

# Thing-Centered Narratives: A study of object personas

**Nazli Cila**

**Delft University of Technology, Delft, Netherlands**

**Elisa Giaccardi**

**Delft University of Technology, Delft, Netherlands**

**Fionn Tynan-O'Mahony**

**University of Edinburgh, Edinburgh, UK**

**Chris Speed**

**University of Edinburgh, Edinburgh, UK**

**Melissa Caldwell**

**University of California Santa Cruz, USA**

*(...) Many things conspired to tell me the whole story.  
Not only did they touch me, or my hand touched them:  
they were so close that they were a part of my being,  
they were so alive with me that they lived half my life  
and will die half my death.*

Pablo Neruda, excerpt from "Ode to things"

## A thing-centered life

Objects are our witnesses, companions, and accomplices in our everyday life practices. They manifest how we experience the world around us, how we think and which values we hold dear. In recent years, a growing recognition of objects for understanding human practice and culture has occurred in anthropological and philosophical theorizing (Otto & Smith, 2013). Miller's (1998) investigations of the centrality of material objects in mundane aspects of social life, Daston's (2000) analyses of the life courses of objects, and Nevile, Haddington, Heineman and Rauniomaa's (2014) explorations of the ways that objects become engaged in the situated, embodied, and spatial circumstances of everyday social interaction reveal the inseparable relationships between the material and the social. Baudrillard's (1996) work featuring the seductive power of objects as a source of desire and passion and Turkle's (2011) "evocative objects"—emotional and intellectual companions that

carry memories, generate identities and provoke new ideas—all bring a scientific foothold for Neruda's (1994) poetic description of things as a part of our being.

Objects are the product of human design, but as they themselves are transformed within ongoing human practices, they also transform those practices. As Verbeek (2012, p. 163) aptly maintains, “humans shape things, and things shape humans”. By studying them as incorporated in practices, we learn about *both* people and objects at the same time (Costall & Dreier, 2008). In other words, the opportunity to reflect on ourselves comes from reflecting on things. This intertwined relationship between humans and objects is a crucial element of Design Anthropology. Acknowledging this ongoing interaction between people and objects calls for methods of design research that give both an equal voice. In current design research agendas, however, we consider that users take the central place in methodology with the tools and methods of user-centered design and participatory design. The importance and value of these methods are apparent in the outcomes they generate, yet we aim to enrich these by offering a new focus for design research that ascribes the material forms a “life” of their own. The argument is that a thing-centered perspective (as opposed to a user-centered perspective) can bring unique insights about the role of objects in human practices, and thus open up design opportunities that we may not be able to foresee with traditional methods (Giaccardi, Speed & Rubens, 2014). In other words, we engage ordinary objects in the design research process as participants to collaboratively elicit new insights.

Objects exist in an evolving eco-system of relationships. Over the course of time of their use, they come into new relations with other people and other objects, and bring different practices together. Through the example of a “desk”, Busch (2005) discusses our inclination as humans to do other things while working. In describing the Workspheres<sup>1</sup> exhibition curated at MoMA and concerning the changing nature of work, Busch discusses a desk accommodating both a computer and exercise equipment and the Hella Jongerius's Soft Desk that is disguised as a bed with pillows functioning as keyboards. By looking at the practices that revolve around an object, we can study objects not only *vertically*, a desk as a place for working, but also connect *horizontally* between things: a desk as a place for working, but also doing exercise and daydreaming. This, we consider, would open up new connections for

---

<sup>1</sup> <http://www.moma.org/interactives/exhibitions/2001/workspheres>

new understandings. The desk may reveal insights about the bed, the bed may do the same for the exercise equipment, and altogether they may reveal insights into practices such as working at home. However, we are in need of new methods to map the data describing our individual and collective patterns and everyday practices, and turn them into effective narratives for designers to act on. In this paper, we propose a way to achieve this—generating object personas. We elaborate on how object personas can help tease out thing-user and thing-thing relations for both analysis and ideation purposes.

