

# The Social Uncanniness of Robotic Companions

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**Abstract.** Social robots offer a promise of relatedness without the limitations of human ability and availability. However, the idea of robotic companionship can also cause unease, a phenomenon I coin the Social Uncanniness of robotic companions. This sense of unease could be attributed to the fact that social robots touch on deeply rooted psychological concerns, including our need to be unique individuals that cannot easily be replaced or replicated; our ambivalent relationship with natural decay, including our own; and a fear that by relating to robots we may lose our ability to relate appropriately to other humans.

**Keywords.** social robots, the uncanny, psychoanalysis, robotics

## 1. Introduction

Robotic companions are imagined in relationship roles from elder care [1], through teaching and childcare [2], to therapy and loneliness alleviation [3]. In these contexts, researchers and entrepreneurs often point to a lack of *availability* of human companions, care professionals, or educators, due to labor market shortages and demographic trends. When robots are designed to stand in for humans, their developers also promise to overcome limited human *ability*; they provide a tireless, selfless, nonjudgmental, and infinitely patient version of a human relationship.

Despite the fact that robots promise relatedness without the limitations of human ability and availability, the idea of a social robotic companion is also accompanied by unease [4, 5], a phenomenon I coin the *Social Uncanniness* of robotic companions.

The term “Social Uncanny” is obviously a thinly veiled play on the concept of the Uncanny that made its way from early 20th-century philosophy and psychoanalysis [6, 7] to early 21st-century robotics. Its connection with robots was in no small part due to the rediscovery—and recent translation—of a 1970 essay on the “Uncanny Valley” in robot design [8]. However, whereas the Uncanny Valley theory in robotics relates to the *physical design and movement* of a robot, the Social Uncanny presented here relates to a resistance to accept the *social* roles and behaviors of a robot, especially in companionate and relational settings.

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## 2. What Causes the Social Uncanny?

What could cause someone to feel uneasy with the idea of a robotic device providing infinitely patient, nonjudgmental companionship in places where humans are unavailable? In this article, I propose that the Social Uncanny stems from the fact that social robots touch on three deeply rooted psychological concerns.

The first is the human need to be a unique individual that cannot easily be replaced or replicated. The second is an ambivalent relationship with natural decay, including our own. Never-aging robots challenge this relationship by reminding us of our own frailty. A third source of unease could be a worry that by relating to robots we may lose our ability to relate appropriately to other humans. In the following sections, I will address each of these three concerns through the lens of prior literature and discuss how they relate to robotic companions.

### 2.1. *The Need to Be Unique and to Resist Replication*

A human's sense of being a unique individual resists the idea of mass-replicating social relationships, which is the very suggestion put forth by robotic companions. In fact, in discussing the Uncanny as early as 1919, Freud [6] puts forward this theory in relation to artificial humans, an oft-overlooked aspect of his analysis.

Roboticians often view the uncanniness of a robot as stemming from an uncertainty surrounding its "aliveness," and a subsequent association with death [9]. But such an analysis is more attributable to the earlier writings of Jentsch [7] and misses a central point in Freud's essay, namely that the uncanniness of the artificial human is more closely related to the fear of the *Doppelgänger*, the identical twin, and the look-alike [6] than a fear of the dead. According to the Freudian analysis of a recurring mythological theme, the human attempt to immortalize the soul by replicating the body eventually leads the look-alike to devour the original or the creator. This idea appears, for example, in the story of the Golem that rises and attacks its maker and in the narrative of Shelley's *Frankenstein*. Freud argues that this Golem-rising motif represents our subconscious knowledge of the futility of any effort to resist demise by mechanical replication.

This idea resonates with a notion brought forth by Benjamin, namely that mechanical replication clashes with spatiotemporal uniqueness and value. Benjamin states that "even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be." Benjamin calls this uniqueness the "aura" of the object, tied to a single moment in time and space, and to a unique presence giving the original object its value [10].

