

Pleasure in Beautiful Technology

This model, which is attributed to the Aesthetic-Expressive Dimension, is rarely represented among elderly individuals. For those that do associate with this type, the functions of devices are of great importance, as in the Instrumental Dimension, but they nevertheless attach a great importance to the appearance of the device as well. Each device is expected to contribute to the beauty of the individual's home. Here, beauty is understood in the sense of a positive feeling or event.[2] Therefore, not only the functionality but also the shape, color, and design are important when buying a coffee maker, for example.

What motive can explain this interpretative model of technology? For these elderly, aesthetics are generally of great importance, which is also reflected in their style of dress and in their home environment. The visually pleasing arrangement of all the artifacts of their home initiates their experience of pleasure, joy, and well-being. At the same time, they are convinced that the choice of a – usually expensive – device underlines their wealth and their cultural expertise, which in turn increases their social prestige.

Based on this motive, the elderly in this model spend a lot of time and give a great deal of attention to purchasing a new device. The desire for a beautiful device can even be so strong that they dispense with functionality in order to get the best style. They appreciate high-priced, brand name products, and often prefer to make their purchases in specialized shops. The atmosphere of these shops is also in line with their desire for beauty in their way of life. In addition, they prefer new and novel products, because they associate a feeling of being up-to-date with them.

Which people could be assigned to this type? Or to ask more generally: What conditions correspond with this interpretative model of technology? It is noticeable that the respondents of this type are similar to the group of people Schulze (1992) describes in his *Erlebnisgesellschaft*, namely the

2 | Beauty is not an objective phenomenon, but it is associated with a device by the elderly.

Niveaumilieu. These men and women mainly have higher levels of education and are rather wealthy. One may suspect that the related cultural and economic resources are the necessary basis for this interpretative model.

Control over Technology

Characteristic for the elderly in this model is their desire to improve their technical abilities and skills via their use of technology. They often take for granted that the devices also have to fulfill important functions in the household (Instrumental Dimension). The aim of these older people is to master their technical devices. New digital technology tends to especially motivate them, as it appears to be complex and inscrutable at first glance, which makes it interesting in their eyes. Similarly, technical problems are welcomed as interesting challenges rather than as nuisances. Nevertheless, these people are not interested in all technical innovations, but rather deal exclusively with the devices of their household.

What are the motives of these people? First, the use of technology is a welcome opportunity to turn away from what these people consider to be boring daily tasks. In addition, they enjoy the opportunity to improve their cognitive abilities and their technical skills, while at the same time assuring themselves of their expertise. Along with technical competence, they associate high cultural qualifications, intelligence, and mental flexibility, all of which play an important role in their lives. Therefore, their own technical competence is a focal aspect of their self-image. One the one hand, it triggers a feeling of pride and a sense of being pleased with themselves. On the other hand, it allows them to set themselves apart from people who possess little technical expertise. For these people, technical competence is the basis of social affiliation, and at the same time an indicator of progressiveness, openness, and youthfulness. They nevertheless experience their skills in some respects as being limited, which they associate with their rather low level of education. Therefore, it is plausible that they limit their interest in technology pragmatically to their own devices.

Due to these motives, the elderly associated with this model have a large number of devices and spend a great deal of time with them. In particular, studying user manuals is considered to be very important to these individuals. This application of time is considered to be the key to improving their technical expertise. The instructions are worked through step-by-step with discipline and perseverance, so as to develop their technological competence

systematically. Moreover, training courses are perceived as important chances to deepen their knowledge. It is worth noting that technical problems are experienced as welcome occasions to further develop technical skills.

What are the context conditions for this type? In this sample, the elderly generally have a low-to-medium level of education. Nevertheless, all have professional experience with new technology, which may be the reason for their open-mindedness towards it and their confidence in their ability to master it. Noteworthy is another aspect: Older women were almost forced by the lack of technical expertise of their partner or their boss to acquire a certain degree of technical competence to carry out the necessary tasks successfully. In this respect, the lack of technical competence of an important person in a social environment seems to be a trigger for intensive engagement with technology in others. Nevertheless, their own expertise might still be associated with a positive self-image and pride in the own competence.

Technology as a Passion

Technology has a very special importance for the elderly of this type. It plays a role not only in coping with daily tasks, but above all as a special purpose in life, a passion. Much of their day is devoted to the use of technology. Every technical innovation on the market triggers their desire for learning more about it. At first glance, there exists an analogy to the model *Control over Technology,* because in both types a keen interest in technology itself dominates their motivations. However, there exists one major difference. While the elderly of the model *Control over Technology* desire to increase their technological expertise as a sign of cognitive skills, the people of this type find technology itself at the center of their motivation. They are convinced of their high technical expertise, which is reflected in the fact that they believe they do not need to read user manuals in order to operate new devices.

