

# Service Fictions Through Actant Switching

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Actor-Network Theory (ANT) and speculative design inspired the creation of Actant Switching and Service Fictions. ANT states that each action is a system made up of human and nonhuman actors. All actors play their set role for the system to move forward. By mapping out the system, ANT can enable exploration of relationships within a context. Actant Switching is a method for speculative scenario creation that interchanges human and nonhuman actors to create counterfactual scenarios exposing tension with the context and technology. Service Fictions is a method for engaging participants in a co-created speculative design around the created Actant Switching scenarios. A case study on sleep practices demonstrates these techniques. Both methods enable insights from allowing participants to confront their relationship with a system, to make explicit the implicit roles in the system and therefore their relationship with technology. These methods are a useful addition to designers' toolboxes, at the intersections of service design, speculative design, and participatory design. Both techniques provide a practical way to apply ANT.

*speculative design; participatory design; actant switching; service fictions*

## 1 Introduction

This paper introduces two related generative methods which enable design researchers to explore questions of people's relationships with a system and the technology internal to that system. Both methods bring to focus the questions around delegations of agency to technology in everyday life. Actant Switching (AS) is a method for speculative scenario creation, based on Actor-Network Theory (Latour, 1992; Verbeek, 2005), which involves switching nonhuman actors to human actors in order to create slightly counterfactual (speculative) scenarios. Service Fictions (SF), evolving from AS, is a method for engaging participants in co-created speculative design based on a slightly counterfactual scenario generated through AS. Both methods enable insights for design, from allowing participants in a user research or design process to confront their relationship with a system, and from defining the implicit relationships between actors in the system or network. AS provokes *designers* to make explicit their relationship to the system; SF enables *participants* to make explicit their own



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relationship to the system, based on a designer's prompts. Both methods use speculative design and Actor-Network Theory (ANT) to explore and understand a context.

These methods grew out of wanting to explore the boundaries of a context; speculative design was chosen as a way to push the boundaries of a context and ANT was chosen as a way to generate slightly counterfactual speculations based on existing systems. Initially, when these speculations were shown to participants, they tended to only react, rather than engage. SF are a way of having participants engage more fully with the generated AS speculations, by having the participants co-create a scenario that makes sense for their lives, based on their preferences and values. The speculative nature of both methods allows researchers to examine their own values, and to open up conversations with participants regarding their values, preferences and ways of thinking, otherwise harder to attain in a first encounter.

### **1.1 Background: Speculation and Probes**

Speculative design can be used to elicit reactions through thought-provoking materializations of counterfactual concepts, its intent can be to initiate reflection and discussion (Dunne & Raby 2001). However, if the scenarios presented are too uncomfortable, too difficult, or too devoid of context, participants may potentially only *react* to the scenario—amplifying gut reasoning—without exploring the reasons why such a reaction is provoked. There is a trend of using speculative design to provoke debate in public discourse through gallery exhibition or promotion. This 'showroom model' (Koskinen et al, 2011) keeps the participant at a distance, where they are perhaps unable to engage fully with the scenario.

One way of rooting this more closely with 'one foot in the present' is to use speculative design methods. This exaggerates elements of what is already present in a familiar situation—making it easier for people to connect the speculation to current reality, so long as they are open to engaging with the prompt. The closer the speculation is to reality, the more the speculation perhaps 'disturbs' the customary conceptions that participants have of a context (Dunne, 2007: 10). There is an effort to remove the 'showroom' model and have participants engage more directly with the speculation. Chris Elsdon et al's 'Speculative Enactment' (2017) uses scripted bodystorming to allow participants to experience speculative scenarios in situation. Other methods that attempt to use speculative design in a participatory way to initiate conversation to inform the design process include speculative design probes (Wallace et al, 2013), *provotypes* (Boer & Donovan, 2012), *prototypes* (Fuez, 2015) and other similar approaches, at various levels of resolution. These methods have been used to explore and gain an understanding of research participants' values, context, and ways of thinking, through collecting responses to a provocation in the form of a "part-made object[...] explicitly awaiting closure" (Wallace et al, 2013), or a presented scenario for "what might be" (Gaver, 2012: 940) which explicitly invites, and makes use of, participants' responses. For example, the evolving approach taken by Bill Gaver and colleagues (the Interaction Research Studio at Goldsmiths) involves giving prototypes of new products and artifacts to participants, to live with over time (e.g. Gaver et al, 2015). These prototypes are used as research probes, where conversations have often started with the designed object but opened up to "encompass the broader and more particular issues, practices and controversies with which our volunteers were living" (Gaver et al, 2015). This use of speculative design as a form of research employs the object as a prompt for rich conversation around, as opposed to simply evaluation of it as a product—similarly to Dunne and Raby's *Placebo project* (2001), examining people's experiences of electromagnetic fields in the home through a series of prototype objects. "We are not interested in whether these stories are true or scientific, but we are interested in [the] narratives people develop to explain and relate to electronic technologies, especially the invisible" (Dunne and Raby, 2001, 75).

