‘For older folks like me, these things are over us…’: The challenge of embedding iPads in everyday life within a long-term care facility

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Abstract: As smartphones, tablets, and myriad computing devices increasingly permeate the public sphere, the adoption, navigation, and utilization of modern technologies continues to be an interesting field of research for scholars of technology and society. Much research has focused on the introduction of ICTs in older people, but it has generally understood them as external factors who act as a sort of independent variable that impacts the seniors’ lives. There remains a dearth of empirical research into how aging and technology are co-constructed (Neven and Peine, 2018). We therefore contribute to this field by analyzing the development and establishment of a sociotechnical network in a long-term care facility that houses seniors in Montevideo, Uruguay. Deploying qualitative ethnographic research comprised of semi-structured interviews, jottings, and field notes, we explore the adoption of new ICTs, and the corresponding actor-network, by seniors who have typically resisted such technology. Our findings suggest that not only was the establishment of the sociotechnical network rife with complexities, disruptions, and fissures, but that the user was heavily influenced by her self-perception of the potentialities of modern ICTs.

Keywords: technology, actor-network theory, postphenomenology, tablet, ICT, older people.

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Introduction

As technology is woven deeper into the fabric of social relations, public institutions continue to develop, implement, and revise strategies to help traditionally atypical users adopt new technologies. Research has consistently found that, in most cases, new technologies offer a level of efficiency that helps individuals and groups deal with everyday life; particularly so for those on the younger side of the 'digital divide' (Neves, Amar and Fonseca, 2013). Recently, scholars have begun to focus on the role of information and communication technologies (ICTs) in later life (Nåsi, Råsånen, and Sarpila 2012). This body of work holds that ICTs are part of an evolutionary process in the future of advanced societies, and that a result of this has been an increased embeddedness of ICTs in the daily lives of older individuals (Lissitsa and Chachashvili-Bolotin, 2015; Quan-Haase, Martin and Schreurs, 2016). The present study hopes to contribute to this literature by analyzing some of the strategies for developing and implementing an ICT network in a long-term care facility in Uruguay called Piñeyro del Campo, located in Montevideo, the capital city of Uruguay.

Uruguay has developed innovative policies aiming at the digital inclusion of its population. In 2007, the country developed a nation wide one-tablet-per-child program — Plan Ceibal— and in 2015, it started a program that aims at the digital inclusion of retired lower-income older adults in Uruguay— Plan Ibirapitá. Through Plan Ibirapitá, retired seniors who receive a monthly income of $30,784 Uruguayan pesos or less (approximately 1,000 US dollars) receive a tablet (similar to an iPad) for free. According to its website, Plan Ibirapitá delivered has 190,000 tablets to date, with the intention of distributing 65,000 more by the end of 2018 (https://ibirapita.org.uy). The Plan also

offers training and workshops that provides seniors with the necessary support so those receiving a tablet a successful experience.

The tablets have an interface specifically designed to be intuitive and friendly for its users. For instance, to deal with well-documented physical and psychological challenges surrounding the use of ICTs for older citizens (Baecker et al., 2014), the tablets have specialized software —such as larger text and a more intuitive User Interface (UI). It has a host of pre-loaded applications, including: games (chess, checkers, tetris, etc.), television, a newspaper reader, a PDF reader, Wikipedia, e-book application, an mp3 player, a calendar, an application to access the Uruguayan Social Security Bank's website, and links to different websites that include weather, pension information and bus schedules.

In this article, we present findings from a research project that took place in a long-term care facility for elderly in Montevideo, Uruguay. Undergraduate volunteers from University of Montevideo met weekly for approximately nine months with seniors in a geriatric hospital to help them use the tablet. The project also aimed at understanding the impact of the tablet on seniors' lives, for which we deployed a qualitative approach based on ethnographic field notes from the volunteers who interviewed with seniors. We develop a theory of actor-network theory (ANT) and postphenomenology, which are two complementary ways of understanding the relationship between humans and technology (Rosenberger and Verbeek, 2015; Rosenberger, 2017a, 2017b; Ihde, 2015), about the role of contemporary technology in the lives of seniors.

The existing literature on the relationship between technology and those living in long-term care facilities (LTC), such as the Uruguayan hospital, is based largely on

experiments which tend to have a technologically-deterministic approach and generally ignores the ways in which technology impacts hospitalised seniors in their daily lives. They tend to be techno-optimistic and ignore the contextual negotiations that seniors engage with while using computers. Scholars from a Science and Technology Studies perspective (Peine, Rollwagen and Neven, 2014; Östlund, et al. 2015; Joyce, Loe and Diamond-Brown, 2016) have proposed moving away from the user/non-user dichotomy and start looking at the associations made with technology in particular contexts using tools from STS such as ANT (e.g. Aceros, Pol and Domenech, 2015). Thus, in this sense, we hope to apply the conceptual tools from ANT and demonstrate how those are suitable to address key questions related to how seniors negotiate with and utilise new technologies in their day-to-day lives.

We also hope to develop a postphenomenological approach to ANT and employ tools from grounded theory to analyse how tablets play a mediating role seniors' lives. Indeed, when we use the term *mediation* or *mediating* we mean how seniors' daily life and realities shift according to the human-technology relationship.

