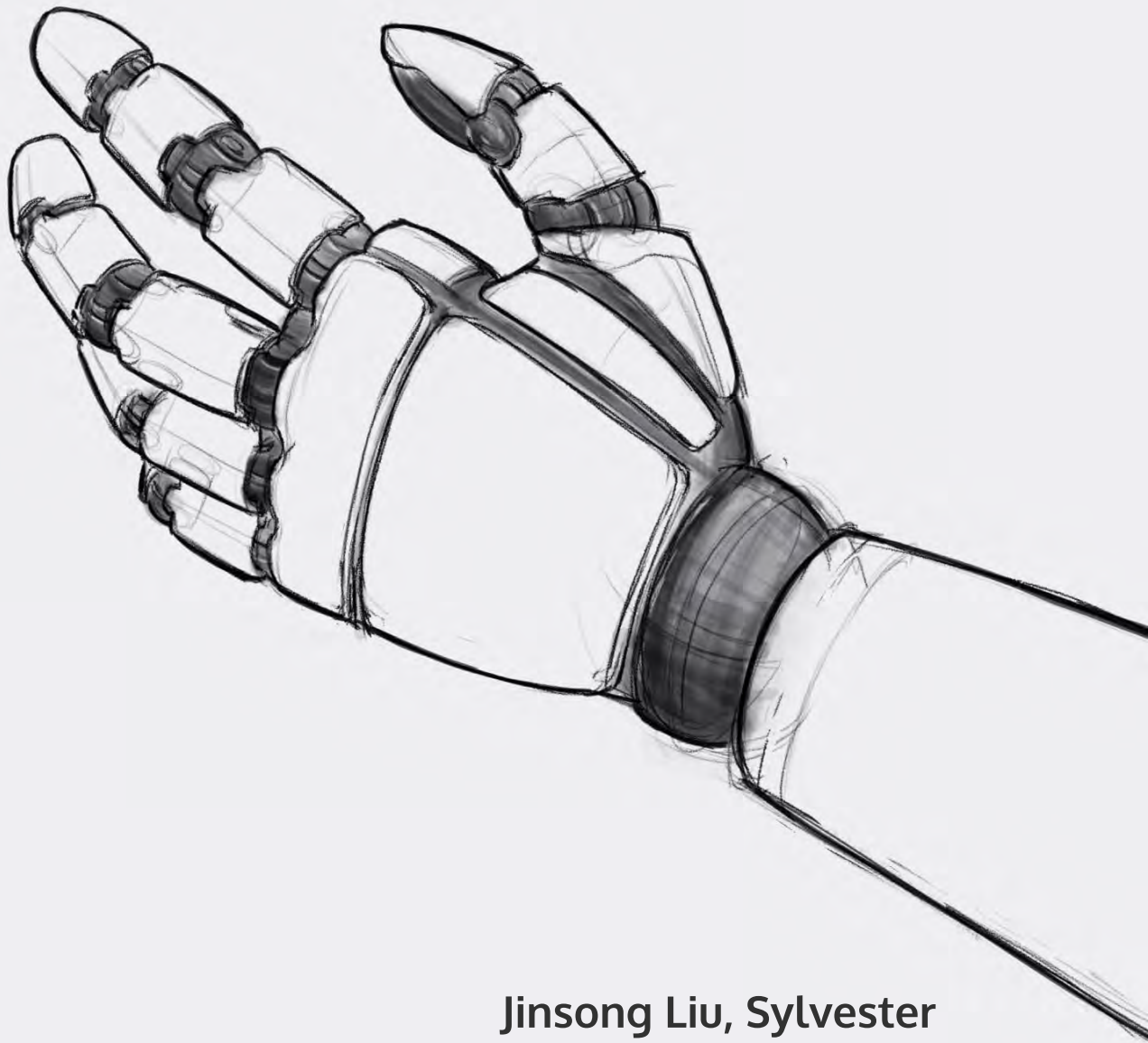


A Critical Evaluation of Anthropomorphic Design



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Introduction

Design that mimics human form or behaviours has a wide range of exemplification covering household products, vehicles, humanoid robots, etc. By adding human-like qualities to non-living objects enhance familiarity, understanding, emotional connections. Moreover, with the evolving technology, products like smart speakers, chatbots, or serving robots can handle rich interactions, even chase to build social relations with people. However, as these once-imaginary objects become more and more 'alive', so do the moral discussions about them. So how should we recognise, use and evaluate anthropomorphic design?