Our intention with creating AS and SF were similar; the counterfactual AS scenarios work as research probes meant to spur 'rich conversation' around the context. The aim of co-creating speculative service scenarios is to open up a deeper conversation around participants' reasoning for their decisions—enabling different insights to emerge from the process. SF aim to help pull out the

reasoning behind participants' preferences. With the designer co-creating this scenario with the participant, the context can be explored thoroughly.

Since speculative design is meant to spur conversation, the benefit of SF is capturing engagement through progressive disclosure and recording how participants relate to the scenario that they create. In co-creating the scenario, participants can engage with the scenario in a way that makes sense for them and thus illuminate the reasoning behind their choices. Conversation also allows for slow 'buy-in' allowing participants to explore and engage more with the provocations rather than the encounter ending with the initial reaction (Dorst, 2015).

## **1.2 Background: Actor-Network Theory**

ANT describes an approach to the description of situations, arising from work in science and technology studies (STS), which centres on interactions and relationships between humans and non-human actors—together making up networks which perform actions. In ANT, objects, environments—indeed all entities—are considered to be actors just as humans are. As such, ANT holds some interest for designers, as a sociological approach which recognizes the performative role of designed artefacts in social systems. It has particular relevance in service design, in terms of its focus on relationships and changing interactions between actors, which influence how we as humans and our nonhuman counterparts work together to act, or achieve a goal (Uden & Francis, 2010). In working together, each actor's role can be seen to move the action forward to the next actor that plays its part until the desired action is complete. An action depends on the actor before them for the system to move forward; each actor in the system is as important as the next. These networked systems are flat continuous networks that make up everyday life.

Latour saw systems in need of both technological nonhuman and human actors to allow the system to function and work seamlessly. Systems are not 'either or', but made up of both types of actors, as a system of only nonhuman actors could not exist without a human actor. Each actor's role can be delegated to either a human actor or a nonhuman actor. For example, Latour uses the example of a door being opened and closed: the actor that closes the door can be either a human or nonhuman (mechanical) actor; it does not matter as long as the action is done.

The reason for considering how both humans and artifacts make up a system is that they are dependent on, and co-construct each other. As Yaneva (2009: 284) puts it, "a thing or a design project can modify all the elements that try to contextualize it, triggering contextual mutations. In this sense, a design project or a disputed design resembles more a complex ecology than it does a static object." An artifact is usually designed with the intention that a human interacts with it in a certain way. The actions of the human are designed. Nevertheless, an artifact is nothing if a human does not use it; and use it the way it was designed to be used. Artifacts shape individuals' day-to-day actions. Likewise, much technology is only realized when a human actor uses it. For example, if a human actor picks up a phone to call someone the human is allowing the phone to be a phone, the phone is then allowing the human to talk to someone, thus completing original desire for the action. Both are reliant on each other for the action to work. The way the phone interacts with the human, and the way the human interacts with the phone is predetermined.

ANT does not recognize free will: there is only one interaction a human can have with a nonhuman and vice versa. If a human deviates, there is a notion of an *anti-program*. Anti-programs are designed into nonhuman actors that are meant to reinforce the intended interaction if a human were to stray from their role. In Latour's example of the seatbelt, if the human actor chooses to not buckle up, the car will beep incessantly until the human actor puts on the seatbelt. If a human strays too far, Latour states that 'the technical shifting-out forces the reader to choose between frames of reference' (Latour 1992: 169). This means when anti-programs are not strong enough, one needs to make a choice to abandon the system 'as is' and make a new system by introducing a technology switch. Each time a technology switch occurs and technology is added or subtracted a 'price is paid' (Latour 1992: 174). The system will normalize through an additional need, i.e. the 'price'—precisely the place the designer can examine, and make explicit, otherwise implicit relationships. This offers

an opportunity for designers to explore: playing with these relationships to provoke discussion and reflection.

### 1.3 About/ Background for Actant Switching

AS was born as a way to explore a context through using ANT—specifically, exploring the differences between delegating a role to human and to non-human actors, and the effect this has on the actions of others. If one starts playing with whether an actor is human or nonhuman, the role the actor follows stays the same, but its connotations may change. Switching actants provides an imbalance that allows one to examine the roles and meaning placed upon nonhuman or human actors. In the following case study, the role an object or technology once played became intrusive and awkward when a human did the same action. Participants were more aware of the actions humans performed, rather than an object providing the same action. This highlights questions about the types of relationships we have with our objects and the amount of control we actually hand over to technology (Figure 1).