Central to our argument is that several actors betrayed a traditional the network of senior-user in their use of the tablet, such as the hospital's internet infrastructure and local staff. We noted how the use of the tablet was diffuse and complex, as the devices were praised more for their potentialities rather than for their actual use. Applying Rogers (2003) notion about the stages of technology adoption, we advance the argument that seniors have some degree of awareness of the tablet, yet remain distant from more practical "how-to" and operational knowledge and principles-knowledge.

We argue that not only do the tablets play a mediating role in seniors' lives, but the mediating role is one of potentiality rather than instrumental. What we mean by this is that by virtue of their awareness-knowledge, the seniors more or less perceive affordances on the tablet such as communication with relatives (Hutchby, 2001), but they cannot bring them into fruition by themselves given their skills, self-perception, and the context of the hospital they are living in. Furthermore, their awareness-knowledge is explained because seniors perceive the potentialities of the tablet based on the techno-optimist prevailing discourse – that is dominant notions of technological utility based on external communications (such as those with volunteers). At the same time, it is very hard to keep all the entities enrolled to the network of the senior-tablet-user. In order for seniors in the hospital to use the tablets in a meaningful way, all the entities should remain loyal to the network to prevent betrayal, given that other actor-networks try to enrol seniors too, such as televisions and radios, for which most have long-enduring relationships.

We develop these arguments in the following manner. First, we first describe the relevant literature on information and communication technology (ICT) and seniors in long term care (LTC), and demonstrate the importance of understanding how seniors navigate, utilise, and develop understandings of new technologies. We then we present our research question and describe the theoretical perspectives adopted in this research to help explicate the mediating role of ICTs in seniors' daily lives. Next, we detail our research setting (the hospital) and methodological tools used to help comprehend the often 'messy' (Law, 2004) reality of seniors and tablets in the hospital. Finally, we close with a discussion of seniors' use of tablets might inform both our understanding of the

adoption of ICTs in everyday life and, perhaps more importantly, how the networked structure of new technological adoption and understanding play an integral role in the self-perception of individual reality.

ICT, Older Adults, and Long-Term Care Facilities

The issue of how ICT – such as computers and the internet – effects older people living in long-term care has been of increasing focus for researchers since the mid-1990s. Much of the literature on the introduction and use of computers in LTC has focused on the positive impacts of artefacts that can improve seniors' lives among a typically non-stimulating environment, such as the hospital (Sherer, 1996; McConatha et al. 1995). At the same time, researchers have suggested that ICTs indeed can prevent and be a treatment for cognitive deficits for older people in residential homes (Günther et al. 2003). Groves and Slack (1994), for instance, demonstrate how the use of computers in LTC increased seniors' motivation given that it fosters independence, suggesting that the use of ICT 'adds a type of functional dimension back into their lives which increases their self-concept' (p. 1). Similarly, McConatha et al. (1994) found that computer training could help in reintegrating LTC residents into the larger community and counteract limited mobility as it could be used to develop skills such as communication, consumer education, and shopping. This was echoed by Purnell and Sullivan-Schroyer (1997) who claimed that 'nursing home residents can indeed become active citizens of the technological world' (n.p).

Scholarship on the role of ICTs in the daily lives of older adults has thus focused primarily on the positive effects of introducing new technologies into the field of LTC

facilities (Sherer, 1996; McConatha et al., 1995; Cotten, Anderson, and McCullough, 2013). Others, however, have been more cautious about the relationship between seniors in LTC and new technologies. For instance, Fisher (1986) examined the reaction that seniors in a hospital's day care would have to computers and suggested the degrees of impact of the computer by noticing how some seniors ignored the computer while others participated and operated the computer with full control. This way, and anticipating recent literature on users of technology (e.g. Wyatt, 2003) the author indicates a broad spectrum of uses, and suggests that the mere introduction of a technology does necessarily mean use and improvements in well-being. In this sense, Fisher (1986) puts a distance from technological determinist stances by mentioning that computers were indeed perceived as useful tools to keep the mind active but also stressing the need to concentrate on senior's individual attitudes. If not, 'it's possible that computers will end up collecting dust, instead of being used as a tool for cognitive stimulation' (p. 36). This points at the *social shaping of technology:* technology has to be analysed within a social context, and is, in fact, an actor that negotiates with a pre-existing social fabric. This is also suggested by Abramson, Stone and Bollinger (2001), who noticed that the use of technology by seniors in LTC could certainly be positive but is nevertheless complex, as it involves, for example, problems such as staff's and administrators' lack of training and interest (see also by Neves et al., 2015). In other words, what Abramson et al. (2001) are saying is that the universe of social actors where a technology is immersed, matters. To tackle these issues, they suggest fostering collaboration with local universities and colleges, the training of staff, and even the inclusion of an 'Internet therapist, who can, in

effect, serve as a therapist, akin to the traditional occupational, physical and recreational therapists' (p. 7).

