

# The art of feeling connected

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# Valorization

## Valorization

In 2005, the Dutch Ministry of Science defined 'knowledge transfer and utilization' as third primary task for universities, in addition to research and education (Science, 2005). In this context, valorization is defined as the value that novel research knowledge creates on a societal, technical and/or economic level.

Because of the practical nature of this PhD-project, some of the generated knowledge is readily available for end-users in forms that can be directly used or implemented in daily practice. Examples include two interactive artworks that were developed and implemented in nursing homes, reports on the effects of three interactive artworks on people who live in nursing homes, information on how to use the interactive artworks in daily practice and guidelines for artists and/or designers to develop interactive artworks in an elderly care setting. Other outcomes which influence society, the economy, end-users, educators or researchers might be less apparent. Therefore, this chapter provides insight into how the results of this PhD-project are relevant for different stakeholders and outlines the steps that have been taken/or are planned to implement the generated knowledge.

### Relevance of the clinical problem

Estimations show that about 117.000 people were living in Dutch nursing homes in 2016 (Planbureau, 2017). Although there is no generic profile for the nursing home resident, 98% lived with physical limitations and 73% coped with cognitive complaints or problems. Despite the implementation and benefits of emotion-oriented care in most Dutch nursing homes, there's still inactivity of residents and boredom during time in between activities (den Ouden et al., 2015). The absence of cultural activities that are adapted in ways that they can be carried out by the nursing home residents themselves in their free time is a missed opportunity. However, to add these activities to the workload of nursing staff is currently not an option, since budget cuts and existing workload already impact the quality of professional health care (Boer & Vreede, 2016).

This situation presents a challenge: In order to keep providing a worthy and full life to elderly who live in nursing homes, innovations are needed. In the light of these developments, interactive artworks can be a valuable addition to emotion-oriented care technology in nursing homes. This dissertation shows that they can evoke responses from nursing home residents during inactive moments during the day, without putting unnecessary pressure on staff.

### Target group and other stakeholders

The findings of this PhD-project might be relevant for several stakeholders as described below.

#### *Nursing home residents*

All three interactive artworks studied in this PhD-project put the experiences of nursing

home residents first. Active participation and individualized activities might provide them with dignity, meaning and joy (Slettebø et. al, 2016). Inspired by the lack of cultural activities (van Campen & Verbeek-Oudijk, 2017) and inactivity (den Ouden et al., 2015) during the day in a nursing home residence, the potential of interactive artworks as a qualitative pass-time was explored. The reported responses in this dissertation show that the interactive artworks studied in this dissertation can trigger memories, spark conversation, stimulate nursing home residents to be physically engaged, focused and calm. In the form of (temporary) exhibitions, interactive art could make state of the art cultural experiences accessible (again) for nursing home residents.

### *Nursing home visitors*

It can be a difficult task to make contact with a nursing home resident whilst visiting them. The experience of new things without the need to rely so heavily on verbal communication could be empowering for both visitors and nursing home residents. Unfortunately, these types of activities, which can be shared with the residents without having a professional caregiver present, are uncommon. Interactive artworks can fulfill three roles here: (1) They can be an interesting destination, something to walk towards and pay a visit. (2) While present, the content and experience that these artworks present can start or keep a conversation going. It provides visitors and residents with “something else to talk about”, and lastly (3) the shared experience can lead to (an increase in) interaction between visitors and residents and might improve their bond.

### *Nursing home staff and institutions*

Although the interactive artworks designed and studied in this dissertation are meant for nursing home residents to enjoy by themselves or together with a non-professional, It has been established in this dissertation that autonomous use by most nursing home residents is impossible, therefore the quality of the experience for most nursing home resident is directly linked to the involvement and level of familiarity of the (professional) caregiver or visitors. Professional nursing home staff can be of great value in guiding an experience with interactive artworks, the interactive artworks studied in this PhD-project can also be used by nursing home residents under the guidance of a non-professional or in some instances even independently. The presence of the artworks therefore does not create extra pressure on the nursing home staff.

The results of this dissertation show that when groups of nursing home residents interacted with interactive artworks like VENSTER (Chapter 4) or the CRDL (Chapter 5), they were generally calm and focused. This made scarce time available to start a conversation with an individual or a group, or to provide someone with some extra attention.