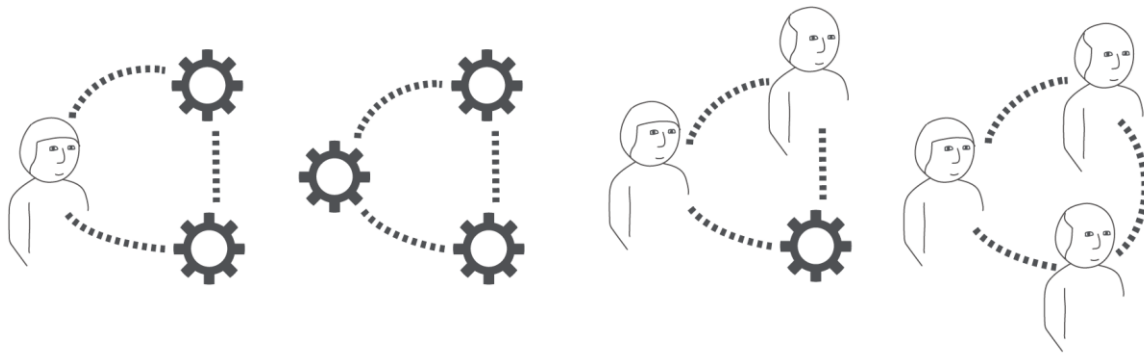


Figure 1. ANT, interchanging actors in a system.

In changing one actor for another, the action stays the same, the role stay the same, but the makeup of the system, and connotations change. This creates a slightly counterfactual scenario that could in fact exist, but doesn't. Different sets of actors lead to different actions, ('the price to pay'(Latour, 1992), allowing for emergent qualities. In changing the connotation, the scenario itself needs to change to rebalance the imbalance that switching actors created. This imbalance creates tension, this tension delineates that this is the boundary of a context. The act of understanding these tensions and attempting to rebalance the system so the scenario becomes plausible, if not preferable, uncovers implicit relationships, underlying contingencies and one's relationship to both the context and its technologies.

This tension allows us to examine our viewpoint and our interpretation of the inherent roles actors hold in a system. AS spurs ideas through the cascading changes in roles and interactions that result from changing a single actor in a system in an effort to find the boundary of what was comfortable for a specific context.

### 1.4 About/ Background for Service Fictions

SF attempt to minimize the 'reaction' to the speculation, by engaging participants in the scenario generated through the AS method. Initially, participants' reaction to the AS scenarios were because they didn't know where to start... SF were created as a way to slowly take them through the scenario by co-creating a scenario that could fit into the participant's life.

SF in the end, are co-created speculative scenarios (the captured SF Scenario, see Figures 6-11) that are reactions to speculative prompts based on scenarios generated from AS. SF attempt to situate the speculative scenario which is centered around an activity or practice, into a participant's life, in a way that makes sense for them based on their values and preferences. It is the participant attempting to rebalance the imbalance AS created. The rebalancing is an act that forces participants

to reflect on their relationship to the system, and thus provides an entry point to talk about the participants values and preferences (or reveal their values to themselves).

This engagement is less about the reaction to, but an exploration of the speculative prompt. In stepping through the speculation, participants are eased into engagement. Starting with reflection of the now, then stepping slowly towards creation of their own scenario with prompts based on their rituals. By stepping through the thought process taken in creating the AS scenario, the resistance to engage in the scenario is less than it was when the scenario was just shown to the participant.

The purpose of these scenarios is for the participant to explore a scenario that is slightly outside of their comfort zone. Service Fictions provided steps for the participant to think through how a speculative scenario fits into their lives. In stepping through a speculative scenario, it becomes fiction and it is no longer about the participant or their life, it is about this world that they are building. Since it is no longer about them or their life, participants feel more free to open up. Their stories, even if based in fiction, are still tied to their lives. The insights are in the participant's comparison between the two, and the why.

## **2 Methods**

### **2.1 Actant Switching Methodology**

AS is meant for the designer to understand their relationship to the context. It is used best in a purely generative way to uncover the possibilities of the new configurations of a network or to explore and understand a network. This allows the designer to understand the system they are designing within, it helps explore the dependencies and assumptions internal to systems.

AS works well in a context where technology has created a need that has not previously been occupied by humans. AS also lends itself well to contexts that are sensitive in nature. The goal of the designer is to find a scenario that sits on the edge of what is acceptable. Slightly sensitive contexts have varying mental models and any slight variation may be normal to one person or be at the boundary for another.

*Procedure:*

1. Choose a system/context.
2. Map actors and their roles in the system.
3. Using the same role, switch out one non-human actor for a human actor.
4. Design the scenario so that it makes sense. (Rebalance the imbalance)
5. (Optional) When returning to the original actors, how has this changed viewing the system?

*Some useful questions to ask when using AS:*

1. When roles/relationships are made explicit, how does the nature of the relationship change between actors?
2. How would making relationships explicit change the world around them?
3. How does having 'x' change the way one interacts with the world around them?
4. Re-balancing the system allows one to ask 'what would fit into my life?'
5. When switching back to the original actor, how does that change the original context?
6. What was displaced before this technology came into being?

## **2.2 Service Fictions Methodology**

SF should be done at the end of the exploratory phase, at the beginning of the generative phase.

To generate the SF, participants were prompted with situations that are slight shifts to conventional practices, and presented speculative service scenarios as provocations. These slightly counterfactual scenarios were the basis for the SF. Instead of presenting the scenario at face value, the interview mirrored the designer's thought process when creating the service scenario. From there, the participants are asked to co-create scenarios to the initial prompts. Making part of the interview a co-creation session allows for the participants to closely relate to the material. Participants are able to talk through and reflect on what the speculative service would look like in order to fit into their individual lives, values around a topic, and rituals.