Following this introduction, we will first present the theoretical underpinnings of object personas and their relevance to design research. Next, we will present a pilot study that was conducted to see object personas at work, and finally discuss our findings and approach in the broader light of design anthropology methods and design research, and reflect upon the potential of using storytelling to address the relationship between people and objects.

## Object personas – Why and how?

Actor network theorists discuss the ontological symmetry of humans and non-humans, where objects take on the characteristics of humans: They judge, form networks, speak, and work performatively (Engeström & Blackler, 2005). In short, they begin to take on agency. The agency of objects is not a new concept. Developmental psychology has continuously demonstrated that people attribute lifelike qualities to inanimate things, including intentionality and consciousness (Piaget, 1959), and the psychodynamic tradition in psychoanalysis points out the striking similarities in how we relate to the animate and the inanimate (Turtle, 2011). The propensity for ascribing intelligence or intentionality to products has also been a longstanding concern in Human-Computer Interaction (HCI) and design research fields (see for example, Mortensen, Hepworth, Berg & Petersen, 2012).

Designers also deliberately assign autonomy and personality to the products and services they create. In his “manifesto for networked objects”, Bleeker (2006) has prepared us for objects developing a form of agency and for a use of the Internet as a means to ascribe life and identity to products (see for example, Rebaudengo, Aprile & Hekkert, 2012). Perhaps the most well-articulated work in this area is by Van Allen and McVeigh-Schultz (2013). The scholars use animism as a design metaphor and

build ecologies of interactive objects with designed behaviors and personality in order to express the system's designed intentions, affordances, history, expertise, and reliability, and thus enable more fluid relationships between humans and interactive systems while sidestepping the issue of anthropomorphism. Similarly, in the ambient storytelling project of McVeigh-Schultz et al. (2012), the researchers allow objects and environments to record and communicate their own lifelog and share their embedded stories and histories. Both of these studies project sentience to objects with the valuable goal of utilizing narratives to foster human-object relationships. Giving a voice to objects and imagining their inner life are also what is sought after in this paper; however, we intend these as a method to (1) analyze the use practices of objects and (2) stimulate creativity in the design of products and services that are based on those objects' lives, movements, and transformations.

In this sense, seeing the world through the eye of a desk, for instance, is a fruitful exercise for both design anthropologists and design practitioners. Both disciplines are people-oriented: The former investigates the differences and similarities in our practices in order to allow people to have a better understanding of what they do and how they do it (Gunn & Donovan, 2012), and the latter constantly seeks to identify and answer the needs of humans in a meaningful way. By focusing on the projected personality, social relationships and life courses of objects, we can make a step toward developing an anthropology that is not just confined to the human but is concerned with the effects of our entanglements with other kinds of entities, as well as provide a source of inspiration to designers to reframe possibilities and innovation potentials. In a similar vein, DiSalvo and Lukens (2011) advocate for a non-anthropocentric approach to design, which considers the human a single factor in a larger system of relations and interactions between humans and nonhumans alike. This approach decenters the human and provides an opportunity to consider how things other than people play a role in action and experience. By using non-anthropocentrism as a deliberate exercise in various studies, the scholars helped their participants to see and understand their environment in ways that opened up new possibilities and requirements for design.

In this paper, we adopt a similar approach of decentering the human and propose a methodology to do so. Personas, the descriptions of fictional users, are widely used in the design field to make it easier for the designers to relate to users,

and thus, allow for gaining a deeper understanding of their needs and requirements (Pruitt & Grudin, 2003). We argue that the same approach can be used for investigating objects. By generating *object personas*, designers can look into an object's life and out to the social contexts in which the object exists to obtain a better understanding of the object and its use practices. Object personas engage with the story-telling tendencies of the human mind. They literally compel the designer and design ethnographer to step into the shoes of objects, where each object is assigned with a personality, a history, interests, needs and a mood. Rather than projecting objective facts, object personas are meant as a creative elicitation exercise to analyze use contexts and inspire design ideas.

