

Taking care of the elderly through the tools of animated communication design: a useful and ethical imperative

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Abstract

"Care" according to Heidegger is the fundamental structure of existence and the totality of determinations of being of Dasein (which is the being-there is both being with). Care is the expression of the relationship between man and others and can be inauthentic or authentic. Inauthentic care takes care away from others by directly providing them with what they need; it is therefore directed towards objects more than towards men. Authentic care, on the other hand, helps others to take on their own care and therefore to be free to realize their own being; it is an expression of "coexisting". According to Heidegger, therefore, authentic care is a care that concerns people and that allows people to possess the tools to be-there.

This difference, apparently subtle but very profound, offers an interesting ground for reflection in the field of design and on the role that the designer can assume in this context. Can design tools, methods and processes be exploited to take care of others in the Heideggerian sense of the term?

This contribution wants to offer an example of taking care of the elderly through the tools of design. The research presented is part of the field of animated communication design and has as its objective the construction of a series of strategies to be offered to the designer in order to produce inclusive animated artifacts towards the older segment of the population. Through the presentation of three case studies carried out following these strategies, it will be clear how creating an inclusive animated product towards seniors is more inclusive also for all the other users.

The taking care of the elderly by design not only makes sense from the point of view of wanting to reach as wide an audience as possible, but it also assumes an ethical imperative. The digital technology universe can offer a wealth of information, empowerment, and potential; it is therefore not possible to deny this possibility to a large part of society.

Author keywords

Communication design; motion design; senior; inclusion; project tools;

Introduction

Taking care is an act that belongs to different disciplines; it does not only refer to the affective field, but has its reflections in many other fields, including sociology, psychology

and philosophy. According to the German philosopher Martin Heidegger, "cure" is the fundamental structure of existence and the totality of the determinations of being in being there.

Since existence, for Heidegger, is being in the world, therefore being among others, care is precisely the expression of the relationship between man and others. According to the philosopher, there are two extreme possibilities for ways of caring. On the one hand, caring can in a certain way relieve the other from "caring" by replacing him in caring, stepping in his place. This taking care assumes, on behalf of the other, what one has to take care of. Heidegger calls this type of care "inauthentic". On the opposite side, there is the possibility of taking care which, instead of intruding in the place of others, presupposes them in their ability to be existential, not to deprive them of their "care", but to authentically insert them in it. This form of taking care, which essentially concerns authentic care, i.e. the existence of the other and not something he takes care of, helps the other to become transparent in his own care and free for it (Heidegger, 1929). Therefore, inauthentic care takes care away from others by directly providing them with what they need; it is therefore directed towards objects more than towards men. On the contrary, authentic care, according to Heidegger, is a care that concerns people and in particular that allows people to possess the tools to "be there".

This difference, apparently subtle but actually very profound, offers an interesting ground for reflection in the field of design and on the role that the designer can assume in this context. Can communication design tools, methods and processes be exploited to take care of others in the Heideggerian sense of the term?

This contribution aims to offer a reflection, through the presentation of three case studies, on how through the tools of design, with particular reference to the animated communication field, the designer manages to "take care" of the older part of the population.

The seniors: a growing range of users with some peculiarities

The seniors represent a growing segment of the population: the lengthening of life and the decrease in birth rates promises a growth in the number of people over the age of 65 at a global level: it is estimated that in the next fifty years, 30% of people in Europe will be aged 65 or over which is 10% older than they are now (European Commission, 2020; Eurostat, 2020a).



The intersection between the progressive aging of the population and the diffusion of technology in many aspects of daily life (work, education, health care, information, socialization, bureaucratic duties, physical activity, etc.), brings an ever-increasing number of over 65s online (Eurostat, 2020b). In fact, not considering seniors, with their unique needs and abilities, as possible users of a digital communication product implies the potential exclusion of an increasingly large segment of the population from using that specific product, with all the resulting disadvantages.

Beyond that, the use of technology has the potential to play a critical role in supporting older adults to maintain healthy levels of sociability, foster connection, learning and recreation while bringing significant benefits to their lives. (Oppenauer, 2009; Wister *et al.*, 2021).