More recently, Tak, Beck and McMahon (2007: 37) have attuned to such changes and stated that 'The attitudes toward offering computer and internet access to residents have shifted from 'little gain' to 'a good idea'', given that people for whom technology is part of their daily lives, are growing older. As a matter of fact, providing seniors with technology will be necessary given how ubiquitous ICT currently is. Seifert, Doh and Wahl (2017), for instance, claim that, in Switzerland, Internet has reached the LTC sector and plays an important role in the lives of their residents, and this tendency is only to be expected to develop in increasingly more parts of the world as technology-use expands (see also Peine et al. 2014).

Namazi and McClintic (2003), for example, have attempted to determine the obstacles that cause seniors discontinue a computer-training project among which they mention physical and cognitive problems, personal, hardware/software/technological, organizational and environmental factors. But they ignore a more mundane factor, that is, that seniors may not find computers useful in their lives (see Davis, 1989). It is necessary to recognise that technology is not necessarily useful or inherently good for people's lives, and that people indeed decide the role that it should play within their context. This fact has led researchers such as Neves et al. (2017; 2018) to stress the necessity of focusing on the complex relationship between users, context, and technologies through a recursive model that scrutinises technology *in situ*.

More recently there has been a relatively robust shift in scholarship in this area that seeks employ Science and Technology Studies (STS) to understand the role of

human agency in the uptake of ICT. These scholars have mostly distanced themselves from technologically deterministic conceptions, or conceptions of technology as an external, exogenous factor that determines older people's lives (Joyce et al. 2017; Östlund, 2011). Rather, they seek to understand the relationships between seniors and technologies in terms of a *mutual constitution* (Selwyn, 2003; Selwyn et al., 2003; Peine and Neven, 2018) of seniors *vis-á-vis* technology (Quan-Haase, Martin and Schreurs, 2016; Selwyn, 2006). In this sense, the conception of seniors' agency should be further understood considering the non-human entities that co-shapes agency (Callon and Law, 1997), especially in places like LTC facilities. To this end, we develop an approach that queries both the human agentic character of ICT navigation as well as how that agency is influenced by non-human entities.

A central feature of our analysis is that we build upon Everett Rogers' (1962) seminal typology of technology adoption. According to Rogers (1962) there are three stages of technology adoption and understanding that coalesce around individualized experience with new technologies: awareness-knowledge, how-to knowledge, and principles-knowledge. Whereas awareness-knowledge refers to a basic awareness of the purpose of a technology, how-to knowledge relates to people's skills to use the device and troubleshoot problems and principles-knowledge refers to knowledge about the system's operation (cf. Schreurs, Quan-Haase and Martin, 2017). We thus explore how seniors' effective use of the tablet may often be mediated by the necessary assistance of a host of other actors, including volunteers, infrastructure, and staff — in other words, we explore the possibilities inherent in the construction of a self-perception that new

technologies are not intended for use by older people and by those whom might suffer individual physical issues.

The role of technological mediation

Actor-network theorist John Law (2008: 141) described that actor-network theory is not strictly a theory, but a set of tools that may be utilised to develop descriptive accounts of often-messy realities. Indeed, the world of the hospital is one such messy place, where both human and non-human actors are involved in complex networks of social interaction. Making sense of those interactions, however, is a very challenging task. Bruno Latour (2005) dealt with this problem by, as he put it, following the actors – defined here as 'any element which bends space around itself, makes other elements dependent upon itself and translate their will into a language of its own ... It defines space and its organization, sizes and their measures, values and standards, the stakes and rules of the game' (Callon and Latour 1981: 286). The nature of the entities that make reality in this case is relational and symmetric —a social fact established by Michel Callon's (1986) classic investigation on St. Brieuc's Bay.

Callon's (1986) case study was an exploration in how scientists worked to enrol Fishermen and scallops into their network in order to tackle a problem of their decline in the Northern France Bay during the 1970s. What Callon (1986) showed in his study is the relevance of non-human entities and how they have to be conceived as having agency that is susceptible to re-define networks in whole new ways – an idea he defined as 'generalised symmetry'. He demonstrated how an entity's identity can be defined relative to the network in the process defined as *translation*, where actors – in this case,

fishermen, scallops, and scientists – are domesticated in a process through which humans and non-humans are relationally understood. Human and non-human actors are both equally significant for determining a social order. This entails an anti-essentialist approach to the social world, where people and objects' meanings and identities are negotiated and established relatively in a network fashion. Nothing is fixed, but rather meanings and identities depend on the strength of a network to keep all its actors in place.

Postphenomenology, on the other hand, establishes that technologies are mediators of how we experience the world and thus are far from neutral (Verbeek, 2005). It conceives subjects and object in terms of a relational ontology, where technologies are not *in themselves* but in relation to how humans relate to them, and it is in this process that they co-shape subjects and their world. Rosenberger and Verbeek (2015b) give the example of a telescope: through the telescope's mediation, people are constituted as observers and the sky as observable.

There are indeed similarities between postphenomenology and ANT, especially with respect to the roles of artefacts as mediating entities that fundamentally change the relationship between humans and their world. This way, human agency is co-constituted and the social order is determined by technological mediations/translations. In other words, while ANT provides with the tools to study how an artifact is established in a network in relation to other actors (namely how it is translated), postphenomenology provides concepts adequate for the examination of the contextual use of a technology (Rosenberger, 2017). Following these seminal contributions, we adopt both approaches in our study of the uptake, negotiation, and deployment of ICTs in the LTC context.