In this sense, it bears similarity with the pastiche scenarios of Blythe and Wright (2006), in which the researchers present a technique to develop richer scenarios by combining fictional worlds and characters drawn from literature; the Steampunk design strategy by Tanenbaum et al. (2012), in which sci-fi genres are used for physically realizing an imagined world through design practice; and, the use of 'alternate endings' by Linehan et al. (2014), in which the authors use fictional narratives to envision long-term consequences of contemporary HCI papers. Using fiction and narrative is not new in the design field, but what is new is that fictional practices are now being considered as viable pathways for producing valid knowledge in design research (Markussen & Knutz, 2013). Design fiction represents a speculative mode of thinking that can open up new questions and unfamiliar opportunities. Object personas are intended as an extension of the research arguing for design fiction as an important methodological innovation.

In sum, the aim of this paper is to investigate if object personas are a fruitful means to think outside the constraints of a familiar user-centered focus in design. We argue that object personas will help to elicit and encapsulate data from fieldwork studies and envision new design concepts or future systems. In the next section, we will provide a methodology to generate these personas and elaborate on their usefulness.

## Generating and using the object personas

To generate object personas, we followed a two-stage process. First, we collected the material from use practices to hinge the personas on. Then, we did a small-scale creative session to generate the personas and discuss their use.

### 3.1. Collection of the material

#### 3.1.1. Context

We have chosen to focus on home practices in this pilot study. Ng (2013) introduces the idea of contextual archetypes, which are daily practices that take place in familiar contexts and make use of particular objects in order to achieve a project: making tea, doing the washing up, doing your homework. Considering the notion that practices are carried out within familiar contexts, temporal orders and objects, we selected a mundane home activity, preparing and drinking coffee and/or tea, and focus on the home practices that develop around kettle, fridge and cup (k-f-c). It was thought that together these objects would reveal insights not just along verticals (i.e., improvements or ideations around themselves) but across horizontals, as aforementioned in the introduction.

#### 3.1.2. Set-up

Following McVeigh-Schultz et al.'s (2012) footsteps to record lifelog of objects, we attached logging devices called Autographers<sup>2</sup> on k-f-c sets at five households to capture visual data about the behavioral patterns, temporal routines, and spatial movements of objects and their users (Figure 1). Autographers are small cameras that are clipped to a person or object and automatically take pictures when prompted by one of the sensors embedded in them (accelerometer, color sensor, magnetometer, thermometer, and PIR). The Autographer data provide time-lapse details that can be accumulated into a visual narrative of events and objects.

Two of the users who took part in the study were living alone, two were sharing the apartment with a flatmate, and one household contained a mother and a toddler. Three of the five households indicated they work from home frequently. Each household was given three Autographers for two days. On Day 1, the Autographers were placed on the kettle, cup, and fridge, and on Day 2, they were placed on the

---

<sup>2</sup> [www.autographer.com](http://www.autographer.com)

kettle, the cup and the user. The users were asked to turn on the Autographers only when they prepared and/or drank coffee and tea. By this way, we ensured that the Autographers did not take any photos without the users' awareness and will. The procedure involved introducing the users with the Autographers, explaining the procedure and getting consent, asking them to prepare a tea or coffee to check if the cameras worked as well as to provide a base to talk about their tea and coffee routines. We ended the procedure by interviewing the users about their coffee/tea practices and related products.



**Figure 1. Autographers at work**

### 3.1.3. Outcome

Data collected from the Autographers provided detailed information about the use patterns of particular objects and their trajectories throughout space and time, as well as supplemental data on parallel activities and objects. The Autographers collected 3000+ photographs, which were combined in a timeline per user (Figure 2) to be used in the next stage of the study.



Figure 2. Format of the photographs taken by Autographers (from a cup's perspective)

### 3.2. Generation of the object personas

#### 3.2.1. Content and procedure

Rather than being a static list of attributes, personas should include characters with individual histories, thoughts and experience. Nielsen (2002) criticized user-descriptions as lacking depth and insight, and proposed character based approaches to persona development drawing on traditions of European filmmaking. According to her, a person's physiology, sociology and psychology should be considered together in order to create rounded characters. A character has both personal and inter-personal (social, public, professional) elements; inner needs and goals as well as interpersonal desires and professional ambitions. Similarly, as aforementioned, Blythe and Wright's (2006) pastiche scenarios are meant for providing the depth, personality, history and cultural context that personas generally lack.