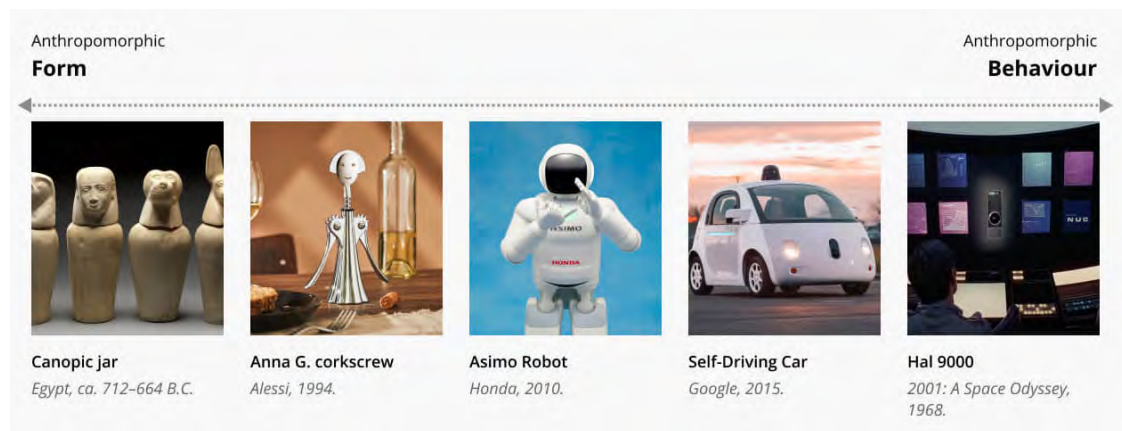
This essay will establish the correspondence of anthropomorphism theory and its application in design. It will then discuss the related social and ethical issues engaging metaphor theory and the encoding/decoding model. Lastly, it will integrate an open-interpreted design mindset as a latent approach to evaluate the anthropomorphic design.

Why Anthropomorphic design?

Anthropomorphism is defined as 'the attribution of human characteristics to non-human things or events' (Guthrie, 1997). The history of anthropomorphism is long and varied, even going back to prehistoric civilisations. Some of our creative ancestors, like indigenous people from Native Americans, Ainu, Buryats (Siberia), believe that natural objects like plants, animals, and rocks possess a spirit and created fascinating cave painting to document their imagination. Religions and mythology is perhaps the most widely known manifestation of anthropomorphism: from Hyades (Greek), Mariamman (Hindu) to Yu Shi (Chinese), different cultures brought humanised images to rain, a meteorological phenomenon that considered mysterious and highly affected production in agricultural civilisation. Possible explanations of these collective desires of personalising entities could be the Comfort and Familiarity thesis. Making things more like us comforts people by enhancing the belief to define and influence the surroundings. At the same time, the activity helps build a mental model to understand and explain the unfamiliar (DiSalvo and Gemperle, 2003).

Fast forward to our daily modern world dominated by capitalism, mixed culture and technology, the same analogical approach then adopted in artefacts. The most prominent examples are those who directly apply human-like forms to non-living objects, such as Alessi's Anna G corkscrew, to brought playfulness, sensibility and other emotional involvement to the product. However, it is essential to recognise that anthropomorphic

design not only intimate human forms but also sometimes indicates human-like behaviours despite how they may look. Although Hal 9000 from 2001: A Space Odyssey is not yet available, tech giants are already eager to name their own AI.



Anthropomorphic design scale: form and behaviour

On the other hand, compared to religious belief, anthropomorphic interaction in modern product design maintains a weak, momentarily form and therefore should be described as 'a metaphorical reasoning' (Airenti, 2018). Applying the metaphor framework, I presume anthropomorphisation started from sensory, correlation-based metaphor (e.g. the face of the car is smiling) and then evolved into a complex and fruitful resemblance-based territory, triggering perceptual and conceptual similarities (Dorst, Pee and Bijl-Brouwer, 2015). In this perceptual level, the mere recognition of a human form might not be essential. Instead, it becomes a relation of human and non-human entities in an imaginary communicative situation (Airenti, 2018). Since we are children, these dialogues took place and thoroughly influence our way to interact with our imaginary friends. However, a crucial distinction in anthropomorphic design is that they manifest and enhance preferred interactions intentionally to serve a specific design purpose, whether usability, emotion or business profit. And that is the place where it becomes problematic.