Methodology

The present deploys a broadly qualitative ethnographic approach with data collected from semi-structured interviews, field notes, and jottings of social interactions between tablet-users, technologies, network infrastructure, volunteers, and hospital staff at the long-term care facility. To understand this sociotechnical network, we developed a series of primary and secondary research questions. We focused primarily on identifying the latent and manifest roles that new ICTs play in the daily lives of seniors at the hospital. Subsequently, we were interested in providing insights into a series of sub-questions, including: how is the sociotechnical network constructed, mobilized, and deployed in the context of new ICT introductions in physical space? How do those involved in the sociotechnical network resist or reject adoption? How do users of the tablets navigate and deal with technical failures? And, finally, how do such failures influence the self-perceptions of new ICT users?

To provide insight to these questions, we used a qualitative inquiry based on ethnography and semi-structured interviews. Different scholars (e.g. Verbeek; 2016; Hutchby, 2001), have demonstrated the important role that conversation analysis plays in examining how technology composes people's reality and how a meaningful 'world' with technology is constructed. We thus used interviews in order to grasp the mediating role of the tablets in seniors' daily lives, and analyzed the resulting data with principles of conversational analysis established in literature.

According to Denzin and Lincoln (2011), qualitative research is fundamentally about understanding the human attribution of meaning. Thus, to explore meaning attribution in the context of new ICTs in the hospital, research assistants, who were also

volunteers, interviewed fifteen seniors participating in Plan Ibirapitá over the course of nine months. Interviewers were overseen and guided by the authors, and were asked to write memos of their interactions with participants, as well as field notes and jottings of what they were experiencing. The interviews were transcribed verbatim for coding purposes guided by a grounded theory approach (Glaser and Strauss 1967). Grounded theory is defined by Strauss and Corbin (1998: 12) as theory that is derived from data, systematically gathered and analyzed through the research process – an primarily inductive rather than deductive process. This entails "not only conceiving or intuiting ideas (concepts) but also formulating them into a logical, systematic, and explanatory scheme." (Strauss and Corbin 1998: 21). To make a mass of data coherent in this way, researchers use a process commonly referred to as coding; it entails developing concepts and categories in a way that goes from the concreteness of the data toward an abstract connection between them (Strauss and Corbin, 1998: 22; see also Charmaz, 2014). All participants were asked to sign an informed consent document and ensured of full anonymity and confidentiality throughout dissemination of the projects' findings – all interviewee names are thus pseudonyms and identifying information has been excluded.

We first read the transcripts in detail to familiarize ourselves with the data. This was followed by a line-by-line coding in which we grouped similar events, concepts, ideas, and narratives under specific themes. As Strauss and Corbin (1998: 103) explain, "a concept is a labelled phenomenon. It is an abstract representation of an event, object, or action/interaction that a researcher identified as being significant in the data". We used the research assistants' memos and field notes as heuristic tools that assisted us in developing patterns and themes when coding the data. In our case, after reflexively

seeing how the fieldwork was developing, we quickly realized that a postphenomenological lens could be applied and that we could empirically develop its complementarity with ANT. Thus, we had these theories in mind when developing our codes that were grounded in the data (see Figure 1). Following Tavory and Timmermans (2014), we therefore adopt what can broadly be defined as an *abductive* approach to grounded theory. The categories we discovered were then articulated with these technological mediation theoretical perspectives —ANT and postphenomenology— which we believe provide with interesting insights to look at the deployment of the tablets in the hospital.

The training of seniors to become tablet-users

Undergraduate students from University of Montevideo trained seniors to use the tablet. The training sessions were highly personalised and focused on the interests of the resident. There was people who were desperate to talk to their family, as well as there were people who liked going to Google and write down recipes. However, the seniors primarily used the tablets for entertainment (i.e., games), rather than more instrumental purposes (i.e., online banking). Many argued that they had nothing to do and said they went to bed and played games, and that this was 'good for their heads' and for 'moving the neurons making them work a little', as a couple of seniors put it.

The volunteers had to go through management offices to retrieve the tablets, although, in some cases, some seniors were allowed to keep it themselves. Each tablet had a number and name corresponding to the resident for which it is assigned. The volunteers would go to meet the resident they are responsible for training. The fieldwork

supervisor was present in the hospital during the training in case any problems occurred, such as the frequent lack of internet. We encouraged those seniors who were motivated and lucid enough to go to there and retrieve their tablet, use it there, and then return it for simplicity sake. We also encouraged for them to ask the nurses to go get them. However, users remained reluctant to use the tablets. What was done, then, was installing lockers and padlocks allowing the people who were more lucid to store the tablet there to prevent it being stolen. However, in general, even if they had their tablet there, they would not use it.

Volunteers were assigned to work steadily one-on-one with a senior. Twenty seniors said that were too old to use the tablet, but ten, who were in a very good condition, could use it. Yet, they do not make an optimal use but only played with it. Seniors were very excited at first, however, it could be because the attention they received from young people and not so much for what they expected from the tablet (a critique already pointed out by Gregor and Dickinson (2006)).

