Unity in Multiplicity:
Searching for complexity of persona in HRI

Jolina H. Ruckert
Department of Psychology
University of Washington
Seattle, USA
jhr333@uw.edu

ABSTRACT
This conceptual paper broaches possibilities and limits of establishing robot persona in HRI.

Keywords
Authenticity, benchmarks, design methodology, human-robot interaction, persona.

1. INTRODUCTION
Robots help make our cars, clean our floors, and kill our enemies. These roles do not necessitate social-relational qualities to replace their human counterparts. The robot trashcan on wheels may have required a compelling persona – diligent, endearing, and humorous – for Pixar/Disney to capture our hearts, garner an Oscar nod, and draw in millions of dollars with the film Wall-E. But in most cases we will not design our robotic tools with social-relational personas. The robot shop clerk of tomorrow may not look much different than the self-checkout systems at the local supermarket – that is, we may not need a greeting of ‘hello’ and ‘how are you doing?’ and the cordial “did you find everything alright today?”. While some roles robots fill in our daily lives are asocial, straightforward, and simple, certain real world social roles we are designing robots to fill (e.g., receptionists, nurses, or teaching assistants) will require complex and nuanced social-relational interactions if the robots are to satisfy the task and fill that role in meaningful ways.

Personas – perceived or evident personalities – are emerging as a design consideration in HRI. HRI researchers are finding that increasingly compelling social interactions between humans and robots are achieved when the robot is implemented with a persona [1, 2].

To extend the discourse on designing robot persona in HRI, this paper offers a key consideration of unity in multiplicity of persona. Humans are, and experience one another as, deeply complex - at times a unity of self, other times a multiplicity - a complexity, heterogeneity, and nuance of persona that provides for richness in social interactions and is, in part, what it means to be human. The consideration of unity in multiplicity helps establish the possible limits of where and how robots can substitute in meaningful ways for their human counterparts.

2. DESIGNING PERSONA
Persona as a means to understanding practical interaction design first emerged in HCI. Cooper (1999) offered the foundational “goal-directed design” - a user-centered persona approach to designing computer systems to fit a distinct perspective of a particular user [3]. A persona, defined as “a precise description of our user and what he wishes to accomplish” (p. 123), is constructed through ethnographic contextual inquiry (e.g., interviewing potential users) and is meant to represent patterns of a user’s goals, motives, and behaviors in the context of the specific design space.

Extending the user-centered focus of HCI, flipping the subject of inquiry, HRI researchers are exploring the potential for personality embodied in the robotic other [1, 4]. To explore robot persona, HRI researchers draw on leading trait theories developed in the study of human personality [1, 4, 5]. Trait theories focus primarily on the measurement of traits (i.e., habitual patterns of thought, emotion, and behavior) [5]. The personality of an individual is defined by a limited number of traits said to be relatively stable over time. For example ‘the big five’ theory, identifies five core human traits: openness, conscientiousness, extraversion, agreeableness, and neuroticism. Meerbeek and colleagues employed personality (drawing on the ‘big five’ trait model) as a central guideline to designing and facilitating plausible social interactions with a domestic robot [2]. By incorporating the user-centered persona approach with artistic and technological techniques to developing persona, the researchers offered a design-process, relevant across a range of contexts and types of robots, for implementing personality in robotic entities.

3. UNITY IN MULTIPLICITY
To frame the discourse on designing robot persona, I’d like to offer the consideration of unity in multiplicity. James (1890) articulated multiplicity in persona when he wrote: “a man has as many social selves as there are individuals who recognize him” (p. 294), he continued: “Many a youth who is demure enough before his parents and teachers, swears and swaggers like a pirate among his ‘tough’ young friends” (p.294) [6]. For James a persona arises in the constellation of varied selves, contextually determined, and unified as one. Along these lines, Baldwin (1897) wrote:

The generalization of the thought of self cannot proceed without the subsumption of the healthful and normal but...
Our multiple selves may not all speak with the same voice, but the multiplicity can be harmonious. There are many social roles that require a nuanced unity in multiplicity. For example, the nursing assistant must at times be forceful and authoritative (e.g., ensuring the patient takes their medication) and other times nurturing and responsive. The teacher, with students of varied backgrounds, interests, sensibilities, for example, may need to cultivate mellifluous encouragement with one student, but with another, provide dynamic confrontational Socratic dialogue, to move both along the same dimension of learning.

It may be that to the extent we seek to create a robot to fill a solidified social role a simplified persona can work quickly to map onto that role. Research in HRI can uncover these qualities and potentially broach increasingly compelling robot personas. The more challenging design space exists in the divergence and multiplicity of social selves that flows into a harmonious unity of self. It is not clear the extent to which we need plurality in social roles, but it appears that for roles where increasing depth of relation in multiple contexts is required, the focus needs to shift to the unity in multiplicity of persona.

4. CONCLUSION
The complexity, nuance, and richness of unity in multiplicity of persona capture one of the fundamental, beautiful aspects of human life. If robots are to fill social relational roles, it is important for the HRI community to focus research agendas on the following question: Can we design for the complexity of unity in multiplicity of persona?

A persona, the word remaining in its Latin form, is a person, it is also a character in a play, or in the Jungian sense, a mask or façade we present to hide our inner selves, and, it is a person’s perceived or evident personality. Perhaps as a mask, the robot can wear a persona well. That may be all the robot can do. It is likely that no matter how sophisticated robots become, their technological platform will always separate them from their human counterparts, and prevent depth of social relation from forming.

Kahn and colleagues have written of benchmarks in HRI [8, 9] – “categories of interaction that capture conceptually fundamental aspects of human life” (p. 363, [8]). Ten benchmarks were offered [8, 9]. One of them is authenticity of relation, drawn from the work of Martin Buber [10]. According to Buber, authenticity resides in the I-Thou relationship:

The form that confronts me I cannot experience nor describe; I can only actualize it. And yet I see it, radiant in the splendor of the confrontation, far more clearly than all clarity of the experienced world (p. 61).

A boundless unity exists between you and I – in this mutual reciprocal confrontation an individual relates to another with ones whole being, freely and fully in the present. In contrast, an I-It relationship emerges when the self treats the other as an object to be used. Robots are our creations, we create them for our use, and these tools do not exist without us. It stands to question if humans will ever be able to establish an I-Thou relationship with a robot.

If we are to create robots to replace human counterparts in socially substantive roles, authenticity in relation is an essential benchmark by which to measure success of human-robot interaction. This paper is an extension of this position. To understand deep parts of human-robot interaction – and of what it means to be a human – we need to assess the possibilities and limits to achieving a unity in multiplicity with robot personas. It may be that robots will only fill social roles in a limited form of what is possible, and what is beautiful, in the human experience.

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6. REFERENCES