Taking this perspective, social robots are an attempt of humans to replicate themselves into artifacts, pouring emotional and social capacities into a machine that could, theoretically, live on beyond them. These machines can overcome the limited human ability and availability and be in places we cannot or do not want to be. The Social Uncanniness evoked by a mass-replicated relationship machine may thus be due to its loss of aura, serving as a reminder of our own frailty. The robotic companion also reminds us of our failing to support those that need us, whether they're our children or our grandparents, who we relegate to being educated and tended to by robots.

## *2.2. The Discomfort with Never-Aging Agents*

An additional source of the social uncanny may be due to the unease stemming from the unchanging permanence of the robot. The human fear of death is tied not only to the possibility of being replaced, but also to the passing of time and the decay inherent to natural things. In Freud's earlier essay, "On Transience," he considers our admiration for natural beauty in light of its unavoidable demise. Human appreciation for the beauty of nature is in fact dependent on its inherent transience: "Limitation in the possibility of an enjoyment raises the value of the enjoyment." [11]

Robots have nothing of the transience of nature. Robots do not age, decay, or change over time. To paraphrase Benjamin: even the most perfect replica of a human differs in one important way: The robot will stay the same age as years pass. The machine's eternal youth stands in stark contrast to our own aging and decay, reminding us of our transience; this could be a second source of Social Uncanniness.

Moreover, the mere fact that robots never age also reduces the value of their youthfulness. Social robots are often designed with child-like features. But if a robot remains an infant and will never turn into an adult, can we really appreciate its youth?

One can extrapolate from physical decay to the transience and wilting of friendships and social relationships. We can appreciate social interactions, signs of love and support, in part because they are not permanent and cannot be taken for granted. Social robots disrupt this aspect of transience in social relationships, as they offer an always on, always responsive, and always positive version of social interaction. This denial of transience eventually causes an increased sense of loneliness and social isolation, leading to the Social Uncanny.

## *2.3. The Relational Carry-Over from Inauthentic Interactions*

The third source of unease is, ironically, tied to this very ease of interaction with social robots, alienating us from the willingness to accept the complex nature of human relations. Turkle addresses a dilemma that social robots evoke [12]: People will accept the obviously designed social behavior of a machine in place of real relatedness. According to Turkle, these so-called "relational artifacts" push our Darwinian buttons to make us feel understood, valued, and cared for. However, she reminds us, the robot "understands nothing, senses nothing, and cares nothing for the person who is interacting with it." In that sense, the relationship and even the mere interaction is not authentic.

One of the reasons for accepting this inauthentic experience, according to Turkle, is that users appreciate the "clean" nature of robots and the simplicity of interacting with digital companions. Robotic pets do not require cleaning up after, and robotic romantic partners have no needs of their own. This simplicity, however, comes at a price. Turkle asks eventually whether there is not "a chance that human relationships will just seem too hard." The better social robots become as companions, the less inclined, perhaps, we will be to accept the messiness of human relationships. This possibility is reflected in interviews our research team held with older adults [4], suggesting that interacting with a simpler, but inauthentic, social companion makes the easy conversation partner inherently unacceptable.

### 3. Handcrafted Robots, a Possible Escape

Designing social robots without taking into account these philosophical and psychological pitfalls runs the risk of creating experiences that are socially uncanny. A possible escape from this predicament can be found in a recent analysis by Halperin-Maimon and Gundar-Goshen [13]. In their article “En Route to IKEA: The Return to Craft from a Psychoanalytical Perspective,” the authors draw on two of the texts discussed above [6, 11] to understand the increasing appeal of handmade objects and traditional crafts in today's age of mass-replication and identical mass-production. Halperin-Maimon and Gundar-Goshen argue that this “return to craft” can be explained by similar psychological needs of uniqueness and irreplaceability and an attachment to transience, in their case, in product design.