There are healthy and active residents who saw the tablet as a window to the world and a remedy to being immersed in a world surrounded by very sick people. This way, the tablet functioned as a boundary-making artefact in so far that owning the tablet created a difference from seniors who are in worse conditions. The tablet gave them autonomy and made them feel as capable people circumstantially surrounded by others with problems. For others, the tablet operated as an antidote to complete inactivity. During the fieldwork it was noted that seniors tended to feel incapable to operate the tablets, and many prejudices were at play, such as that ‘I’m too old for this’. As we will show, this sort of prejudice is a product of the technological mediation itself; seniors

often times felt frustrated and did not understand how it worked. The breaking down of the internet was also another source of frustration for seniors and volunteers alike, as there was not much the latter could do to solve that problem.

The realities of the residents with whom the volunteers worked were very varied. There were residents who were capable to leave their section to go to the garden, the assembly hall, or the occupational therapy room. There were even elderly people who had special permits to leave the hospital and do things such as going to the supermarket or to the bakery. This was associated with a variety of individual experiences with both the training sessions and the tablet use itself. Compounding this varied usage was that the internet network (i.e., WiFi) was repeatedly broken, so the fieldwork supervisors were often forced to call the internet provider, thereby adding complexity to the sociotechnical network. Indeed, this meant being days in a row without service.

Actor-network of senior-users of the tablet in the hospital

Here we describe the set of actors that are relevant in the actor-network of the senior-user-of-the-tablet: seniors, volunteers, tablets, Internet and Wi-Fi, volunteers' cell-phones, nametags, lockers, padlocks, hospital's staff, and stairs, televisions, radios, and cell-phones. Let us start with seniors. Whereas some of them were engaged, others did not see a use for the tablets. Age was a common justification, and some stressed that the tablets were not for them but for the younger generation. They said things such as 'I am not in a stage to learn this, if I was younger [I would use it]'; 'the tablet is for the youth' or 'I would like it if I was younger. I'm 83'. They constantly mentioned the problems intrinsic to being old according to them:

> ‘I used to learn things, now I don’t know whether I can learn. Keep in mind that I am 76 years old‘
>
> ‘For older folks like me, these things are over us. It may be useful to somebody else, but to people like me, I changed’
>
> ‘I am a nervous person and I don’t have the patience’
>
> ‘For the old ones like myself, it is over. For a young man it is different than for an older one like me. It is of not use for me, others might find it useful...one has already changed’

If we establish a parallel with Callon’s investigation of the scallops of St. Brieuc’s Bay, seniors could be considered the actors whose identity we wanted to enrol in a network of users. The government’s (and ours’) objective through Plan Ibirapitá was to ‘anchor’, or better said, *enrol* seniors to the network of tablet-user so that they can reap the benefits of the digital world. The goal was to translate their identity from a ‘person excluded from the benefits of the digital world’ into a tablet-user, surfer of the Internet who harvests the succulent fruits of the web and its applications. However, some seniors were unruly, or they succumb to the temptations of other networks such as that of television and radio that do not demand much from them. This is because one can just lie in bed and watch TV or listen to the radio, and one is more of a passive recipient. In addition, TV and radios are devices of their time that they know how to use, whereas tablets, even though they might be useful, require much work and are complicated to manage. This why a senior stated, ‘Nothing has changed much [with the tablet] because I have the television right there’, whereas another one said, ‘I enjoy watching TV. It entertains me a lot.’ In addition, cell-phones are another example of competing network:

> ‘I’m going to tell you the truth. At the beginning, I started, I asked for the tablet, because I thought that it was easier and I had a wider spectrum to communicate with my family and with the people I love. But as time went by, I have found the cellphone to be easier than the tablet. Because I turn the

> tablet on and push on the social network icon, and there is a silence that tells me nothing, and no familiar faces show up on the tablet's screen. I found that to be frustrating.'

Other senior also pointed out problems with the internet:

> 'I don't have the time, you see. I would have the time if I was determined to, but as I have to have internet and all that, I grab a book which is easier, or I listen to the news on TV, or something like that. I'm pretty well informed that way.'

Another senior mentioned the easiness of TV compared to the tablet adding the prohibitions he was inflicted from the staff, from the Wi-Fi, and the charger:

> 'I'm going to be honest with you, with the tablet I cannot watch the news. [TV] is much easier and I access images and sound. With the tablet I look for information, I mean, I look for channels but I can't. I go round and round but I can't connect to any channel. [if he had internet] and they allowed me, I could go outside with the tablet. I could sit somewhere where I don't bother anyone, turn the tablet on, and watch [a news program] and the other in channel 4.… There are some Turkish soap operas on TV that I can't stand and then I think about [the tablet], that I have to charge it, I have to look for the icons and I can't find them. So then, why would I grab it, you see?'

Or another senior combined the difficulty to manage the tablet with issues of age:

> 'I don't like it [the tablet]. I watch TV, it is more practical. More comfortable. I don't care about the world of [the tablet], I leave that to younger people, for kids, the grandchildren. It is a different epoch when the first tablet, computer appeared, it is a different stage now. I arrived here and that's it… With my age I want to live comfortably. [The tablet] is bad because of the time that takes from what amuses me, from the distractions, better said than amusements, that is the TV.'