So, given the explosion of various forms of social media and online learning programs, given the ubiquitous use of technology in everyday life and the importance of it in maintaining independent living, it is understandable how much it is important to contribute to finding design strategies that can meet the needs, preferences and abilities of older people in using digital products or services. Therefore, when well designed and easily accessible, they can contribute to well-being and quality of life, support independence and self-reliance, and help with age-related issues and other limitations. (Neves and Vetere, 2019; Rogers *et al.*, 2020).

Proper attention to design in all its processes is the key to eliminating the frustrations that are often linked to the use of new media by the elderly.

Although the data on the increase in the viewing of online videos by seniors are encouraging (Ericson Consumer & IndustryLAB, 2021) it should be stressed, however, that unfortunately the elderly are also the least expert class in the exploitation of digital technologies; precisely for this reason, compared to young people, there is a substantial gap also due to the disparity of digital skills and less experience in the use of new technologies (Friemel, 2014; Guo, 2017; Hargittai *et al.*, 2019; Hunsaker and Hargittai, 2018; Moore and Hancock, 2020).

These differences in experience and technological proficiency are important to consider when designing digital products, services and systems. Any designer has the task of considering that the experience, competence and attitudes of the elderly towards technology are different from those of young people: not considering it in the design phase can potentially exclude a very wide range of possible users.

To these social and historical problems are added the physical and cognitive limitations related to age, which sooner or later almost everyone experiences during their elderly life.

Animated project tools for an inclusive design for seniors

Although there is substantial variability among the elderly in terms of skills, attitudes, experience and preferences, and this variability should not be ignored, younger or older adults vary some of their psychophysical characteristics in a predictable way: some of the most relevant differences are related to perceptual and cognitive abilities, movement control, experience and attitudes with technology (Boot *et al.*, 2020; Panadisi, 2022)

For each of these areas, there are some design strategies to consider, which are derived from existing guidelines and scientific literature on the subject, as well as from design experience in motion design.

When you think of watching a video on a smartphone screen, you immediately think of seeing and hearing: These represent the most important forms of exchange with the environment and both senses are subject to significant age-related loss that begins quite early in adult life (Wahl Hans-Werner, 2003).

As for the field of vision, one of the main problems is the inability to see all the elements on the display correctly; the vision problems that most frequently occur with advancing age include the lesser amount of light reaching the retina, the yellowing of the lens, more difficulty focusing in cases of sudden changes in brightness and the early stage of cataract causes blurring (McLaughlin & Pak, 2020).

If the product is designed to be used on multiple platforms - in the field of visual intelligibility - it must above all be visible and readable on the different screens and in different formats: the 16:9 format, for example, which is most often used to create videos on smartphone screens, is definitely an outdated format and should be replaced by vertical or square formats. The excess of information, the overlapping of images and graphics in the same picture and the use of bright, high contrast colours can also lead to visual disturbances.

Like sight, hearing is one of the senses that deteriorates with age. The ability to listen can affect the ability to interact properly with systems. In fact, a hearing problem in the context of modern technology means losing touch with people and things. Hearing is often thought of as a backup sense to sight, although it has advantages over vision: It works 360 degrees around the body and provides greater acuity to detect rapid or minimal changes in the environment (Michels *et al.*, 2019). In this case, the important variable is the context in which the user is viewing the video: The use of subtitles to accompany the voiceover and describe sounds or music is a very useful element. It is important that everything can be understood without sound or with possible background noise in the environment. On the other hand, heavily synthesised voices should be avoided for voiceovers. Prefer voices recorded by humans, which have more understandable frequencies (McLaughlin & Pak, 2020).

There are other important factors to consider when designing an animated artefact that adds to hearing and seeing: these are cognition and movement.