Therefore, a proper persona should include a person's self and relation to others, as well as its present and past. We used the same approach to generate the items to consider in our object personas. We designed an object persona template to fill in, which included four main categories and the following items:

**Day in the life:** By looking at the photographs that the Autographers took, the participants who were invited to the persona generation session were asked to fill in a



timeline of a day in the life of the kettle, the cup, and the fridge. This was intended as a warm-up exercise that would help the participants to objectively note down what is happening around the object and get familiar with the material.


**Inner life:** The participants were asked to look at the photographs and imagine the personality, attitude towards life, temperament, general mood, needs, likes and dislikes, aspirations, desires, frustrations, fears, complexes, skills and abilities, ambitions, typical behaviors, habits, ideal life perception of each participant's kettle, cup, and fridge.

**Social relationships:** The k-f-c have relationships with each other and their users. Participants were asked to depict the social life of kettle, cup, and fridge sharing the same household: How is the social structure in the kitchen? Who are friends and who are enemies? What would X talk about with Y and Z? What would X learn from/teach Y and Z? What is X's relationship with its owner? How would you describe this relationship metaphorically?

**Life course:** Objects contain hidden stories about who and what they might have been before they assumed their current form. Participants were asked to elaborate on the past and future of each object in the k-f-c by answering: What kind of a past X might have had? What would X have learnt from its past? What kind of transformations might X have had? What kind of dreams may X have for the future?

These items were given to participants as a tool for analyzing the photographs and reflecting upon how an object sees its surroundings. It was emphasized that if they could not extract an answer for a particular item or they considered an item as irrelevant they could leave it blank. Two participants (a design researcher with a MSc. degree in design and a psychologist with a design anthropology MSc. degree) were given the photographs taken by Autographers and the object persona templates. They were asked to fill in the templates by analyzing the photographs and come up with design ideas for that particular context (Figure 3). Since we were not particularly interested in the quality of design ideas at this stage, the participants were asked to talk about their ideas rather than sketching them. After the session, we had a detailed discussion about their experience, ideas and suggestions. The whole session took 2.5 hours, the aim being to see templates at work and gather initial insights about their use and benefits.

P1



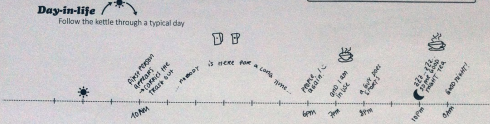
Name (if you want to name it) \_\_\_\_\_

This kettle belongs to: \_\_\_\_\_

How? \_\_\_\_\_

**Day-in-life**

Follow the kettle through a typical day



**Inner life**

Depict the kettle's psychological profile

Personality	Attitude towards life	Temperament	General mood
→ LESS OPEN TO NEW THINGS → SENSITIVE → PRAGMATIC (PRACTICAL) → VERY SENSITIVE	POSITIVE KEEP CALM AND STAY WORKING!	THE KETTLE IS NEITHER CALM AND ACCESSIBLE	A LITTLE SAD - BUT MAKES THE BEST CHAY

Needs	Likes and Dislikes	Aspirations	Desires
→ ENOUGH WATER TO WORK → ENERGY → BE BURNED TO BE USED	+ LIKES TEA + LIKES PEOPLE - DOES NOT LIKE TEA - DOES NOT LIKE INSULT COFFEE		WANTS A LITTLE MORE CAPACITY

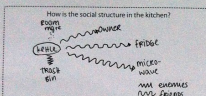
Frustrations	Fears	Complexes	Skills and Abilities
→ WHEN IT IS FILLED WITH TOO MUCH WATER AND THEN (WHEN USED) ONLY USE A PART OF IT - ... AND THAT WATER	- FEAR TO BE REPLACED		→ CAN HEAT WATER → ALWAYS THERE FOR YOU

Ambitions	Typical behaviors	Habits	What would be the ideal life for the kettle?
	LIVES WORKING TO PEOPLE		

**Social relationships**

Depict the kettle's social life

How is the social structure in the kitchen?



