

# Designing Robots to Laugh at

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**Abstract**—This paper proposes a new theoretical direction in the design of assistive, functional robots, by leveraging play theory. Our vision is that a playful perspective will lead to the creation of assistive robots that could better address the emotional and interactional nuances of care practice, embodying values of humor and creativity, while appearing non-intimidating to people affected by dementia. Therefore, we propose to reconceptualize assistive robots for care homes as functional toys; humble and amusing objects that are easy to play with or laugh at.

**Keywords**—assistive robots, play theory, empathy, humor, mood.

## I. INTRODUCTION

Assistive robot technologies are increasingly entering the living spaces of older adults in need of care. If not fully integrated yet, robots are at least regarded as potentially playing a large role in the future of care [1] [2]. Within research these robots are demarcated into two categories: a functional and a social [3][4]. The distinguishing line is determined by whether the robot has been created for socialization with humans or not. Hence, automatic vacuum cleaners like the Roomba are regarded as functional while the toy-like seal Paro is categorized as a social robot. However, based on [5] and [6] we suggest that any automated agents sharing physical environment with care-dependent older adults should be regarded as social robots. Not because they have been created to socialize per se, but because they will be assigned a social agency, no matter what their designed function is.

Assistive robots may present several problems in care environments where frail and often ill older adults live. In particular, self-moving, autonomous robots can appear as annoying or threatening to individuals affected by dementia. Therefore, we propose to endow robots for care environments with playful values. That is, with attractive and interaction-inviting aesthetic and functional qualities. This will serve to render the robots more humane and to spark interaction and laughs, instead of deference or fear. Play is typically related to social robots such as Paro, but it need not end there. Several studies [7][8][9] as well as Marchetti’s field work demonstrates that daily care practice already involve playfulness in many variations and that it may be beneficial for both the older adults, their relatives, and the staff to increase it. Playfulness may serve to lift the mood in difficult situations, give adequate stimulation, and let people share significant experiences regardless of physical and mental capacities [10] [11] [12] [13] [14].

## II. PLAY THEORY

To prevent the infantilization of older adults who receive care [15], play and the playful may be regarded as problematic in relation to this group. Hence, we need to address the largest hinderance for accepting play and the playful in relation to older adults. Namely that it is often regarded as childish. However, the poet and philosopher Friedrich Schiller [16] in his letters on *The aesthetic education of man* famously declares: “Man only plays when he is in the fullest sense of the word a human being, and he is only fully a human being when he plays.” While Schiller particularly focuses on artistic practice [17], he employs the notion of play in the full meaning of the word at the time. In 1800th century Germany the notion of “play” denoted everything from running about, over staged plays to the solving of riddles and the creation of art. Yet, with the onset of modernity, play – as the rest of society – has undergone chronologization [18] [19], marking it off as the child’s obligation through which it trains to become an able and work-ready adult [20]. It is understandable, then, that it is often frowned upon to couple play and older adults. However, the problem is not with play but with the residue of chronologization, which has marked it off as childish. Thus, we need to claim back play for humans of any age.

The playful, as we use the phrase here, is derived from the notion of play, embodying some of its characteristics though not necessarily all. Play cannot be reduced to a particular set of activities. It is rather that which happens when one or more actors enact the playful potential of a given situation. Consequently, play resides neither in the player nor in objects or the surroundings but emerges in the entanglement between these [21]. When drawing the line between play and not-play – the playful occupying the continuum in between – framing or metacommunication is central. Human play references everyday practices in many ways, but also differs markedly from it because play comes about via a more or less explicit framing, namely the agreement: “this is play” [22] [23]. This framing or metacommunication may be expressed in many ways via language, bodily gestures, architecture, or rules. The frame indicates that everything may take on new meanings within its boundaries. Due to its paradoxical nature of appearing-similar-to-while-not-being-and-yet-emulating, play creates a space for experimentation both with that which is and that which is not.

Another important characteristic of play is its manifestation as an autotelic mood practice. That is, players play simply to do so, seeking to create and maintain a play mood. This understanding is implied in much play theory [21] [24] [25], however, Helle Skovbjerg (former Karoff) [26] presents the point with particular clarity. Karoff draws on Heidegger’s notion of mood in her work, regarding it as a

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fundamentally interactional way to be in and directed toward the world:

[...] the state of being where you are distinctly open to new meaning production and where the possibilities exist for that to happen. It is not something that comes from within the players or from the outside, but instead it is happening through our engagement with the doings of play and in our relations towards the people we are with. [26: 83]

Thus, the basal mood of play is openness toward the world, its objects, beings, and features. It is an openness toward forming and being formed, but also to dissolving and being dissolved. Play and the playful may involve humor and joking, enactment, the playing of games, creative practices, subversive practices as well as movement to and fro.

### III. MAKING ROBOTS TO LAUGH AT

We propose to approach the design of assistive robots for mundane functional roles (e.g. cleaning, transporting or lifting units) from a playful and humoristic perspective, not in the sense of supporting specific activities, but rather exploring qualities of play to enrich the interaction between robots and users. Our approach builds upon three main goals:

- To better fit the playful aspects of care practice,
- To expand the emotional and interactional palette of assistive robots,
- To make robots relatable as toys.