Perhaps a return to craft is also called for in social robot design to overcome the Social Uncanny of robots. In our own research, we brought forth the proposition of handcrafted robots as a speculative design [14]. Craft objects are reminders of not only their transience and their uniqueness, but also of their imperfection. A handcrafted robot exists uniquely in time and space and could thus break down the authenticity gap. In addition, a hand-crafted robot exposes the difficulty in making it, reminding the user of the difficulty of maintaining social relationships. Furthermore, by revealing the imperfection inherent to handmade human-driven processes, it points toward the imperfect nature of human interactions.

Clearly, the Social Uncanniness of robotic companions cannot be resolved by a single design decision, and the proposal for handcrafted robots should be viewed as more of a provocation than a remedy. That said, developers of social robots should continue to challenge their underlying assumptions of companionship in light of the psychological and philosophical concerns their technology arouses.

### References

- [1] Broekens J, Heerink M, Rosendal H. Assistive social robots in elderly care: a review. *Gerontechnology*. 2009 Apr;8(2):94-103.
- [2] Gordon G, Breazeal C. Bayesian active learning-based robot tutor for children's word-reading skills. In *Twenty-ninth AAAI conference on artificial intelligence 2015 Feb 16*;1343–1349.
- [3] Lee KM, Jung Y, Kim J, Kim SR. Are physically embodied social agents better than disembodied social agents?: The effects of physical embodiment, tactile interaction, and people's loneliness in human–robot interaction. *International journal of human-computer studies*. 2006 Oct 1;64(10):962-73.
- [4] Deutsch I, Erel H, Paz M, Hoffman G, Zuckerman O. Home robotic devices for older adults: Opportunities and concerns. *Computers in Human Behavior*. 2019 Sep 1;98:122-33.
- [5] Calo CJ, Hunt-Bull N, Lewis L, Metzler T. Ethical implications of using the Paro robot, with a focus on dementia patient care. In the *Workshop on Human-Robot Interaction in Elder Care at the 25th AAAI Conference on Artificial Intelligence 2011 Aug 24*.
- [6] Freud S. The uncanny. *Fantastic literature: A critical reader*. 1919:74-101.
- [7] Jentsch E. On the Psychology of the Uncanny (1906). *Angelaki: Journal of the Theoretical Humanities*. 1997 Jan 1;2(1):7-16.
- [8] Mori M, MacDorman KF, Kageki N. The uncanny valley [from the field]. *IEEE Robotics & Automation Magazine*. 2012 Jun 6;19(2):98-100.
- [9] Koschate M, Potter R, Bremner P, Levine M. Overcoming the uncanny valley: Displays of emotions reduce the uncanniness of humanlike robots. In the *Proceedings of the 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI) 2016 Mar 7*; 359-366.
- [10] Benjamin W. *The Work of Art in the Age of Mechanical Reproduction*. *Illuminations: Essays and Reflections*, ed. Hannah Arendt. trans. Harry Zohn. New York: Schocken Books, 217:52, 1969.

Author's copy. Appeared in: Nørskov, M., Seibt J., Quick O. 2020. Culturally Sustainable Social Robotics—Proceedings of Robophilosophy 2020. Series Frontiers of AI and Its Applications, IOS Press, Amsterdam.

- [11] Freud S. On transience. In the Standard Edition of the Complete Psychological Works of Sigmund Freud, Volume XIV (1914-1916): On the History of the Psycho-Analytic Movement, Papers on Metapsychology and Other Works 1957. p. 303-307.
- [12] Turkle S. Authenticity in the age of digital companions. *Interaction studies*. 2007 Jan 1;8(3):501-17.
- [13] Halperin-Maimon E, Gundar-Goshen, A. En Route to IKEA: The Return to Craft from a Psychoanalytical Perspective. In *Thoughts on Craft*, trans. Guy Hoffman. Resling, Tel Aviv, Israel; 2016;278-287.
- [14] Suguitan M, Hoffman G. Blossom: A Handcrafted Open-Source Robot. *ACM Transactions on Human-Robot Interaction (THRI)*. 2019 Mar 13;8(1):1-27.