Interaction and Service Design as Offering Perspectives in a Space of Action

Mattias Arvola, Linköping University, Sweden, mattias.arvola@liu.se

Abstract

This paper makes the proposition that interaction and service design can be seen as offering perspectives in a space of action where acting agents grasp a finite perspective depending on objects of concern and equipment, and then reorganize the space. The meaning of this proposition is outlined in the paper, and it also presents a case study of client meetings at banks, which illustrates the proposition. That case show how equipment was used in the background while the clerk attended the client. The clerk made things available for the client in their shared region, directing the client's perspective on the space of action. It was observed that equipment at times presented too rigid a perspective, not allowing the clerk to restructure it. Still, the clerk could make things available for himself or herself and for others, creating a multi-stable character of the region. Seeing interaction and service design in this way highlight the service moments as they appear to the individual agents who co-create the service throughout an encounter. The region set up by designers offers a frame of possible perspectives and an orientation in the service moment.

Keywords

Space of Action; Interaction Design; Service Design; Phenomenology

This paper makes the proposition that interaction and service design can be seen as offering perspectives in a space of action for acting agents, who grasp a finite perspective depending objects of concern and equipment, and reorganizes the space. This proposition reframes interaction and service design and can potentially open up opportunities for reflecting on design work.

The purpose of this position paper is to outline the notion of interaction and service design as offering perspectives in a space of action, illustrate it in a case, and discuss consequences of such a notion of interaction and service design. 'Space of action' is defined as lived space grasped within the finite perspective of an acting agent (Arisaka, 1995). A 'perspective' is a point of view that we employ on the world, and it places some things or some aspects in focus and others in the background of our attention.

Three questions will be addressed in the paper:

- What is the idea of "interaction and service design as offering perspectives in a space of action?"
- What does "perspectives in a space of action" mean in a specific case?
- What are the consequences of a notion of design as offering perspectives in a space of action?

The first question is addressed in the background chapter where a frame of reference and theoretical concepts are introduced. The second question is addressed in an illustrative case. Finally, the third question is addressed in the conclusions of the paper.

Background

The background addresses the question of what the idea of "interaction and service design as offering perspectives in a space of action" is. Firstly interaction and service design is briefly introduced, and other phenomenological efforts in the field are briefly described. Then the notion of perspectives on the design object is outlined, before the concept of space of action is described in respect to interaction and service design.

Interaction and Service Design

Buchanan (2001) describes four orders of design: design of symbols, things, actions and thought. The corresponding design disciplines are graphic design, industrial design, interaction design and environmental design. It should however be noted that a graphic designer does not work solely in the order of signs, but also makes creative displacements into the other orders, when for example investigating how people interact in relation to or through a sign, or when designing a three dimensional package. To make a successful design it is necessary to integrate all the design orders into a working whole.

Interaction design involves shaping conditions for the interaction and experiences people have with interactive artifacts, as well as shaping conditions for the interaction and experiences between people by means of interactive artifacts. The word 'interaction' in interaction design can be defined as a mutually and reciprocally performed action between several parties in close contact. The parties involved may be either human or computer based. (Arvola, 2010)

Service design is the systematic application of design methodology and principles to the shaping of services in the context of service development, management and marketing using modelling techniques for service experiences (Holmlid, 2007). Segelström (2013, p. 27) defines service design as: "the use of a designerly way of working when improving or developing people-intensive service systems through the engagement of stakeholders (such as users and frontline staff)."

In Buchanan's design orders, service design belongs to the same order as interaction design, and they share material properties such as dynamicity and temporality as well as similarities in design methods. Interaction design focuses on the design of the interactive artifact, while service design focuses on the service of which the interactive artifact is an integral part. Service design has thus a larger scope, intersecting with the design of thought, environmental design, and the design challenges lie closer to business, innovation and strategy. Interaction design has a smaller scope, intersecting with the design of symbols, graphic design, and the design of things, industrial design, and has the design challenges that are closer to systems development and the material design fields. (Holmlid, 2007)

Phenomenology in Interaction and Service Design

Phenomenology has been used in many different ways before in interaction and service design research. There has, as also noted by Secomandi (2012), largely been a focus on ready-to-hand tools and embodiment, as seen for example in the work by Winograd and Flores (1986), Dourish (2001), and Fällman (2003).