What would the kettle talk about...

with the cup? ABOUT THE BEST TEA SELECTION

with the fudge? ABOUT (IN)ABILITY TO MOVE (SPONTANEOUSLY)

What would the kettle learn from health to...

the cup? HOW TO CARE WITH REJECTION

the fudge? HOW TO STAY CALM AND HAPPY WHEN?

How is the kettle's relationship with its owner?

THE RELATIONSHIP IS NOT SUPER CLOSE, BUT RELAXED.

THE KETTLE WOULD LIKE TO HAVE A CLOSER RELATIONSHIP BUT ALSO SEE THE NEEDS OF ITS OWNERS

How would you describe this relationship with a metaphor?

KETTLE IS LIKE A GRANDFATHER AND THE OWNER IS THE GRANDCHILD

OLD AND WISE

**Life-cycle**

Depict the kettle's past and future

What kind of a past the kettle might have had?

THERE WERE BEEN TIMES WHEN HE WAS CLOSER TO HIS OWNER (WIFE) AND WHEN THE RELATION TO HIS OWNER WAS MARKED WITH DISTANCE (SOMETIME).

What kind of dreams the kettle may have for the future?

HE WOULD LIKE TO BE ALSO ABLE TO COOL THINGS BUT HE NOW KNOWS WHEN HE CANNOT DO SOMETHING (IS MORE THAN NOW)

**Figure 3. An object persona template filled in for a kettle**

### 3.2.2. Feedback and results

Despite the limited sample size, the feedback we got from participants about the templates was rather positive. One of the participants stated, “(...) you really get a new perspective on the same product because before you just see it from your perspective but then you really elaborate the surrounding and think about it in a more enhanced way. I have to admit that I didn’t expect that to happen. I was rather surprised that it helped me this much”. Some items were found particularly useful for inspiring ideas, which we will present below per category together with the ideas generated and the feedback of the participants about the template:

## Inner life

Regarding the template, participants mentioned that sometimes they were having difficulties to differentiate *desire* and *need*, *desire* and *ambition*, *typical behaviors* and *habits*. They suggested grouping these into a single item or giving examples for each. Giving examples was also proposed for the *personality* item, where the big five personality traits were suggested to be used for inspiration. One of the participants also mentioned that thinking in terms of the first person instead of the

third person when referring to the objects, i.e., imaging how “she” would feel under those conditions, helped to trigger the most ideas.

Regarding the individual items, participants mentioned that thinking about the *skills* was very helpful to inspire ideas since it also prompted them to think of “potential skills” an object might acquire. In one of the cup personas, the relationship of that particular cup and its owner was defined as very intimate on the basis of the photographs. This cup was following the user everywhere in the house from the desk to the balcony and the bedroom, and was labeled as a “buddy” that accompanies its user in every situation. Since this cup does not have any other skill other than holding a liquid the way it is now, the participant thought that it should contribute more to this relationship by gaining extra skills. These could include like showing signs of excitement when seeing its user, or as a more functional contribution, coaching the user by giving feedback about his tea and coffee consumption and taking care of him.

Imagining the *fear* and *frustrations* of objects was also considered useful. In the kitchen of one of the users, the kettle was placed in front of a trash bin, which, according to the persona based on it, reminded the kettle about its limited time in the kitchen and that it could be replaced any second. For this reason, this kettle *desires* to obtain novel skills like the ability to heat water in different degrees in line with the wishes of its user so as to be different than the other kettles, and thus, be irreplaceable. Another kettle was imagined to have the *frustration* that it was underappreciated because its users were only using a fraction of the water it boiled every time. So, it was imagined to wish being able to emphasize how much water is needed for each boiling task.