It was important to lead the participant through the thought process taken to generate the speculative scenario before engaging in co-creation of a script. 'Priming the Participant' was necessary for them to 'arrive at the same frame idea themselves' therefore '[bypassing] the adoption problem' (Dorst, 2015, 65). The participants are asked to think through their rituals around the context first, then with the prompt in mind, how would their rituals for this context change? The co-creation development of the script allowed individuals to react to the prompt, but then situate the service scenario in their own life while remaining emotionally separated. Counterfactual probes allow participants to think about circumstances that are close to reality but are still based in fiction. This gives participants permission to explore the topic in a way they might not normally have considered. SF allow participants to play with a certain idea without having to actually live through it in reality. The participants' insights given in storytelling nevertheless still reflect their individual values and thoughts towards certain issues.

*Possible Procedure:*

1. Development of speculative scenario (AS).
  - a. Since this method was interchanging actors as a way of highlighting tensions in the dependencies of actors, it is important to develop the scenario separately beforehand for the development of the interview.
  - b. Designers should capture their thought processes taken to get to the scenario, break down the core concept and devise steps on how to get the participant to the desired result.
2. Interview/Step users through thought process:
  - a. Breakdown thought process to:
    - i. What happens now, what do you wish was easier, what is challenging?
    - ii. Shifts in convention, and how that would change things.
    - iii. Engagement with scenario prompts.
3. Co-create the scenario.
4. Post-interview:
  - a. Each created scenario was illustrated in storyboard format, using the same character and environment for each scenario.
  - b. Capture script.
  - c. Anonymizes scenarios by having same actors.

### 3 Case Study

#### *SleepGivers*

Sleep is a slightly sensitive and private subject. While everyone sleeps they don't generally talk about it, unless things go wrong. People do not talk about their practices or rituals because it is something that is shared with only a select few, and to talk about nighttime routines is slightly intrusive to some, but not others. Everyone has different mental models of and around sleep, it means something different to everyone even though there is an assumption that these mental models are all the same or similar.

This inconsistency provided a starting point to probe to discover what was acceptable around sleep (thus the boundaries) and to make more transparent the differing mental models and relationships to sleep as a system. AS proved useful in creating scenarios that were not abnormal but were uncomfortable.

Taking the system of going to bed, there is a person and non-human actants that allow for that person to go to bed. If one inserts or switches humans to take over the role of the non-human actants, the system changes as seen in Figure 3.

If a designer contextualizes this system and a human actor takes over for that of an app a human actor uses when going to sleep, a scenario starts to emerge (Figure 4).

Using this context, the following speculative scenario (Figure 5) was generated focusing on switching a sleep app that helps one sleep for a person who helps one sleep.

The scenario was not out of the realm of the possible. Elders often have night nurses, ICU's have a service that aims to help people sleep better, and hotels mimic this to a degree with a turndown service with a mint on one's pillow. Attempting to normalize the scenario revealed that individuals were more comfortable when the scenario was medicalized and this person acted as a medical professional who had medical knowledge of how to make one sleep better.