A basic theme in Heidegger's phenomenology is our being-in-the-world. The word 'in' means in this case 'involvement' rather than 'containment' (Coyne, 1995; Malpas, 2012). It means that we are engaged in the world before we are reflective. We are thrown into a situation where we act and cannot avoid to act. It is the primarily unreflective state of active engagement directed towards the things that we care about as the world presents

itself to us. Our practical artifacts are ready-to-hand for action disappearing into the background of our attention, and becoming transparent as we focus on the objects of concern. It is possible to redirect attention from our daily dealings to the practical artifacts that mediate them. This detached reflection requires that the artifact is unready-to-hand and instead it becomes present-at-hand, an object of study. The process of transformation from ready-to-hand to present-at-hand is called a breakdown. As our being-in-the-world is disturbed by a breakdown, the fabric of our taken-for-granted everyday world is disclosed to us so that we can reflect on it and question it.

Fällman investigates (2004) the multi-stable relation between user, mobile information technology, and the world. He observes, for example, that when taking a photo with a digital camera the relation can change dramatically a number of times during a period of a few seconds.

Another phenomenological aspect that has received attention in interaction design is that of 'placemaking' and experiential and meaningful place in contrast to objective Cartesian space. The notion of space in a phenomenological sense is accordingly an aspect of being-in-the-world (Coyne, 1995). Agency in space is furthermore a fundamental aspect of creating place (Rossitto, 2008). Ciolfi (in press) gives a good and current theoretical overview of placemaking.

Turning the attention from interaction design to service design, Secomandi (2012) suggests that service design can be seen as primarily the design of mediating interfaces between service providers and clients. He stresses the importance of the materiality of those interfaces, and exemplifies how they can change the perceptions of both one's body and social life. Service interfaces can in his analysis also be human-to-human interfaces that also need to be deliberated.

Coyne (1995) provides examples of how Heidegger's theory of space can be applied to the analysis of computational things. This paper contributes to this body of research by outlining the notion of interaction and service design as offering perspectives in a space of action.

Perspectives in a Space of Action

A perspective is for the purposes of this paper defined as a point of view that we employ on the world, and it places some things or some aspects in focus and others in the background of our attention. The notion of a 'space of action' as used in this paper builds on Arisaka's (1995) account of Heidegger's theory of space. It is a theory of space that is not an entirely uncontested (cf. Arisaka, 1995; Malpas, 2012).

A space of action is here construed as a functional, ready-to-hand, lived and embodied space grasped within the finite perspective of an acting agent. The places in which we live and work have regions or districts (Ger. 'Gegend'), which organize our activities and determine the locations of available equipment and objects of concern. A region is indexical, which means that it determines here, there, near, and far for the things we deal with and the way we move emanating from an acting agent. *'Regionality'* is hence one fundamental feature of a space of action.

Another fundamental feature is how we make things available to ourselves and bring things close. This is called *'de-severance'* (Ger. 'Ent-fernung'). Arisaka gives the example of how the phone appears available and close in her reaching for it. Making things available creates a particular actual perspective derived from the frame of possible perspectives offered by the region. For Heidegger, things can also reveal space: "In

gathering, they bring other things into proximity (Coyne, 1995, p. 175)." One thing leads to the next, opening up, or bringing things to presence. Heidegger has given an example of a bridge (Coyne, 1995, p. 190): "the bridge reveals the banks and the character of the river, through the way it is reflected in the water and by the way the pylons have to be built to withstand the river's flow." It also brings the other bank near. In the same way we may think about other designed things: What do they reveal and bring close?

The actual perspective for an acting agent is directional, which leads to a third fundamental feature of a space of action: '*Directionality*'. The phone in Arisaka's example is located in a direction from her, which dictates where to face. Specific regions determine the locations of objects of concern and equipment, which means that regions also organize activities through directionality.

As mentioned above, a region offers a frame of possible perspectives for an acting agent, where the agent is given and takes a finite perspective depending on objects of concern and equipment (equipment also give one a perspective: if you have a hammer you see a world of nails). Arisaka gives an example of a region of an L-shaped hallway leading to a living room, where anyone would follow a direction of movement decided by the orientation of that region. The region dictates how the living room opens up ahead as one walk through the hallway with the walls on both sides. Anyone plugged into that region will be oriented in basically the same way, which dictates one's direction of movement.

By making equipment and objects of concern available to oneself one reorganizes the region. Arisaka has an example of the region of her left-handed work area, where anyone would have to reach for the mouse, the pen and other things on the left-hand side of her computer and move them to the right side if one is right-handed. In relation to mediated communication, Coyne (1995, p. 169) writes: "What brings proximity is not the mediation of electronic communications per se but the proximal region brought into being through our concern at the moment."

Transferred to interaction and service design, the notion of a space for action means that designers set up a functional region for people. The region offers a frame of possible perspectives and an orientation to acting agents who grab finite perspectives depending their objects of concern and equipment. The perspective places some things or some aspects in focus and others in the background of our attention. The region that designers set up decides accordingly the locations of objects and equipment as well as an orientation with respect to the acting agent. The locations and the orientation then dictate agents' movements in the region, while they make things available to themselves, which in turn reorganizes the region.