Cognition refers to all the processes by which the brain receives sensory input - whether from the eyes, ears or other senses - and transforms, reduces, processes, stores, retrieves and uses that sensory input (Boot *et al.* 2020). Some of the most important cognitive aspects that a communication designer dealing with audiovisual content must take into account are processing speed, which includes the speed of recognising letters and numbers, reading and understanding language; attention, which concerns our ability to process information; and finally, working memory, which refers specifically to the ability to keep information active until it is used (Czaja *et al.*, 2019). In the cognitive domain, one of the most effective design strategies is to create short, clear and simple content, as the attention threshold of a normal user is always lower and therefore audiovisual content that does not exceed 90 seconds is the most effective. To overcome some of the most common cognitive problems, it is useful to include images and diagrams in the animation to clarify the text and the narrative voice, take into account that the user does not need to remember and therefore minimize the viewer's memory load by not overload-

ing the attention span by presenting too much information and text. The last characteristic to be considered is movement; both accuracy and timing of movement tend to decrease with age, without any particular pathology.

The main problem in the area of physical capabilities, which mainly concerns animated artefacts with an interactive component, is that smartphones are often used to watch short videos and the small size of their displays and buttons can make them difficult to use. Besides choosing an appropriate size and visibility of the buttons that appear in the interactive videos, it is much more important to increase the time for inputs by avoiding timeout operations. Therefore, it is advisable to add motion interactions to extend the time for answering a question or making a choice.

Starting from the deepening of some of the physical and cognitive characteristics of the elderly considered relevant in the interaction with an audiovisual product, the definition of the strategies in detail was completed, during the PhD research period, thanks to the systematization of these together with the principles and guidelines in subject of graphic design for displays, UI, UX and web accessibility, the principles of Universal Design and design for digital products and systems intended for elderly users and the technical peculiarities of motion design.

Application of senior-friendly project strategies: three case studies

Motion design is the most widespread of the new forms of communication: In recent years it has permeated a wide range of applications, brand building and identity design, digital product interfaces, data visualisation, design for TV and channel brands, exhibitions, advertising and much more. It uses the principles of visual communication and animation to convey a message in an engaging and effective way (Brian Stone & Wahlin, 2018). It is the synthesis of different disciplines and combines the static language of visual communication (graphic design, illustration, photography and painting) and the dynamic language of animation (film, sound, VFX) (Shaw, 2015).

Although the term motion design is still quite new (Kubasiewicz, 2005), both animation and motion graphics are anything but new techniques. The first dates back to the nineteenth century (Rondolino 2003), the second emerged in the 1950s through the opening credits of films and short animated interludes of television channels (Betancourt, 2013). It is important to look at the roots of this language: From being a language of communication limited to a few specific categories, it has evolved over the last decade into the main language of the internet, where short animated videos are distributed to promote, inform, educate and raise awareness on a variety of topics, products and services. Motion design is not a common visual language for older people, but it is also not too innovative to discourage its use.

Therefore, designing animated artifacts that are accessible to seniors is important both on an ethical and communicative level: in fact, excluding the elderly from a communicative message excludes a large segment of the population.

The videos chosen for the case studies are some of those made in the context of the PhD research as part of the verification of the strategies for producing inclusive animated artifacts towards seniors; they are made with different animation

styles and techniques ranging from 2D to 3D. The application of the design strategies already took place in the pre-production phase starting from the concept.

Video 01 | Falls prevent

The first of the three videos that will be presented below deals with the topic of preventing accidental falls in the elderly. It is a very sensitive issue for the elderly and is one of the most frequent problems of hospitalization.

Moderate physical activity is one of the main strategies for preventing the risk of falling, maintaining good muscle tone and improving joint flexibility. The video presents some exercises developed by physiotherapists which, if performed consistently, can contribute to the prevention of accidental falls.

The minimal and clean scenography leaves room for keywords and subtitles, and the figure performing the exercises is placed at center stage as the main element of the narrative (see Figure 1).

Given the need to make the exercises as understandable as possible, the choice was to create a 2D animation with very simple characters and backgrounds, colored with flat colors without shadows, outlines or shades, just to put the focus on the exercise and not on the character or scenery.