Student-volunteers were the 'obligatory passage point' (Callon, 1986) as they were generally the ones who grabbed the tablets from the management office and took them to the pavilions where the seniors were. Without them there could have not been network at all; they problematised (ibid.) the seniors' identity. Along with the tablets, they translated all of the other actor's identities toward the network of senior-user. They

functioned as Callon's scientists. At the same time, the tablets are 'immutable mobiles' (Latour, 1987; Law, 1986) of the government's efforts to transform the low-income-retired-senior population into users of tablets within the framework of human rights inscribed in the Uruguayan law. The tablets carry certain social order to specific places such as the hospital. Moreover, they transport the government's script (Akrich, 1992) that technology is good for older people and that it can help them improve their lives. The tablets tried, sometimes successfully, to translate seniors' interest and free time toward being a tablet-user and active senior through its components such as games. And indeed, sometimes it worked, as one senior remarked, 'I had nothing to do before, but now I have the tablet'. Another one said: 'The tablet has been a window toward entertainment', and one volunteer noted that: '[one senior] likes being plugged to the tablet, radio or TV, not to think'.

Let us now introduce a couple of traitors to the network: Internet and Wi-Fi. These two go hand in hand and were fundamental to enrol seniors into the network. When they failed, seniors lost interest in the tablet. The quotes below attest to this:

> 'The problem is that I cannot communicate from bed [using the tablet] and sometimes I don't feel well enough to get out of bed and I want to communicate to tell [his daughter] that I don't feel well, that I need her. Although I know she won't show up because she is working in Buenos Aires. I want to communicate and tell her how I feel but I can't.'

> 'Sometimes I get so angry that I want to throw [the tablet] to the ground when I can't communicate. I just want to smash it. I just do it here [on the dining room] because I have wi-fi here. In the bedroom I don't. I turn it on 25,000 times, and 25,000 times I press on the icons that they told me I have to press, and nothing.'

> 'Right now I don't use it because it always asks to connect to the internet. I can't get internet.'

> ‘I love how you [volunteer] teach, but the problem is that I left it aside because as the thing to connect to the Internet popped up and I don’t know how to connect.’

One volunteer noted:

> ‘It is not comfortable for him [the senior] going to the dining room. He doesn’t find the time as they are always serving food or cleaning. He says he should go at 11PM but it’s too late then. He cannot go to the assembly hall because it is always closed.’

In a way, the Internet had the same effect as when the scallops did not anchor in St. Brieuc Bay in Callon’s account. Internet is key in holding the network together, but often times it does not do its job properly nor efficiently. This provoked human actors such as the fieldwork supervisors to call the Internet provider (a government-owned company) in order to try and keep the network together, but the restoration of the Internet often took days. However, an association of human and non-human actors provided solutions on several occasions: the volunteer’s and their cell-phones that can share Wi-Fi. Together, these actors offered networks of solution when Wi-Fi was failing and held the network together in momentary times of failure or futility.

Other fundamental actors are nametags, lockers, and padlocks, that provide several anti-programs to other actors who threaten the network – namely, thieves and unwanted patrons. A program of action is related to a script. It is the inscribed function to a device, namely, what the device is determined to be for (Latour, 1992). These elements counteract the human robbers’ program of action, namely, stealing the tablets from seniors, but also against some senior’s laziness of not wanting to walk all the way to the management offices to use the tablet. Lockers were assembled close to seniors to encourage those more avid users to use the tablet more assiduously and thus fortify the

network. The thieves' program was also counteracted using padlocks and nametags glued to the tablets.

Other actors that worked against the network were stairs and staff. On the one hand, stairs attempted to prevent seniors, especially men, to move themselves to the places where they had Internet access. On the other hand, human entities such as nurses or employees both hindered the seniors' use of the tablets by not helping in moving seniors to those places where there is intermittent Internet access, even when fieldwork supervisors requested for help (cf. Barbosa Neves et al., 2015).