Conducting in situ observations for a period of 2 months in 2019 in several Danish care homes in relation to the *Rethicare*<sup>1</sup> project and a co-design session for the *Smooth*<sup>2</sup> project, provided unexpected insights into the playfulness of caring practice. Specifically with respect to how caregivers adopt a playful framing to create a social and human bond with the residents, showing empathy, enriching the experience of routine tasks, or handling stressful situations like sickness or emotional distress. For instance, a common practice in the care homes we have visited is to utilize what they call “dementia toys”, which are provided to residents on daily basis as a form of emotional relief. The most popular toys include *Ruben’s dolls*<sup>3</sup>, *Store Bent*, and the blanket *Flora*<sup>4</sup>. *Store Bent* is a stuffed sloth, with round blue eyes, while *Flora* is a blanket with the face of a round hippo. They are both soft and heavy and according to caregivers from a care home in Odense their weight “helps the residents to relax when they become restless (...) as if they were hugging their pet or a person”.

We noticed that the caregivers were attempting to keep a light-hearted and relaxed mood, where use of toys, laughs and jokes were the norm. During observations at a care home in Koege, the caregivers showed us how they would dispense medicines and drinks while adding a festive mood to it. The caregivers gathered the residents around the dining table and the medicines were distributed together with a glass of water or juice. As the drinks were distributed, the caregivers took a glass of juice too and loudly said: “Skål!” (Danish for cheers), the residents replied, and both residents and caregivers drank together smiling as if during a party.

These instances show how role play and toys are entangled in care practice. In our view, designing robots with playful values in mind, would mean acknowledging in full the nature of care practice and how caregivers interact with residents on an emotional level.

Moving to our second point, we see that care practice carry rich social and emotional meaning, so that caregivers are careful in everything they do when approaching the residents. For instance, caregivers kneel, whisper, and smile while talking to the residents to avoid intimidating them. Caregivers do not only solve problems, but they also create a mood around the residents, acting on the line between play and not-play. In this sense, play can provide a framing to explore creative forms of interaction and appearance for assistive robots, that could better address the social and emotional nuances of caring. A playful framing will enable developers to expand the palette of emotions associated to assistive functional robots, potentially eliciting amusement, fun and more creative interactions.

Regarding our third point, play is used in care practice to shorten the hierarchical distance between patients and doctors [7]. A common issue when designing robots for elderly care is the residents’ acceptance of such robots, especially when addressing people affected by dementia. We argue that approaching assistive robots with playful values, will enable the designers to create more relatable robots, which could be perceived as functional toys. In this study we see toys as objects that can be employed in play, inspiring a light mood, amusement and laughs. Based on these premises, toy-like robots will be non-intimidating objects that contribute to the framing of play, encouraging an atmosphere of safety and trust.

An assistive robot in care environments should not induce people with concern of being hurt or make them feel confused about how to act around the robot. Hence, we propose to integrate playful values to assistive robots, so that these will instead appear relatable, harmless, non-intimidating and easy to laugh at or, even, ignore. Design inspiration could come from toys for dementia, common toy-like or zoomorphic forms, saturated light colors and soft lines. On a methodological level, meaningful data could be found observing how residents like to interact with each other and with caregivers, with the objects they use daily, and in general what can elicit in them a light mood.

Interestingly, [27] argue that research on play tend to focus on children, but that, based on their results, play can contribute to enrich social interaction and daily practices for older adults. Moreover, [28] argue that the agency of people affected by dementia is expressed emotionally or even non-verbally and through jokes or stories, rather than verbally and rationally. In this sense, approaching the context of care homes from playful values such as role play, creativity and humor, might more adequately address the relational needs of residents. Current research in assistive robots has a unique opportunity to investigate how to support care practice in novel ways, addressing the rich nuances of social interaction inside care homes.

<sup>1</sup> <https://www.sdu.dk/en/forskning/sdurobotics/researchprojects/rethicare>

<sup>2</sup> <https://smooth-robot.dk/en/project/>

<sup>3</sup> <https://www.rubensbardolls.co.uk/>

<sup>4</sup> <https://oliz.dk/produkt/sansestimulerende-hjaelpemiddel-store-bent/>

#### IV. CONCLUSIONS

Based both on existing studies and observations in care homes in Denmark, we propose to approach the design of assistive robots from a playful perspective. Our claims build on play theory and our data, suggesting that care practice is in fact playful. Caregivers consciously act on the line between play and not-play, leveraging toys, role-play and humor to enable the residents to face daily routines or potentially stressful situation with a light mood. This leads us to a different understanding of caring and the role of caregivers, who are not simply problem solvers, but are also playful facilitators, creating a mood around the people they care for.

Play has been already considered for social robots, like *Paro*, or exergames, to enable residents to engage in physical training. However, we find that play theory has a lot more to offer also for functional robots, so that these could be more easily integrated in care homes, addressing the needs of people affected by dementia.

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