The presence of interactive artworks can change the perception of a nursing home. By embracing interactive artworks, nursing home institutions can show that a nursing home



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can also be a place of culture and that people who live with cognitive and/or physical challenges are not left out. Although economic value is hard to calculate in this case, there is value in being on the forefront of developments and innovations like these that are in the best interest of the nursing home residents themselves. It has an effect on the image of the institution and can play a role in the branding strategy. The artworks discussed and developed during this PhD-project have already generated positive (media) attention for all involved.

### *Design/art education*

Design and art schools are changing. They adapt to the ever more rapidly changing world and elderly care is one of the societal issues that needs designers who are trained and capable of ascribing meaning to this altering field in collaboration with others. This PhD-project has proven to find its way into education. The knowledge that was generated with regard to interface design for people who have cognitive and physical limitations and how they react to interactive (art) installations is used to educate bachelor students in minor programs and bachelor projects to design their own installations for these target groups.

These students benefit not only from the generated knowledge that is put into place in the curriculum, but also from the network that has been formed. This network consists of local businesses, different alpha and beta faculties, research groups and care organizations that provide students with professional guidance, a place to perform research and experiments and even options to bring their ideas to market.

### *future health care professionals*

To ensure the successful implementation of interactive artworks it is important that future health care professionals know that they can be part of the continuous development of these types of artworks. Once implemented, they should know what the possibilities of interactive artworks are. Although these artworks should not be treated as obligated activities or therapy, future professionals can be the linking pin between the artwork and introduce colleagues, visitors or volunteers by showing them how they work. Future professionals can spread knowledge and enthusiasm about interactive artworks and incorporate them in their own daily practice.

### *Media artists*

Most artists do not have the tendency to study their audience's reactions in a scientific way alongside of their artistic merits, although exceptions exist (Khut & Muller, 2005). Nursing home residents, and people living with cognitive challenges by extension, are not an obvious target audience for most media artists. It is common knowledge for artists in this profession that an interface stands between the person who visits or participates in the artwork and the experience. The way nursing home residents interact with interfaces of interactive artworks,

however, are not familiar grounds for most media artists. The guidelines and pointers that are described in this dissertation can start paving the way for more inclusive artworks that are accessible for a multitude of people. Studying the reactions of people towards interactive artworks in general, and in this case nursing home residents specifically, will lead to knowledge about how interface and installation characteristics enable and influence the experience of participants.

Documenting the process of creating interactive artworks also has its merits. Creating documentation of the design process and writing down experiences regarding the involvement of all stakeholders during the rapidly iterating process informs media artists on how to involve people in their process and will possibly lead to a practice of continuous examining and improvement.

### *Researchers*

The results of this PhD-project show that there is a lot of interesting research still to be done. Most of the interactive artworks created today are not formally studied in any setting. The established framework could provide some insight into how people react to different interactive artworks. The framework itself could use some scrutiny as well. To easily compare participant responses to different artworks, consensus on a framework and word choice is needed.

While the explorations in the nursing home indicate that nursing home residents react to interactive artworks and that there is potential for broader implementation, further research is needed to explore the possibilities in other care fields and to gather more data in order to differentiate and broaden the market for these artworks.

All the studies mentioned in this dissertation looked at the immediate responses of people interacting with the artworks. It would of course be favorable to also learn about the long-term usage patterns. Do people in the nursing home grow bored of the installations or start using them differently over time and what does that mean for the designer? Is it possible to keep it interesting over the long term?

If we want to learn whether interactive art can create meaningful experiences for nursing home residents, subjective experience and perception of general wellbeing should be measured. An evaluation of the suited methods to gain insight in short- and long-term effects on happiness, perceived wellbeing and quality of life should take place.

Aside from measuring experience and wellbeing, data aggregation could be automated through integrating sensors in the artworks that monitor use and record responses automatically and individually. It can provide insight in whether and how people interact with the artworks over longer periods of time and register the number and amount of time an artwork is used.



# Valorization

## Dissemination of findings

Since this PhD-project has been carried out by a teacher, researcher and practitioner, there has been a constant knowledge flow from the beginning of this project. In addition to the knowledge, different products and services are presented into which the research has been or will be translated.