### **Social relationships**

Participants mentioned that this category was the most inspirational for coming up with new ideas. They had the opportunity to see the user-object relationship not just from a function-focused point of view, but more from an emotional perspective that also takes into consideration of needs and expectations of the object. Speaking from a cup’s perspective, one participant stated, “At certain point I thought ‘May be he will put me back in the cupboard! And then I’m gonna be just one of many! But then in the end, he used me when watching a movie. We watched a movie together...’”, which indicates the intimate, if not romantic, relationship that

some objects may have with their users; and as designers, we may miss this intimacy when looking at the object from our own perspective.

Although mainly with a human-focus, looking at human-object relationships is what designers are accustomed to. Product to product relationship, however, was considered as an interesting potential by our participants. There is a curious difference between static and dynamic things in the photographs. We see all kinds of things moving in and out of these environments and come into contact with other things, e.g., fresh produce, cutlery, computers, books, and so on. Participants mentioned that it would be interesting to map out these networks as a social network analysis, not just in between a kettle, a cup, and a fridge, but with all the actors in an environment. Furthermore, this movement changes the nature of things and the social ecologies they inhabit. For instance, the movement of a user between different cups might create different social dynamics. In the photographs of a cup of one user, what appears to be another cup enters the scene at one point. This moment is defined as a “jealousy moment”, which imbues the cup with the ambition of being the only cup in its users life. The same dynamics may also apply to the movement of the same cup among different users, which may change the nature of the thing itself and the individual relationships it has with people.

What an object can teach to or learn from another object was also considered an inspiring issue to think about as it allowed participants to transfer properties, skills and abilities between objects. For instance, another idea for the jealous cup was to learn how to boil water from the kettle so that the user would not need a kettle anymore and the cup could take over all the tea-related activities at home. Similarly, the question of what these objects could talk with each other revealed the nature of different relationships among products. Whereas the relationship of a cup with a kettle was considered as a work relationship, the one between the cup and the fridge was defined as acquaintanceship. In one of the cup personas, the former couple was imagined to talk mainly about the practical issues like quality and density of the tea, scheduling of the day, or water temperature. This prompted the design idea of the cup and the kettle to communicate through the home network and the cup to heat itself a little when the kettle is almost ready in order to prevent temperature shock for the water. The cup and fridge couple instead was imagined to lightly chat about the cup’s travels in the house.

### **Life course**

Here, participants mainly focused on the notion of time for objects. Objects exist in specific temporalities but not necessarily the same temporalities. There is much more of an “empty” time for a kettle than there is for a fridge. But how does empty time look like from the perspective of an inanimate thing? From the perspective of the human, empty time might feel like boredom, relief, or something else. Contemplating how the passing of time feels for an object was considered useful. For the aforementioned afraid-to-be-replaced kettle persona, the participant elaborated on this fear by emphasizing the seasonal rhythms of a kettle. For example, because a kettle may not be used frequently during the summer, summer is somehow an empty time period for the kettle, and this was imagined to intensify its anxieties. The participant thought of a design idea to teach the kettle to “cool” the water and thus help it secure its place in the kitchen. As a frequently used product in every season, the fridge may experience periods of inactivity as relief and rest. Therefore, there exist multiple routines and rhythms between and across the objects that are relationship with one another and time might feel different to them.

### **Discussion and conclusions**

In this paper, we propose a thing-centered approach to broaden the issues and methods of design research and bring new insights about the role of objects in practices. We investigated object personas as a viable means to attain this. We generated an object persona format to analyze the use cases of a kettle, a cup and a fridge at five households and asked participants in a follow-up ideation study to come up with design interventions. Despite the limited size of the participant group, the process seemed promising as a method to give a voice to products and explore a new space of design possibilities. Our further step is to revise the personas in the direction given by the participants’ experience, test these with a bigger sample size, and investigate the quality of the design ideas generated.