A main motive for members of this model in the use of technology is, as mentioned above, an intrinsic interest in technical devices. The engagement in technology has as a high priority in their lives as their former employment previously held. Several lines of evidence support the hypothesis that engagement in technology is a replacement for their earlier employment. As previously mentioned, they spend most of the day devoted to technology-based activities, which are strictly separated from their so-called "private life." In addition, these people often receive orders from their social network which require technical expertise, and they fill these orders promptly, duti-

fully, and almost professionally. Moreover, they did not voluntarily leave their employment, but rather did so out of necessity due to their age. Their employment had become their purpose in life. It seems that the occupation with technology is an attempt at compensation for the lost employment for these elderly.

Each day, these people schedule an intensive engagement with technology. Furthermore, these elderly have a great interest in all technical innovations. They regularly study technical magazines, as well as hold conversations with other technical "experts" about new products. It is self-evident that their households are equipped with a variety of classic and new technology. They perceive every technical problem as a welcome opportunity to be engaged in technology, just as the elderly of the *Control over Technology* model.

How can the context conditions of this model be described? What is most striking about this type is that it is comprised solely of men in this study. They generally have many years of professional experience with sophisticated technical equipment. Accordingly, the intrinsic motivation of technology in itself is already reflected in their choice of career, and may be the trigger that plays a major role in their retirement as well. To this day, technical employment is predominantly held by men. Accordingly, both the interest of technology in itself as well as many years of professional experience with technology could be found especially in men. Therefore, it is reasonable to assume that this type is represented primarily by males.

Construction of the Social Self with Technology

This model shows a proximity to the model *Control over Technology*, as in both models there is a need to ensure one's own competence in using technology. At the same time, there is a clear difference, which justifies constructing a new type: The elderly of this model are able to increase the feeling of their own competence, satisfaction, and pride in dealing with other people through the use of technology. They require social recognition of their technical competence. They make such competence apparent in conversations with friends and relatives, as well as in discussions with technical experts. The inclusion of a variety of devices in daily life is self-evident to them.

The competent use of technology for individuals in this model is closely associated with feelings of social affiliation and social integration. The elderly are convinced they will be excluded from the current and future technological world without sufficient technical skills. In other words, they

believe they require this competence to be considered a full-fledged member of society. As one female interviewee says, without these skills, one feels *"to be only half somehow [Irgendwie nur halb zu sein]."* However, the desire for social visibility of one's own high technical expertise has its downsides. These elderly feel pressure caused by continual technical progress. They feel the compulsion to learn constantly in order to keep up-to-date. This is connected with the fear of failure and a fear of being stigmatized as "old" by younger people. Technical expertise for these individuals is associated with youthfulness and progressiveness, traits they seek for themselves.

These motives are expressed in an intense preoccupation with technical devices, especially in terms of time. For example, if a device is to be purchased, these elderly spend a great deal of time carefully weighing the pros and cons of different devices. Not only do they consult the internet to receive aid in the purchase decision, but journals and retailers in specialized stores as well. In addition, technology is an ever-present theme in their discussions with friends and/or their life partners. They also enjoy contact with technical experts such as professors of adult education centers in dealing with technical issues. It is self-evident that the household of these elderly persons include a variety of latest and modern appliances, which are utilized with supreme confidence as a result of their careful research. The elderly see technical problems as welcomed challenges rather than as nursances.

What are the context conditions which promote this interpretative model of technology? Some hints can be derived from the sample and should be examined on their generalizability. All people of this model possess at least an average level of education and have made a wide array of experiences with the use of complex technology as part of their professional activities. In some cases, the intense preoccupation with the new digital technology is intrinsically motivated. In other cases, it was forced due to the requirements of their jobs. Also interesting is a marked gender difference in this model. While the men in this type are predominantly intrinsically motivated, the women experienced mostly an external pressure – such as a boss with a lack of technical expertise – as the trigger for their improvement of technical competence.

Based on many years of professional experience, these elderly persons confidently use technology in their households. Likewise, it seems plausible that they can easily win social recognition with their knowledge, especially in a high-tech world. Because of this, it is easy for them to perceive a sense of belonging and integration in society.

Communication with the Aid of Technology

This type of individual also connects technology with a social need. Technology is considered to be an effective way to achieve permanent access to other people. Accordingly, this interpretative model of technology could be assigned to the Instrumental Dimension. Nevertheless, it is assigned to the Social Dimension because it satisfies the social needs of the elderly in particular. The cell phone, telephone, and email program all play a central role in the daily lives of these elderly. In particular, the cell phone is seen as an opportunity for enlarging and strengthening their own network of relationships and, therefore, is their constant companion.