Figure 1. Frames from Case Study number 1 | Link to video 01

The main design strategies used to make the artefact inclusive for seniors were:

- » Avoid using bright contrasting colors
- » Use a soft, neutral color for the background during the exercises to make the main subject stand out.
- » Using a single pattern for the whole scene to avoid creating optical disturbances.
- » Present the keywords with very large fonts: in this way they become graphic elements.
- » Insert animated graphics (arrows and lines) to improve the understanding of the animation and the exercise.

Video 02 | The stages of feminism

The second video represents some essential stages of the feminist movement that took place in the time frame that goes from its birth to the present day. The animation tech-

nique is a hybrid between 2D and 3D that can be described with 2.5D; two-dimensional elements are used (in this case the path, numbers and texts) but within a 3D environment with a camera that therefore moves in three dimensions. The scenography is practically empty, a choice designed precisely to keep the viewer's focus centered on the stages, without distractions of any kind.

The whole narration is conceived as a long sequence shot to accentuate the idea of fluidity of the path that the viewer ideally follows while watching the video. The choice for the style is to use white for the background and black for the few elements in the foreground: the sinuous line that simulates the path and for the dates and small texts that accompany them, exaggerating the contrast between the elements (see Figure 2). In this particular case the guidelines to be taken into consideration are those to achieve cognitive ease and avoid short-term memory overload.



Figure 2. Frames from Case Study number 2 | Link to video 02

- » The video is very short.
- » Only two colors are used with a very evident contrast between the background (white-grey) and the foreground elements (black).
- » The dates and the short texts that accompany them are deliberately made out of proportion precisely because they themselves represent the protagonists of the narrative.
- » The decision to create a practically bare environment, with the exception of the main elements, is strategic in order to avoid distractions on the part of the viewer during the course of the video.

Video 03 | Save waste, save lives

The reduction of food waste is the theme chosen for the third video, created with a 3D animation technique: all the elements are modeled in the three-dimensional space, which becomes a real set with the camera and the lights positioned in order from film studio. The setting is that of a simplified food industry in which a machine in the center acts as a display of data and graphics while various types of food move on a rear conveyor belt. The background is monochromatic

with no other elements to allow the viewer to focus on the main element. Even the camera is fixed and only graphics, elements and texts are animated. The narration therefore presents a single layout for its entire duration: this element is both functional to underline the importance of the main element of the scene which is always placed in the center, and to facilitate the understanding of the video without tiring the viewer (see Figure 3). Since this video is informative and has a good amount of data in relation to the duration time, the guidelines are taken into account to ensure that this data is well received and assimilated.



Figure 3. Frames from Case Study number 3 | Link to video 03

- » The main element that hosts the data is always placed in the center of the layout.
- » Along with the data, graphic elements are also displayed inside it that help clarify the narrative.
- » The user does not have to make any effort to search the screen for information because it is always placed in the same position.
- » The colors used are not particularly bright, but offer a good contrast between the relevant information and the background.

Conclusions

In recent years, thanks also to the Covid-19 pandemic, there has been an increase in the use of new media by seniors, with a particular increase in the use of motion design artefacts. This is an important point to ponder: older people, as we have noted, are a growing demographic worldwide and a significant class of digital media users; consequently, it is important to consider their specificities in design. It is considered that after the theoretical analysis of the design of inclusive digital systems and products and the psychophysical characteristics of seniors that are most stressed when interacting with an audiovisual product, the designer should consider a set of strategies to be applied when designing a motion design artefact. It was clear from the case studies illustrated in this paper that, if put into practice, these strategies will facilitate the resolution of certain visual, auditory, cognitive and physical problems of seniors mainly related to age. Animated

communication design artifacts created by considering the physical and cognitive characteristics of users can be a valuable tool in increasing the confidence in the use of new media by seniors, with all the potential benefits that will derive for them. After testing these videos with two groups of over 65 users (for a total of 100 users) the response was very positive, and the design strategies needed few adjustments especially for the audio part of the project.

As we have seen with these three videos, it is absolutely possible to produce animated artifacts that are inclusive towards seniors and also more understandable for all other users without affecting aesthetics and animated dynamics. For a designer, taking care of a senior user in the authentic form also means making sure that the communicative product is not only aesthetically satisfying, but above all understandable, accessible, and usable even for less young users.

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