The criticism of the anthropomorphic design

So far, the article has discussed the potential cause and use of anthropomorphism in design. More specifically, its intuitiveness and spontaneity make it a promising tool to engage complicated technology in a concise, understandable and emotional manner. Although this design method facilitates human-like social modes of interaction, anthropomorphic design's unconsidered push is problematic and raises criticism. In the following section, I will review my Micro UX project with Moley Robotics to evaluate some hidden issues in this field.

In the Micro project, we collaborated with Moley Robotics to design social relations and interactions between a cooking robot and its human guest. The current version of the Moley robot has neither humanoid torso nor verbal communication capability. But the model's two robotic arms with palms and five fingers immediately prompted anthropomorphic recognition in our first impression. Hence, they inspired us to consider it as a partner rather than a regular machine, envisioning that it would cook with a human using the same utensils or even take a chef's job. The instinctive imagination is compatible with the basic modalities of cooperation and competition in the anthropomorphic relation (Airenti, 2018).

As one of our primary and thoroughgoing method, we conducted various role-play asking participants to impersonate the robot chef to probe potential human-robot interaction in a domestic kitchen. In the beginning weeks, the actor/actress of the robot retained a complete human form, resulting in unconvincing improvisation. We then changed our kitchen settings to block the visual hint of facial expression and body posture, leaving only hands and voice interaction to depersonalise the robot acting actor/actress. The overall installation emphasises conceptual anthropomorphism in robot and helps generate a research framework of physical interactions and social relations.

<p>Week 2 Role-play</p> <ul style="list-style-type: none"> • People use iPad to deal with robot error. • The 'robot' stays full human form. 	<p>Week 3 Role-play</p> <ul style="list-style-type: none"> • Human and robot interact using gesture • The 'robot' is restricted from moving and talking 	<p>Week 5 Role-play</p> <ul style="list-style-type: none"> • Robot cooks and serves meal for human • The 'robot' is fixed on the wall and only has arms

Role-play development, de-personalise the human actress

<p>Fully block mode</p> <ul style="list-style-type: none"> • A curtain is placed to block human-robot interaction 	<p>Customisation mode</p> <ul style="list-style-type: none"> • Human can remotely control how the robot cook the meal 	<p>High relation mode</p> <ul style="list-style-type: none"> • Robot asks human to stay and participate in the cooking process, even perform magic tricks

The same setting is used to examine different level of human-robot interactions and relations