Mediating role of the tablet

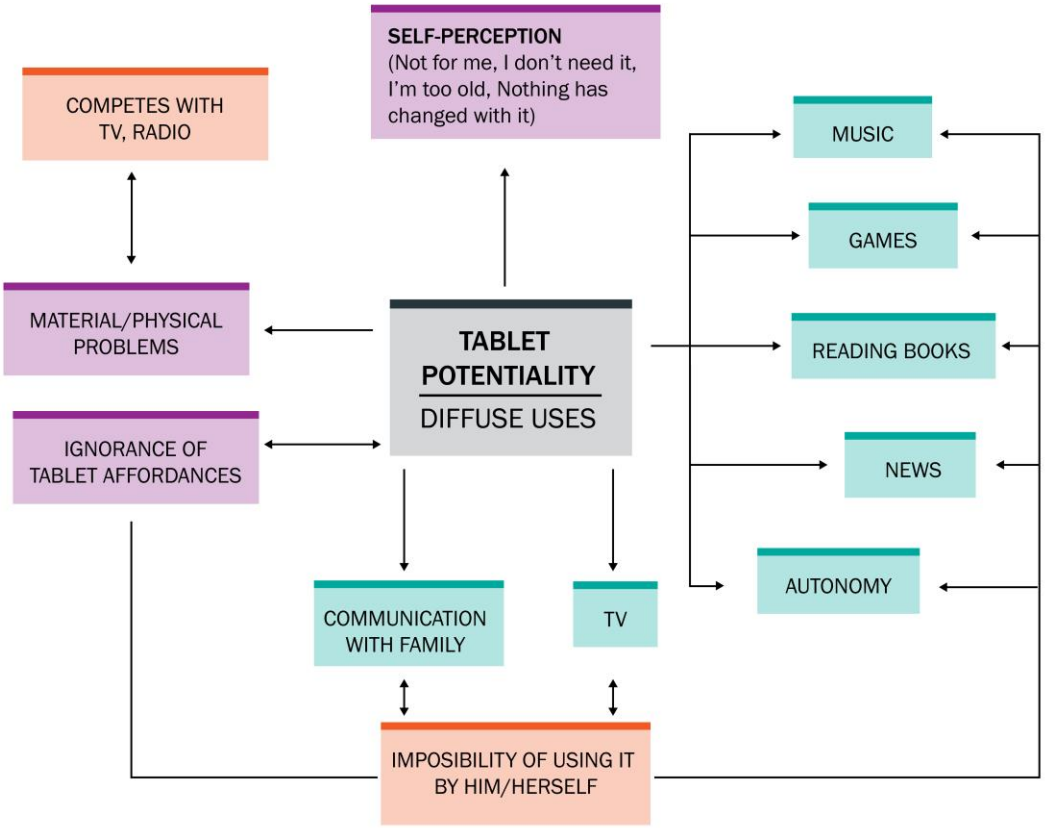
But one thing has to be made clear: mediation, as described by postphenomenology, goes beyond mere use and includes the potentiality of technology. In this sense, Aisle Kiran (2017: 8) argues that the artefacts that compose our lives 'configure the manners of our being-in in the 'physical world' as well as the 'social world'. This means that technological mediation transforms human's projects, agency, possibilities, and their selves. Technology's actuality, then, does not provide with a comprehensive account of the significance of technology in the lifeworld, so that we need to also put our attention on what Kiran calls 'technological presence' other than on artifacts *in use* (2012: 79). This way we can consider technology's influence in their potentiality rather than their contextual actuality. It refers to the fact that technologies carry 'virtual' actions which are side effects of what they were designed to do. Technology, thus, affects our lifeworld with the possible mediations it provides: "We become the kind of subjects that we are through throwing ourselves into projects. The projects we regard ourselves to be able to

undertake, throw us into, is very much related to the technological possibilities we recognise in our lifeworld" (Kiran, 2012: 80). In other words, our projects define how we perceive reality showing us the affordances for our goals (see Brey, 2017). Kiran puts forward the notion that the technologies organise our lifeworld as it opens up the potentialities of what we might become, so that 'the 'world' becomes the potentiality enabled by things' (Kiran, 2012)—things that compose our existential horizon (ibid.). In other words, we maintain that our projects and affordances are established by the actor-network we are a part of. We move through the world according to the associations of entities in particular contexts, or, in Kiran's terms, our existential horizon.

Thus, the tablets, as non-human entities, mediate seniors' realities in a complex fashion, mostly not through use or actuality but through its potentialities, or, the perceived affordances or the awareness-knowledge of the artefact (Rogers, 2003). This way, they co-constitute seniors' reality within an actor-network.

With our interviews analyzed with grounded theory tools, we arrived at the following scheme:

Figure 1: Conceptual Schema of Sociotechnical Network at Hospital Piñeyro del Campo



We found that the main category is that of the tablet's potentiality as well as its diffuse uses. This is because the seniors we interviewed appreciated the tablet more by its perceived potential affordances, technological presence, or awareness-knowledge, rather than by its actual use:

> 'What happens is that I like to talk a lot and I would like to have things such as communication with my daughter. But then I would need to know how to use it properly.'

> 'I dreamt I would be able to communicate with my family through the tablet. I want to do it by myself and every day.'

> 'If I want to watch a football game and I am away from the pavilion, how do I do? I have to go out with someone, otherwise I can't. I would like to go out with the tablet instead of being inside trying to watch the football game unsuccessfully.'

> ‘I didn’t know what the tablet was for. I imagined I could listen to the BeeGees. Because I watched that [another resident] used the tablet with one of the guys that comes here and they could play with the tablet.’
>
> ‘I would like to use it to communicate in order to learn to knit. You see, I knit, but I want to learn other styles or other stuff related to knitting.’
>
> ‘I don’t know…to communicate, to follow the news…I have a daughter in Buenos Aires.’