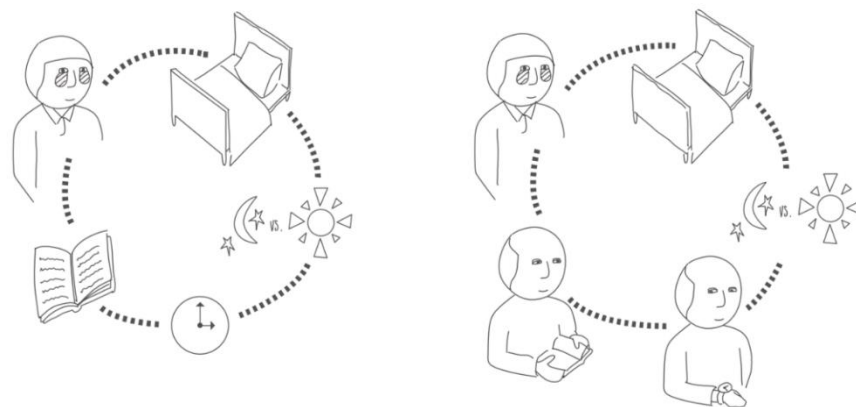


Figure 3. AS Scenario

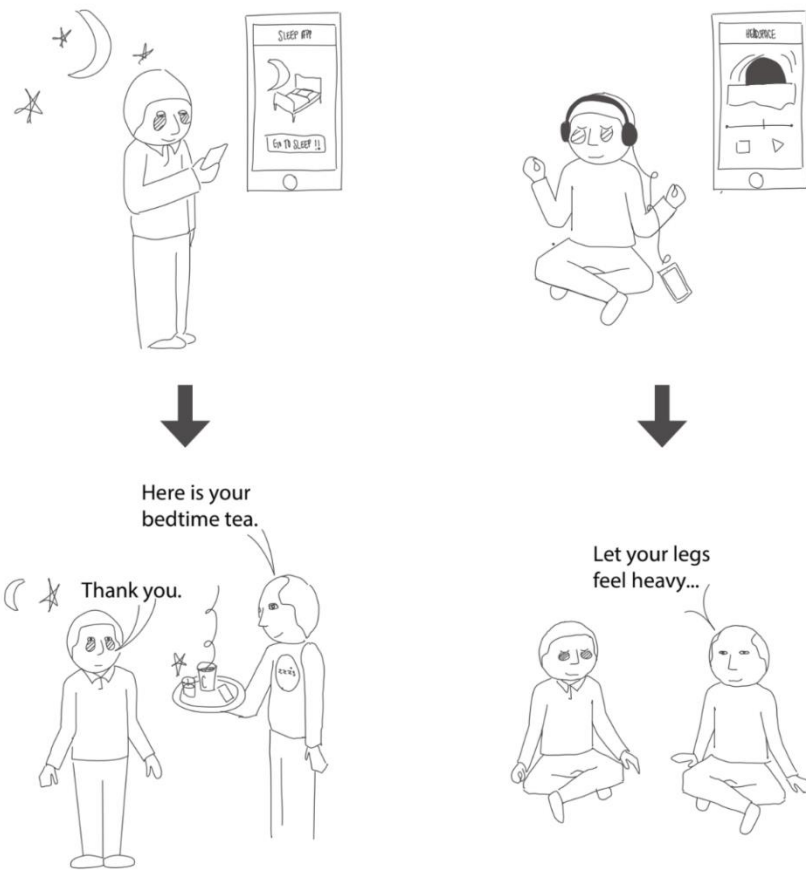


Figure 4. AS Scenario





Figure 5. AS Scenario

An informal call asked for individuals with insomnia who expressed the interest to 'be able to sleep more'. Of the 40 who responded, 12 SF were created illustrating the participant's boundaries around what they were comfortable with related to sleep.

*The questions asked in the interviews:*

1. What are your rituals around sleep.
2. If there was technology associated with an action, what would it be like if someone was facilitating that same action for them?
3. Then we co-created a script for a person who comes in to help the participant sleep.
  - a. When would they come?
  - b. What would your conversation be like?
  - c. What would they do?
  - d. When would they leave?

Below are some of the resulting scenarios from these SF sessions.

*Select Generated scenarios: (Figures 6-11)*

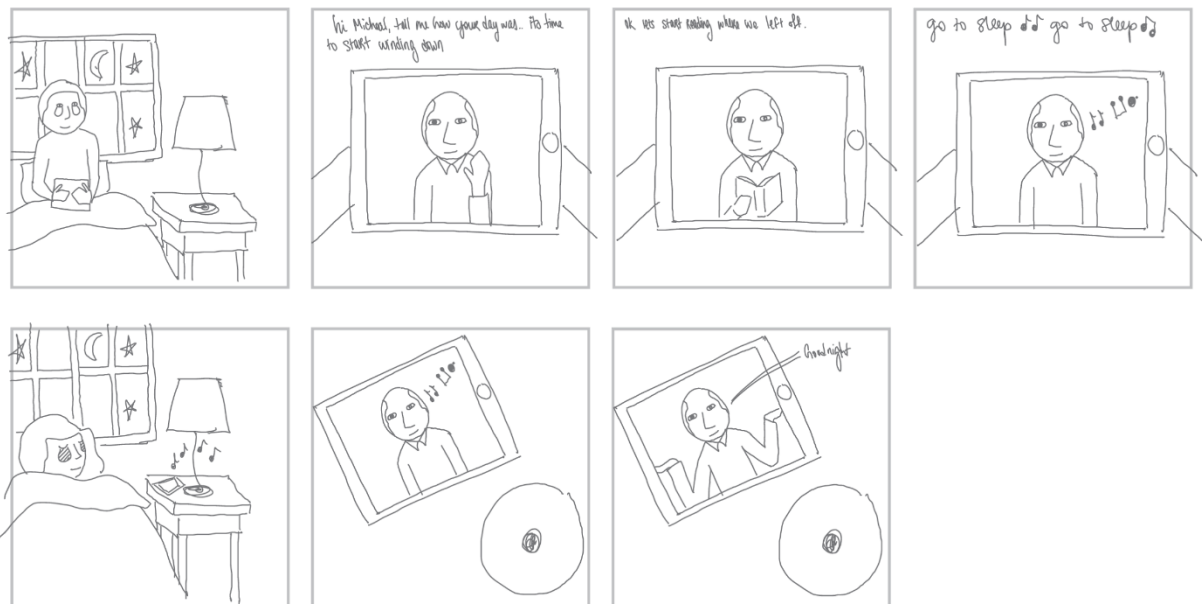


Figure 6. SF where the SleepGiver Sings the participant to sleep remotely.