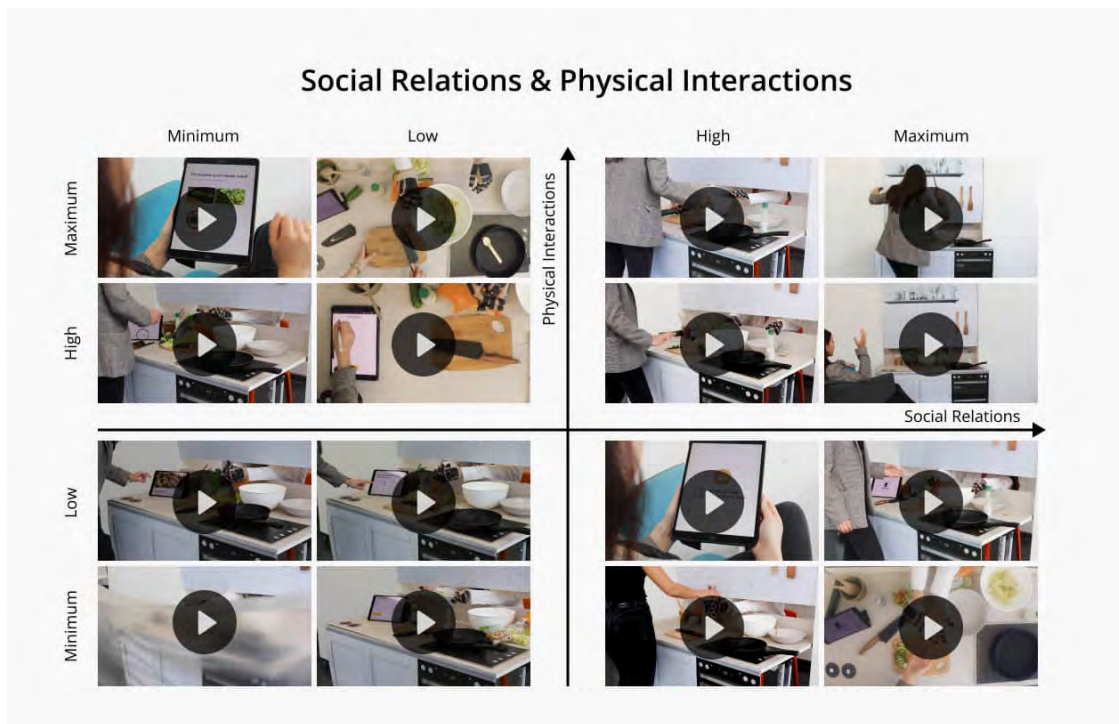
Reviewing our massive experiments, different levels of anthropomorphic design appears with various settings. Nevertheless, the notion of inappropriate expectations and relationships with products jumps out in some of the analysis. For example, to increase human-robot relations, we perform a story that gives the robot a stereotype 'mom personality', rejecting the guest's requirement and enforcing healthier meals. The 'mother' characteristic brings strong projections of human mental states but unveils the hidden unsettled value like family roles and responsibility. Moreover, creating a mom robot or merely imitating your loved one's manner of speaking and behaving could be offensive and unethical. Even in a domestic dining situation, the role of the mother carried much more than recommending healthy food but moral, cultural, physiological cues. A simple appellation like 'mom' is a new metaphor that highlights some features of reality and hides others, which eventually could have the power to define reality (Lakoff and Johnson, 1980, pp.3–10). Let alone that every culture has different representations of the human body and various ideas about anthropomorphic applications (DiSalvo and Gemperle, 2003).

I would argue that the idea of a 'social robot' is perhaps the most extreme anthropomorphic case in product design. Whether physical or virtual, social robots enter individuals' residence, lives and routines, encountering the situated sophistication of human complexity (Scheutz, 2012). The concept of a robot is so successful and ingrained that we often feel disappointed when they fail our expectations but simultaneously excited to create regulations for hypothetical scenarios. The widespread worry of whether AI will cause job loss shows people's growing concern in this social-cultural discourse.

Open-interpreted Design for Evaluation

So, does it mean we should restrain humanising artefacts? If not, how should we consider the ethical problem? Undoubtedly, various fields have put many efforts to tackle this problem, and the debate will last for a long time. As designers, we specialise in using practice to stimulate open interpretation and facilitate the ongoing critical discussion.

Examining anthropomorphic design and issues through Hall's (2003) Encoding/Decoding lens, we can spot discursive sensemaking in the consuming and reproducing anthropomorphic messages when engaging with products. In the mom robot case, the preferred message of comforts and nostalgia could be decoded as opposite reading: disrupting a family role, issuing undesired social practices. One of the dominant insights driving HCI is that design must promote the preferred interpretation of the system to increase usability. But in the project, we speculate different scales of human-robot relations and interactions with matrix, and provided multiple modes in a domestic cooking robot scenario. I viewed the project outcome as an exploration of open-interpreted design. First, it favours that



Design outcome: a matrix for human-robot relations and interactions analysis and evaluation

a system can allow people to define personal meanings and hold heterogeneous ways of experiencing and acting. Second, it supports further evaluation and coordination (Sengers and Gaver, 2006) of anthropomorphic interpretation processes in robot development.

After further improvement, similar systematic approaches could benefit other anthropoid product cases in design and evaluation. In particular, designers can conduct role-play to examine scenarios of anthropomorphised degrees, spot unnoticeable issues in the preproduction stage, and retain constant evaluation.

Conclusion

This essay has discussed the anthropomorphic applications in design by studying several literature of its history, cause, theory and practice. It then raised criticism on enhancing anthropomorphic relations in products by reviewing my Micro UX project. Lastly, it has demonstrated using an open interpretation design mindset to generate multi-scale experience and support evaluation. In general, I remain optimistic yet critical attitude towards anthropomorphic design, and agree that it should shift from merely seducing consumption to fulfil a humane way to interact with human-like artefacts (DiSalvo and Gemperle, 2003). The ongoing ethical debate should involve not only corporations but also more individuals evaluation.

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