We have seen that objects have needs that are different from humans and from each other. They can work together, independently or in competition, they are conscious about where they come from and where they will go. The methods we have chosen to study them is a first attempt to distinguish between different spatial trajectories while also paying attention to the multiple, overlapping, or even parallel

relationships among the objects and humans in the context of practice. This could be a fruitful way to think about the “horizontal” that were mentioned in the introduction. In our non-anthropocentric approach the human does not disappear. First, we employ this approach to human benefit with the goal of understanding their practices better and providing them with innovative design ideas. Second, as there is no possibility for a shared mental state between a human and an object, we describe objects’ life through our own capabilities and perspective. Instead of assuming possible intersubjectivity between actors, we delegate the analysis to the people who appear to attribute an inner life to the objects on the basis of their manifest actions contextualized within a shared practice<sup>3</sup>. As DiSalvo and Lukens (2011) state, a non-anthropocentric perspective on design can affect through a consideration of material agency, that is, not the attribution of intentionality to materials but acknowledgement of how humans and materials interact relationally. This relational interaction is rarely a control or mastery of the material by the human, but rather a productive entanglement. For this reason, the shift away from a centering of human activities and desires in our method mainly relies on the participant’s imagination, empathy and divergent thinking. Though clearly filling in the object persona template might be easier for some than others, the writing process can be engaging, provoke insights and indeed stimulate creativity for everyone.

Object personas can be considered as a “defamiliarization tool” (Bell, Blythe & Sengers, 2005) to help seeing the familiar practices with a fresh eye. This, we consider, would bring design and anthropology together by means of creating theories about human practices and generating products and services that transform reality. The problem of how to understand objects and how we live with them—and how objects, in turn, come to live with people—calls for a methodology that goes beyond a focus on humans and the new spaces of possibility such interactions can create. The present study is one of the first attempts to listen to what objects have to say. If we develop thing-centered methods for this aim, we can generate concepts for design that may be overlooked in a typical human-centered approach, as well as explore new

---

<sup>3</sup> The same methodological issue also exists in an emerging field of Animal-Computer Interaction field in design. In order to elaborate on how those scholars address the agency problem, see Mancini, C. (2013). *Animal-Computer Interaction (ACI): Changing Perspective on HCI, Participation and Sustainability*. *CHI '13 Extended Abstracts on Human Factors in Computing Systems*, pp. 2227-2236.

spaces of design potentials that exists at the interface of people, environments, and materials.

## Acknowledgements

This study is being conducted within the scope of the Thing Tank project, which was presented in the first Seminar and is funded by the Skoltech Institute, Moscow in the context of the MIT Skoltech Initiative, “Ideas Lab” funding program.

## Bibliography

Baudrillard, J. (1996). *The system of objects*. London: Verso.

Bell, G., Blythe, M. & Sengers, P. (2005). Making by making strange: Defamiliarization and the design of domestic technologies. *ACM Transactions on Computer-Human Interaction*, 12(2), 149–173.

Bleeker (2006). A Manifesto for Networked Objects — Cohabiting with Pigeons, Arphids and Aibos in the Internet of Things. Downloaded from: <http://blog.nearfuturelaboratory.com/2006/02/26/a-manifesto-for-networked-objects/>

Blythe, M. A. & Wright, P. C. (2006). Pastiche scenarios: Fiction as a resource for user centred design. *Interacting with Computers*, 18, 1139–1164.

Busch, A. (2005). *Uncommon life of common objects*. New York: Metropolis Books.

Costall, A. & Dreier, O. (2006). *Doing things with things: The design and use of everyday objects*. Aldershot, UK: Ashgate Publishing.

Daston, L. (Ed.) (2000). *Biographies of scientific objects*. Chicago: The University of Chicago Press.

DiSalvo, C. & Lukens, J. (2011). Non-anthropocentrism and the non-human in design: Possibilities for designing new forms of engagement with and through technology. In M. Foth, L. Forlano, M. Gibbs, & C. Satchell (Eds.), *From social butterfly to engaged citizen: urban informatics, social media, ubiquitous computing, and mobile technology to support citizen engagement* (pp. 421-437). MIT Press.

Engeström, Y. & Blackler, F. (2005). On the life of the object. *Organization*, 12(3), 307–330.