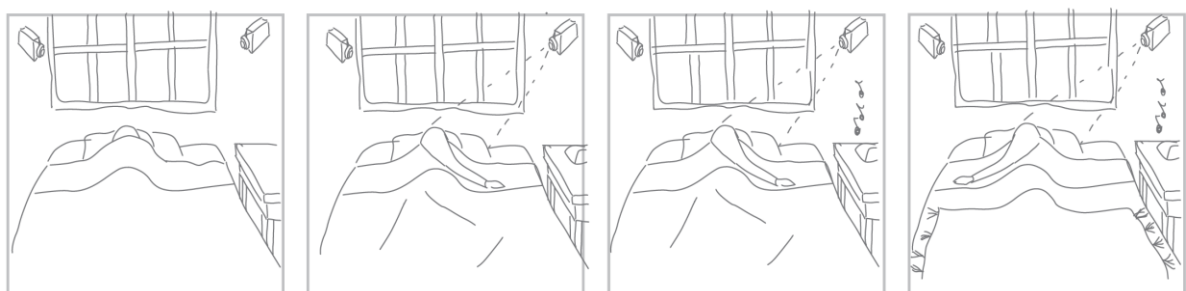


Figure 7. SF where the SleepGiver watches Participant sleep remotely, so that they could give participants tips on how to sleep better.



Figure 8. SF where the SleepGiver helps with chores, then blow dries Participant's hair dry and rubs feet until they fall asleep.



Figure 9. SF where the SleepGiver hangs out and reads a book, does not interact with Participant. The SleepGiver brings dog, dog falls asleep on bed.

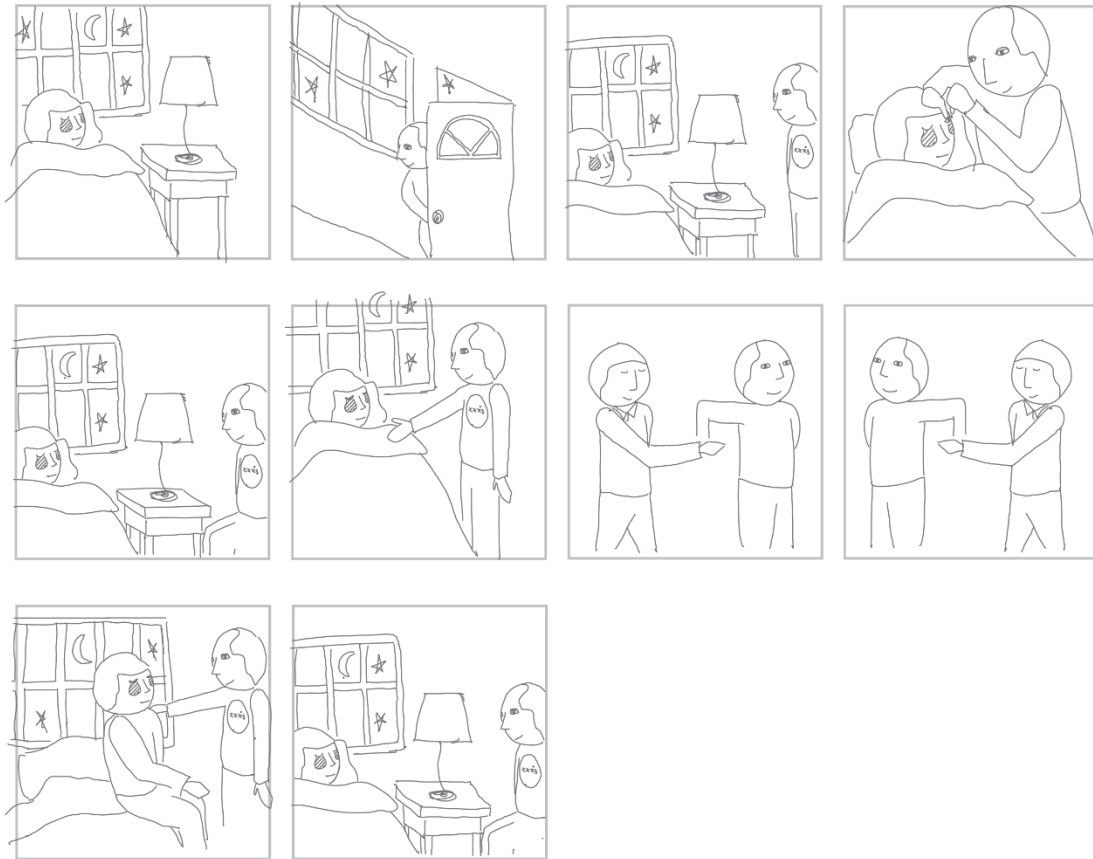


Figure 10. SF where SleepGiver watches Participant sleep, puts eye drops in their eyes so they won't wake, and if they do they walk them to the bathroom and back.



Figure 11. SF where the SleepGiver acts like a hotel Concierge and brings tea so the Participant can fall asleep.