### Knowledge transfer to society and elderly care

#### Public presentations

##### **TEDx talk**

[https://www.youtube.com/watch?v=Dkku71m\\_w\\_g](https://www.youtube.com/watch?v=Dkku71m_w_g)

##### **High tech meets health**

<https://www.slideshare.net/posiXtom/tom-luyten-hightechinhealthcare2014>

##### **Barsten in het Brein IV**

26 januari 2016, Zuyd Hogeschool, Heerlen

#### Public online videos

##### **VENSTER**

<https://vimeo.com/142050697>  
<https://www.tis.tv/user/posixtom/>

##### **Morgendauw**

<https://vimeo.com/232712051>

##### **Interfaces voor interactieve kunstbeleving**

<https://vimeo.com/255724735>  
<https://vimeo.com/242055091>

#### Online articles

##### **VICE**

<https://www.vice.com/nl/article/gv89v4/hoe-gaan-nederlandse-kunstacademies-om-met-digitale-kunst>

##### **Fondation Mederic Alzheimer**

<https://www.fondation-mederic-alzheimer.org/technologies-16>

##### **Mieke van Os**

<https://miekevanos.com/2016/07/27/social-design/>

**Knowledge transfer to society and elderly care**

<p>Television appearance</p>	<p><b>SBS6 – samen sterk</b>  <a href="https://www.youtube.com/watch?v=VwmoU7DGK2s">https://www.youtube.com/watch?v=VwmoU7DGK2s</a></p>
<p>Articles in plain language</p>	<p><b>Digitaal VENSTER als zorg hulpmiddel</b>  <i>Cicerone - Jaargang 9 nummer 3 september</i>  <a href="http://www.innovatiesindezorg.eu/files/8214/1450/3943/artikel_Cicero.pdf">http://www.innovatiesindezorg.eu/files/8214/1450/3943/artikel_Cicero.pdf</a></p> <p><b>Morgendauw, een interactieve kunstinstallatie</b>  <i>Vitalis Next – 12/2016</i>  <a href="http://www.fiftylab.be/wp-content/uploads/15936942_1274675229242144_7158101164912058092_o.jpg">http://www.fiftylab.be/wp-content/uploads/15936942_1274675229242144_7158101164912058092_o.jpg</a></p>
<p>Interactive art installation</p>	<p><b>VENSTER</b>  <a href="https://vimeo.com/14205069">https://vimeo.com/14205069</a></p> <p><b>Morgendauw</b>  <a href="https://vimeo.com/232712051">https://vimeo.com/232712051</a></p>



**Knowledge transfer to education**

<p>Hackatons</p>	<p><b>Hackaton snoezelrobot Daelzicht Heel 2015</b>  <b>Hackaton Licht en Liefde 2013</b></p>
<p>Minor courses</p>	<p><b>Interfacing Tomorrow</b>  <a href="https://vimeo.com/255562433">https://vimeo.com/255562433</a>  <a href="https://vimeo.com/203003182">https://vimeo.com/203003182</a>  <a href="https://vimeo.com/163461972">https://vimeo.com/163461972</a></p> <p><b>Installation Design</b></p>

# Valorization

## Knowledge transfer to education

Bachelor Theses

**Interfaces voor interactieve kunstbeleving in het verpleeghuis**

Sabien Douven

**Doorbreken van dwaalgedrag bij mensen met dementie**

Kelly Grootheest

**Ouderen met dementia activeren met de Qwiek.up**

Armand Meessen

**Bij kinderen noemen we het fantasie**

Fré Hermans

**Co-creatie met ouderen**

Tessa Biermans

**Draadloze persoonsidentificatie met als doel personalisatie, case VENSTER**

Hans Hoogenboom

## Knowledge transfer to (creative) industry

Collaborations

The development of VENSTER occurred in close collaboration with software company Noos Design

The development of Morgendauw occurred in close collaboration with software company PciD and hardware company Audioworx

A network of artists, engineers, health care professionals and research has been formed

**Knowledge transfer to research community**

Articles in journals

**Participant responses to physical, open-ended interactive digital artworks: a systematic review.**

Luyten, T., Braun, S., van Hooren, S., & de Witte, L. (2017). *International Journal of Arts and Technology*, 10(2), 94-134.

**process of co-creating the interface for VENSTER, an interactive artwork for nursing home residents with dementia.**

Jamin, G., Luyten, T., Delsing, R., & Braun, S. (2018). *The Disability and Rehabilitation: Assistive Technology*, 13(8), 809-818.

**co-design method for creating meaningful art installations for residents of nursing homes.**

Luyten, T., Braun, S., van Hooren, S. de Witte, L. 2017. LAAN, T. V. D. (ed.) *Shared insights on co-creation in healthcare*. Utrecht: U-create.

**How nursing home residents with dementia respond to the interactive art installation ‘VENSTER’: a pilot study.**

Luyten, T., Braun, S., Jamin, G., van Hooren, S., & de Witte, L. (2018). *Disability and Rehabilitation: Assistive Technology*, 13(1), 87-94.