Giaccardi, E., Speed, C. & Rubens, N. (2014). Things making things: An ethnography of the impossible. In *Proceedings 1st Seminar of the Research Network for Design Anthropology*, April 10-11, 2014, Aarhus, Denmark. Available at: <https://kadm.dk/co-design/research-network-design-anthropology>.

- Gunn, W. & Donovan, J. (2012). Design anthropology: An introduction. In W. Gunn & J. Donovan (Eds.), *Design Anthropology*. Farnham, UK: Ashgate Publishing Company.
- Linehan, C., Kirman, B. J., Reeves, S., Blythe, M. A., Tanenbaum, J. G., Desjardins, A. & Wakkary, R. (2014). Alternate endings: Using fiction to explore design futures. *CHI '14 Extended Abstracts on Human Factors in Computing Systems*, pp. 45–48.
- Markussen, T. & Knutz, E. (2013). The Poetics of Design Fiction. *Proceedings of the 6th International Conference on Designing Pleasurable Products and Interfaces (DPPI '13)*, pp. 231 – 240.
- McVeigh-Schultz, J., Stein, J., Watson, J. & Fisher, S. (2012). Extending the Lifelog to Non-human Subjects: Ambient Storytelling for Human-Object Relationships. *Proceedings of the 20th ACM international conference on Multimedia*, pp. 1205-1208.
- Miller, D. (Ed.) (1998). *Material cultures: Why some things matter*. Chicago: University of Chicago Press.
- Mortensen, D. H., Hepworth, S. J., Berg, K. S. & Petersen, M. G. (2012). “It’s in love with you”: Communicating status and preference with simple product movements. *CHI '12 Extended Abstracts on Human Factors in Computing Systems*, pp. 61 – 70.
- Neruda, P. (1994). *Odes to common things*. London: Bulfinch Press.
- Nevile, M., Haddington, P., Heinemann, T. & Rauniomaa, M. (Eds.) (2014). *Interacting with objects: Language, materiality, and social activity*. Amsterdam: John Benjamins Publishing.
- Ng, I. (2012). *Value & worth: Creating new markets in the digital economy*. Cambridge, UK: Cambridge University Press.
- Nielsen, L. (2002). From user to character: An investigation into user-descriptions in scenarios. *Proceedings of Designing Interactive Systems (DIS '02)*, ACM Press, pp. 99–104.
- Otto, T. & Smith, R. C. (2013). Design anthropology: A distinct style of knowing. In W. Gunn, T. Otto & R. C. Smith (Eds.), *Design anthropology: Theory and practice* (pp. 1–29). London: Bloomsbury Academic.
- Piaget, J. (1959). *The language and thought of the child*. Routledge & Kegan Paul.
- Pruitt, J. & Grudin, J. (2003). Personas: Practice and Theory. *Proceedings of the 2003 conference on Designing for user experiences (DUX '03)*, pp. 1-15.
- Rebaudengo, S., Aprile, W. & Hekkert, P. (2012). Addicted Products, a scenario of future interactions where products are addicted to being used. In J. Brassett, J.



McDonnell & M. Malpass (Eds.), *Out of control: Proceedings of the 8th international conference on design and emotion*, pp. 1-10.

Tanenbaum, J., Tanenbaum, K. & Wakkary, R. (2012). Steampunk as design fiction. *Proceedings of CHI '12*, Austin, Texas, pp. 1583–1592.

Turkle, S. (Ed.) (2011). *Evocative objects: Things we think with*. Cambridge: MIT Press.

Van Allen, P. & McVeigh-Schultz, J. (2013). AniThings: Animism and heterogeneous multiplicity. *CHI '13 Extended Abstracts on Human Factors in Computing Systems*, pp. 2247-2256.

Verbeek, P. (2012). Humanity in design: A few notes on the relations between anthropology and materiality. In W. Gunn & J. Donovan (Eds.), *Design and Anthropology* (pp. 163 – 176). Farnham, UK: Ashgate Publishing.