Participants had varying degrees of comfort when creating the SF and normalized the scenario in completely different ways. Some made their scenario far-fetched as a way to bypass the privacy issue, but their reasoning behind their choices gave insight into what sleep meant to them. One participant wanted a person in a rocking chair reading but did not want that person to acknowledge them or speak to them (See Figure 3d). Having a person setting the mood of sleep, the participant felt that sleep would then become much more contagious. Other individuals wanted a person to help them make the dinner and help with chores, but wanted them to hide in a closet when the rest of the family sat down to eat.

Themes that emerged from this method were about when it was appropriate to use humans or technology in the design of services and preconceptions one has of each. For example in some cases, the 'SleepGiver' was stripped of their human qualities and used as a proxy for technology that did not exist. Or a reason people were hesitant about this 'SleepGiver' was that they didn't know their intentions, and it was not a closed but variable feedback loop, as opposed to technology where you 'know' what you are getting. Other themes that came up were the varying degrees of control, privacy and trust.

#### 4 Results

AS is the method utilized in creation of slightly counterfactual speculative scenarios to be used in the creation of SF. If systems are made up of both human and non-human actors, shifting one non-human actor in this system to a human, the balance and relationships in that system changes. The system becomes a service. It creates service scenarios that could exist, but yet are not wanted. This allows one to examine their relationship to the previous non-human actor (technology). These Service scenarios exist at the boundaries of a chosen context. It allows the designer to explore their

individual boundaries, and understand the roles internal to the system making explicit the implicit relationships.

SF are co-created speculative scenarios evolved from AS. AS is the designer exploring their relationship to a system/context through speculative scenarios. In SF, it is the participant exploring the boundaries and understanding their relationship to the prompts and thus the system. These speculative scenarios are meant to allow participants to adapt speculative prompts as related to their life. The end result is a SF, or a co-created scenario that takes place through a semi-structured interview/session. The participant uses the prompts created from AS and creates a service scenario of their own based on their preferences in how they see the prompts fitting into their own life. The purpose is to understand the 'why' behind the reasoning for these choices. These co-created scenarios allow for insight into a participant's preferences, values, and imaginaries while allowing them to define, reflect and explore their relation to specific actors internal to a specific context. SF allow participants to reflect upon and converse about their values and underlying assumptions specific to a context in a non-confrontational manner.

#### **4.1 Validation of Methods**

A workshop at Carnegie Mellon University was held to see if these two methods could be applied to a financial health context in a way that gathered rich insights, and if designers could use these methods without too much guidance.

The workshop took place with second year Master of Design students. The workshop was four parts, the introduction of the topic, AS, Interview script, and SF. The last three parts were done in teams of three, and activities were slightly modified in order to make it group work.

Students worked around a system of withdrawing money from the ATM (Figure 12). Initial concepts resulting from Actant Switching were switching out either currency, the ATM or the receipt.

Students noted that to normalize the scenario, more than one actor needed switching. Normalizing was less about fitting the scenario into their current lives, but about making the scenario make sense in a fictional world.

The participants then voted on one scenario, where the money had been exchanged for a human substitute. The groups then broke the scenario down to a script, and generated SF based on the speculative prompts.



Figure 12. Validation workshop on Financial Health

Conversation that was spurred centered around the script that humans delegated to money and what humans displaced when delegating the script to money. We also noted that most scenarios treated social relations as capital, and if AS also looked at social relations. The workshop participants found that AS was useful in changing the way one thought about a system, specifically what would happen when that system was switched back.

## 5 Discussion

### 5.1 The Benefit of Actant Switching

AS is a useful way of reframing problems/exploring problems as different relations or properties may emerge in its creation process. ANT in this iteration of AS and SF has proved useful when trying to understand social conditioning and constructs as related to one's possessions and the type of care one deems to be acceptable.

Tensions and imbalances resulting from AS allow one to examine their relationship to the context. When one attempts to rebalance the scenario, one is forced to make explicit the implicit relationship between actors. Thus, forcing one to confront what it is that they like or don't like or care about in

relation to particular actors in their life. Since AS focuses on switching non-human actors with human actors, this un-automation primes the conversation to one's relationship with technology.

## **5.2 The Benefit of Service Fictions**

In showing participants a speculative design that sits on the boundaries of a context, participants can relate this slightly counterfactual scenario to their own life, without it being part of their own life. This allows individuals to safely engage in fictional world building that is relative to them. The fact that this created world isn't real and is fictional allows participants to feel that they can engage. How they relate this world to their life is where insights can be and are gained about the context and boundaries. These thoughts towards a provocation can be extrapolated to be one's relationship to provocation itself, and thus their relation to the original context.

SF work well with sensitive contexts and expose insights from participants and stakeholders without broaching the topic head on. Generally, sensitive topics are difficult to ascertain what the participants truly feel about the topic. This may be due to the participants not knowing how they feel and needing to figure out their thoughts towards a prompt. Exploration of this in real time can capture and lead to powerful insights. Alternatively, sensitive topics may be considered private and considered not up for discussion. Speculative scenarios are fictional, are not based in this current world, and thus provide an analogous storytelling element where participants feel that they can engage because it is fictional and thus not about them or their situation.