In addition, almost all of the times, seniors needed the volunteers to be with them in order to engage with the tablet. The awareness-knowledge that different seniors brought up in the interviews were that of being able to communicate with family, listening to music, playing games, reading books, checking the news, watching TV on the tablet, as well as a perceived autonomy they got through the tablet. In spite of this, however, they largely ignored how to use it and they seemed to repeat what the volunteers explained to them in the training sessions without really using it by themselves in most cases:

> ‘As of now, [the tablet] has not been useful. It is if I get help from somebody else who knows. I can’t communicate.’
>
> ‘I would try it, but as I tell you, I don’t want to waste your time and the other kid’s who are so good to me. I’m on a different stage now. If I was younger, then yes. But at my age I am with one foot here and another one in the other world. So for my kids, grandchildren, yes. They are in an age to use the current technology, but I am lazy.’
>
> ‘I haven’t used it recently because it says that I have to connect to the internet, and I don’t know…’

These perceived potential benefits were accompanied by something that seems contradictory, that is, the fact that seniors tended to explain that they were too old to manage the tablet, that they do not need it, and that nothing has changed with it. So even if they felt that the tablets could be beneficial, they found excuses not to use them through that self-perception. These excuses where also fed by material and physical

problems such as that the tablets need to be charged, and that many seniors had different physical issues such as mobility or vision problems. This, at the same time, was synergic with the aforementioned easiness of watching TV or listening to the radio:

> ‘I haven’t used it. I have played with it, but I haven’t used it much. I haven’t used it because I had to charge it the other day, I had it uncharged, and now I plugged it in for charging again.’
>
> ‘It is not a lack of will, but the problem is that I can’t see well. It’s a waste of time.’
>
> ‘The advantage of TV is that it does not affect my vision’
>
> ‘If I was in good conditions, ‘brand new’, I think I would like it.’
>
> ‘It is a waste of time… I barely do my own things and I don’t ask for anyone’s help. I’m always busy.’

We could say, then, that the social space created by the tablet is one determined by a discourse that recognised potential benefits to using device, but that those are ‘not for me’, or ‘I could use it but I’m too old for it’. The tablet does co-constitute seniors’ reality in a fashion that is not directly by its use, but through the technological presence that Kiran describes, and the actor-network co-constitutes their agency. That is, through the perceived potentialities and diffuses uses that seniors tend to engage with the volunteers’ help.

Conclusion

In order to study the impact of tablets on the life of seniors who live in the LTC, we used ANT and postphenomenology, two theoretical standpoints that have been pointed out as complementary (Rosenberger, 2017). On the one hand, from an ANT perspective, we

used concepts from Michel Callon's classic study on the scallops of St. Brieuc Bay (1986). On the other hand, using a postphenomenological standpoint, we focused on the mediating role of the tablet on seniors' lives. Our data was gathered through interviews and interviewers' detailed notes and then was analyzed using grounded theory (Charmaz, 2014).

We found that the actor-network of the hospitalised-senior user of the tablet is fragile, as there are several actors that attempt against the network. The actors involved in the establishment of the social order tablets-in-the-hospital, are: seniors, volunteers, tablets, Internet and Wi-Fi, volunteers' cell-phones, nametags, lockers, padlocks, the hospital's staff, stairs, televisions, radios, and cell-phones. For instance, an Internet and Wi-Fi that sometimes do not work properly do not allow seniors to connect from their bedrooms. This disrupts one of the activities that is most interesting for seniors, which is communication with family. The student-volunteers who trained the seniors worked as 'obligatory passage points' (Callon, 1986) insofar as most seniors said they needed the youth's guidance in order to use the tablet. Furthermore, when the Internet and Wi-Fi collapsed thus destroying the network, student-volunteers counteracted this by mobilizing their own cell-phones through which they could share Wi-Fi.

Using postphenomenology, we noticed that the mediation (that is the constructing role of seniors' reality through the technological medium), and concomitant seniors' agency, is based on potential perceived affordances (see Kiran, 2012) or what Rogers (2003) defined as awareness-knowledge, namely, the basic knowledge of what the tablet is for, which does not mean an actual know-how. This led to a diffuse use of the tablet by the seniors, which was basically consisted in playing games.

Previous literature (e.g. Sherer, 1996; McConatha et al. 1995; Tak et al. 2007; Cotten et al. 2013) agrees on the fact that technology could help seniors living in LTC have a better life, added to the fact that they are susceptible to isolation (Prieto-Flores et al., 2011). That is why policies such as Plan Ibirapitá could be helpful. However, this should not be framed in a technologically deterministic fashion, because context is fundamental. Recent scholarship on seniors and technology from an STS perspective has argued against paternalistic views in the design and implementation of technological innovations that sees older people as mere recipients (Peine, Rollwagen and Neven, 2014). These paternalistic stances usually carry rhetoric about technological innovation being a sort of morally necessary solution for many of seniors' problems that are usually intertwined with ageist stereotypes (Joyce et al. 2016). Thus, scholars have indicated the necessity of looking at how older people use technology in the context of their lives (Peine and Neven, 2017) because aging and technology are co-constituted (Peine and Neven, 2018). We found that the borders of an apparently simple technological artefact such as a tablet are diffuse in so far as many actors have to be in place in order for the tablet to be used, translate people's identity, and establish —in our case— a senior-user in a geriatric hospital. We suggest that ANT brings an interesting way to design, understand, and apply technological policies such as the Uruguayan Plan Ibirapitá in specific scenarios such as the hospital Piñeyro Del Campo. This implies moving away from simple (and often deterministic) appropriation models to include the many human and non-human actors that are involved in the technosocial.

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