**Reconnecting People with Dementia by Using the Interactive Instrument CRDL.** Teunissen, L., Luyten, T., & de Witte, L. (2017). *AAATE Conf.* (pp. 9-15).

**How groups of nursing home residents respond to “the CRDL”: a pilot study.**

Luyten, T., Braun, S., van Hooren, S., & de Witte, L. (2018). *Journal of enabling technologies*, 12(4), 145-154.

**How nursing home residents respond to the interactive art installation ‘Morgendauw’; a pilot study**

Luyten, T., Braun S., van Hooren, S., & de Witte, L. (2019) *Design for Health* (submitted)



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## Future dissemination and implementation activities

Everyone is entitled to experience art and culture. In the case of the nursing home, it seems that interactive art can be a valuable addition to the existing palette of experience-oriented care technologies, especially during the inactive time in between existing activities and therapies. It can possibly even change the perception of the nursing home environment, provide meaningful experiences for nursing home residents, despite their mental and physical challenges, and might affect wellbeing of all who reside, work or visit in the nursing home. The following paragraph describes several future dissemination activities to further upscale the implementation and use of knowledge that was gathered in this PhD-project.

### *Knowledge transfer to society and elderly care*

The results of this PhD-project will further be disseminated to the public by press releases of Maastricht University and Zuyd University and the PhD-project will be accessible worldwide via the research portal repository of Maastricht University (<https://cris.maastrichtuniversity.nl/portal/>).

The interactive art installation VENSTER and Morgendauw will remain active in the respective wards of the nursing homes. To embed interactive artworks into the nursing home and to tear down the walls that separate museums, media festivals, exhibitions and the society in general from the nursing home, an experiment with a museum-like environment inside the nursing home should be explored. This could take form as a living lab where the art is on display during and after development and viewers are aware their data is being collected to advance the development of the works, such as Beta\_space (L. Muller, Edmonds, & Connell, 2006) Artworks in the lab need to be equally interesting for the people who live inside and outside of the nursing home, but created in such a way that everyone, including the nursing home residents, can understand and enjoy them in their own way, within their possibilities.

### *Knowledge transfer to education*

The author remains active as a teacher in higher design education, transferring knowledge in minor programs such as “interfacing tomorrow”, where students learn to create meaningful experiences for people living with disabilities and “installation design” where installations are created for museum experiences. Bachelor students can graduate on the topic of interactive art, design for people with limitations and participate in the living lab. Several presentations and weblectures on the different topics that have been addressed in this PhD-project will be generated and shared openly.

### *Knowledge transfer to (creative) industry*

During the PhD-project a network of artists, engineers, health care professionals and research has been formed which is needed to assemble interdisciplinary teams which can

create the often complex and challenging projects that interactive artworks in a health care setting are. This network will be formalized and made visible.

### *Knowledge transfer to research*

It is the intention of the interactive art expo to become a living lab that provides continuous results on how nursing home residents and other people react to different interactive artworks. This will result in publications by students, artists and researchers on the topic and provides fertile ground for experimentation and exploration.

Furthermore, a factsheet providing an overview PhD-project and its results will be published open access to inform researchers worldwide about the knowledge gathered.

### *Innovative aspects*

To our knowledge, the interactive artworks developed and studied in this PhD-project are the first that were specifically designed for a nursing home environment. The project lived in the center of a triangle that consists of art, technology and care, combining these three disciplines in a single research and development trajectory.

The novel interactive artworks presented in this dissertation were developed in thorough co-creation with different stakeholders including patient representatives, who were involved in all phases of the project. This close collaboration with different stakeholders ensured commitment to the project and continuous feedback on the design of the artworks. Furthermore, it actively involved students, professionals and researchers in interdisciplinary and diverse teams, which meant challenges but also a lot of knowledge sharing and valuable partnerships that break down walls.

Seeing (interactive) art as an important part of life within the nursing home walls connects to the theme of “the human and his/her environment as a whole”, defined by the NWA (NWA, 2018). They state that the physical, social and cultural space are of great importance for health and prevention and that more knowledge is needed and needs to become available. This project contributes to that task.

Lastly, the role of media artist or designer in this PhD-project as researcher, entrepreneur and interdisciplinary project manager has been novel. Due to the complex nature of the problem space, and the mix of different disciplines it was not always easy to navigate. It required open minded institutions and people to share, work together and share a common goal. Designers and artists are trained to come up with creative solutions, and would be well suited to tackle the societal challenges ahead by (conceptually) leading interdisciplinary teams.