### *Captured Engagement*

SF are an attempt to allow individuals to engage and react with speculative scenarios in a way that can be captured. Slowly stepping through a scenario, allowed the participants to experience and engage with the SF rather than just reacting to it. By stepping through it, participants could digest smaller bits of information, and acclimate slowly to the scenario prompt. Also giving the participant not the script itself but the prompts to generate the script allowed them to respond to the reasoning behind the scenario, not the scenario itself. This led to the point that the scenarios generated reflected the participants' own personal values and boundaries.

### *Analogous storytelling*

Participants may be reluctant to voice their experiences to a complete stranger. Since the prompt is fictional, it is not about them or their experience, however since it is the participant who is telling the story, aspects and reasoning are not separated. It is about what is acceptable to the participant, and their boundaries. Analogous story lines allow the interviewer to dig deeper without being intrusive to the sensitive aspects of the participant's day to day.

### *Defines boundaries on social norms*

In some slightly sensitive contexts, individuals hold vastly different mental models towards a chosen context. Yet, people are not aware of these differences, and assume their mental models are the same until they are made explicit. This method breached slight social norms, to see where the norms were for different people.

### *Decisions on level of engagement*

Participants accepted creating scenarios, but as soon as they were asked to act it out, they felt as if it was an intrusion to their privacy, or they felt weird, or they felt that was asking too much. This reflected the level which the participant is free to explore the scenario. If it is just talk, it is still fictional, when they are asked to act it out, it becomes more or less real.

## **5.3 The Limitations of Service Fictions**

It is well known that there is a difference in what people say that they want, versus what they do, and therefore what they actually want (Bertrand, Mullainathan, 2001). When participants build their own scenario based on the designers prompts, it is not about what they want but their rationale behind that leads to insights.

Some people were initially reluctant to explore creation of the script because it was still out of their comfort zone. It was only when the designer said "I understand it is weird and I understand you may



not want this, but what would happen if this were the only way you could go to sleep". This was the allowance needed for people to engage in the SF. SF seemed to be the right amount of abstraction for people to engage.

Some participants still found it hard to engage due to the semi-private context and only answered what was specifically asked. This made it more difficult to spur conversations or to go off script, so some scenarios were short and not very detailed. The benefit of the semi-structured-ness of the script creation was to allow people to wander and reflect in the moment. This is still valuable however, because one is able to see and reflect about where their boundary was. In retrospect, it was hard to ask 'why' at the end of the creation of each SF. Instead 'whys' were asked during the conversation or when the participant felt the need to explain.

This method is used to gather insights, it does not attempt to analyse insights. Analysis is a separate event and has been used successfully with clustering.

#### **5.4 Applications to Service Design**

AS interchanges a nonhuman actor with to a human actor. This switching turns a system into a service.

Service design is concerned with designing people's actions within the system that they operate. ANT says that each actor in a system is interchangeable (whether it is a human or technology), so in designing a service- the designed service designs human actions the same way one would design a product. Each actor has a purpose and plays their role.

There is value in using these two methods to make relationships explicit, or understand where the boundaries are particularly when researching sensitive topics. Defining relationships, one starts to see how actors and roles are delegated to each other. In any service or service ecosystem, modelling things in terms of actors allows one to see what part of the system relationship or goals are delegated to human actors and which ones are delegated to nonhumans, and how they delegate to each other.

## **6 Conclusion**

This article describes and details the development of AS and SF. Both help to uncover an individual's relationship in a context/system/or network by making explicit the implicit relationship in a system or network. Both techniques enable design researchers to explore questions of people's relationships with, and delegations of agency to, technology in everyday life.

AS provides an imbalance that through rebalancing allows the designer to reflect on their relationship to a context and the technology within that system. This imbalance allows the designer to look for the boundaries of the context through generation of different scenarios, and by doing so examine what roles are delegated to what actors, and what those roles mean when given to a human actor. Reflection of these delegations perhaps change how one perceives technology in the given context.

SF allow designers to engage participants in rebalancing the imbalance created with AS, and enable capturing the participant's reflection in real time. This opens up pathways of conversation not available in the typical interview session. Understanding how speculations would manifest in the participant's life and their reasoning for their decisions, allows the researcher to see values, boundaries, and beliefs that would otherwise be harder to obtain. In making relationships explicit, participants are provided an entry point to talk about their preferences if not reveal their values to themselves. SF are a useful way to gain access to participants' ways of thinking, and to build the variation of mental models towards a context.

Both techniques rely on the imbalance that switching actants provides. This allows one to examine the roles and meaning placed upon nonhuman or human actors. In the case study, the role an object or technology played became intrusive and awkward when a human performed the same action. As a result some participants attempted to dehumanize them and turn their role back into technology. Participants were more aware of the actions humans performed, rather than an object providing the same action. The act of understanding these tensions and attempting to rebalance the system so the

scenario becomes plausible if not preferable, uncovers implicit roles and its underlying contingencies and one's relationship to both the context and its technologies. The use of AS and SF can give powerful insights for discovering the intricacies of the implicit interdependencies internal to a system and our relationship to them.

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