In this model, the motive for the use of technology is quite clearly the need for permanent and close integration into and interaction with their social network. These elderly always want to be up-to-date when relating to their friends. They are convinced that new media technology allows them an intense contact, which had not been possible in earlier times. Nevertheless, these individuals do not wish to communicate constantly, but rather to be available continuously and to have the opportunity to contact others at any time. Additionally, the cell phone gives them a feeling of affiliation during a "lonely" walk, even without the active use of the device. The spatial absence of the others is transformed by the communication media in a location-independent, interactive presence.

In daily life, this interpretative model of technology is manifested by a competent use of a variety of devices for social interaction. If it is necessary to contact a friend who travels a lot, one female interviewee first sends a text message to determine the location of the friend in order to choose the appropriate mode of communication. Likewise, a male interviewee stated that if he wishes to plan an interaction with his busy daughter, he writes her an email, so she can answer at her convenience. Noteworthy is also the time which is spent during social interaction with the aid of technology. Telephone conversations with friends which cannot be met face-to-face due to geographical distances or (age-related) mobility restrictions often take a great deal of time. Therefore, the telephone flat rate has now become a staple in many households. Concrete reasons for calls are not necessary. Phone calls over "sweet nothings" (Peil 2007: 231) are often used to keep friendships alive. Due to the importance of communication, the elderly put an emphasis on quick solutions to technical issues and were willing to enlist the support of experts in remedying them. Hence, in the perception of this group of elderly, such defects played a subordinate role in their lives.

This interpretative model of technology was represented by both men and women, across all educational levels and age groups. Technical competence, or the lack thereof, seems irrelevant for this model as well. Common to all elderly of this type is that their social network and an intense social interaction play a prominent role in their daily lives.

4. Conclusion

Several trends can be gleaned through the consideration of the motives of the elderly for and against the use of technology. First, the motives associated with the Instrumental Dimension seem to play a prominent role for the majority of the interviewed elderly. Through the use of technology, daily work can be more easily, quickly, and economically managed. As described by Rammert (1988: 192), this could be attributed to the so-called "technological mentality," which has emerged in the course of modern technological development. On this basis, efficiency and improved performance have become an end or a cultural value in themselves. Technology is interpreted primarily as a means to an end. Sackmann and Weymanns' (1994) findings about different technology generations point in this direction as well. According to them, the current interpretation of technology by elderly can be attributed to experiences from their youth, which encourages the idea that technical achievements should primarily facilitate work.

Based on this finding, it can be assumed that factors other than instrumental motives hardly play a role, but it can also be shown that a multitude of other reasons for the use of technology exist. A small proportion of the elderly of this study – which can also be assigned to only one type, the Aesthetic-Expressive Dimension – combines the use of technology with feelings of joy and delight. With beautiful looking devices, they wish to arrange their household aesthetically, coherently, harmoniously, and beautifully. At the same time, these devices serve as a testament to their financial and cultural resources, the latter in the form of good taste. It can be assumed that rather few elderly associate with this model, as it is difficult to develop feelings in the context of instrumental objectivity in dealing with technology as described above (cf. Tully 2003: 148).

In addition, motives for the use of technology can be identified which could be attributed to the Cognitive and the Social Dimensions. Some elderly perceive the use of modern technology as an important opportunity to assure

themselves of their own technical skills. Based on this, they consider themselves as open-minded, progressive, mentally flexible, and educated. For others, the use of technology provides an important purpose in life, which is equivalent to that of a profession and represents compensation for their exclusion from employment.

For others, the social visibility of their technical competence plays a major role in their choice to use technology. Through the presentation of their technical expertise, they perceive themselves as belonging to the modern and technological world. Another large group of elderly individuals interacts with technology as an assurance of communicative accessibility. For them, through the use of communication media, the physical absence of their social network is transformed into a location-independent, interactive presence, which is associated with a feeling of affiliation and belonging.

Another finding of the study is that with the use of technology, elderly are usually influenced by several motives simultaneously. For example, some elderly with high technical expertise use technology – in addition to supporting their daily work – as a means of increasing self-confidence, feelings of social affiliation, and social recognition. Avoiding the use of technology leads other elderly to an avoidance of technology-induced loss of control and the visibility of their lack of technical expertise, which contributes to their desire for "invisible" technology.

If it is the aim of innovators to enable older people to live a longer, more independent life through technology, the results of this study must be taken into account during technology development. Not only should technical feasibilities be considered when creating new technology, but the motivations of older people in using that technology should be as well. In order to make this typology of motives for (and against) the use of technology available for technical innovators, it is necessary to develop it further. It is essential to verify the theses on interrelationships between the social, cultural, and structural conditions and the interpretative models of technology with a quantitatively-oriented research design. Based on such studies, groups of people can be identified with specific motives in dealing with technology. In addition, the specific needs of these groups of elderly must be analyzed. The aim of such a collection would be to gather a comprehensive and systematic overview of different groups of older people, which are characterized by specific needs and interpretative models of technology. Technology development should be systematically oriented on these findings.

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