Heidegger's theory of space can be related to Ihde's description of a version of readiness-to-hand, which is when the technology is peripheral or "to the side" (Ihde, 1990, p. 110). He describes how it is part of the immediate environment, but neither an embodied ready-to-hand tool, nor a present-at-hand object. It has instead a *background relation* to the inhabitant of the environment, and by making things available to him or her self the inhabitant can bring it from the background to the foreground.

Case Study

The second question for this paper is what perspectives on a space for action mean in a specific case. To address this issue I will use empirical material from a research study conducted in the late nineties. We studied client meetings at a bank from the perspective of the clerk. It is a case of a service encounter that includes both human-human interaction and human-computer interaction, and as such it highlights issues typical of

both service design and interaction design. The client's perspective is only touched upon briefly and is not in focus for the analysis presented here.

Method

The research process had three identifiable stages: (1) Observations and situated interviews; (2) Analysis in workshops; (3) Iterations of categorization and coding of the material.

A study was performed at four offices at a Swedish banking company. Five clerks were followed to uncover the experienced qualities of their usage of computer equipment in client meetings. The work of every participant was observed for a few hours on two occasions (accept for one of the clerks who was only observed once). The inquiry involved taking part of the clerks' work, taking notes, asking questions, observing client meetings, and documenting the space of action for the clerks.

The clerks worked primarily as financial advisors for private clients rather than for businesses. The experience level and age varied. Three of the participants were female and two were male.

Transcribed field notes were firstly analysed in three workshops. The workshop group consisted of three competency developers and three systems developers with banking experience, together with the with two design researchers. These workshops allowed for triangulation between multiple interpreters with different backgrounds. The workshops were video recorded and the analysis participants made in these workshops were also investigated.

The analysis then entered a second stage where one researcher performed the in-depth analysis. The analysis was at this stage approached using categorization. The first tentative categories were formulated by marking up the empirical material. The categories relied primarily on what emerged as meaningful categories in the material. The categories were also grouped into higher-level categories, and at this stage the theoretical framework informed the development of themes.

The clerks' space of action

In the client meetings that were observed a consulting clerk met with one or two clients in the clerk's personal office. They dealt with things like binding of loans, selling and buying bonds, or discussing new loans for buying a house, a car or an apartment. Their concern was to get the client's finances in order, and perhaps make changes, and have a meeting that went smoothly. It was also a concern for the clerk to relate well with the client the client and make profit for the bank by selling financial products and services. The clerk did not want to be surprised by different aspects of the clients' financial behaviour. One clerk said: "The client must never feel that their situation is abnormal, that would make the client uncomfortable."

The clerk used a PC with the screen turned away from the clients, and both client and clerk utilized pen and paper located on the desk. In the offices that were observed, the clerk was seated so that he or she could meet and greet the clients when they arrived at the doorway. The clerk had already printed out the forms, the information, and the documents that probably would be necessary to go through together with the client. They were placed on the desk. Sometimes, the client had been asked to go through some information material before the meeting. The clerk often turned direction to the PC in order to get the latest information about interests and similar figures. If the meeting concerned a

loan, the clerk would have to do extensive input to the system and was partly directed away from the clients during this time. The clerk would then frequently ask the client to forgive the non-attention and the client usually made it clear that he or she completely understood: "After all, we've all had to work with computers, haven't we."

The region shared between clerk and client was to a high degree controlled by the clerk, but questions from the client usually led their attention in un-anticipated directions. The client could see all the documents and forms that were laid out on the table and could by that draw conclusions about what they had to go through during the meeting.

Accuracy was a concern for both clients and clerks. It was also a concern to be efficient, and not keeping other clients waiting. The clerks therefore often had parallel clients on-screen, preparing one client while waiting for another. They also had parallel objects of concern during a meeting. One of the participants had, for instance, four log-ins and two screens open in the system owned by the subsidiary mortgage institution.

Clerks moved between different systems and tools, making them available for usage. This was not without friction, given the many different and un-integrated systems that the clerks had to use.

Functional Equipment

The computer often took the role of functional equipment; the computer itself becoming transparent. This means that it became a tool, ready-to-hand to manage the data that became the object of concern. The client resided then in the background of the activity. During extensive time spans of data input, or during breakdowns in the activity, the clerk could not attend the client at all. The client did then not know what to do besides wait, and the clerk excused him or herself for ignoring the client, to help the client regain face. The computer itself was then objectified and entered as a topic into the conversation.

When the computer was used as functional equipment and a ready-to-hand tool during the meeting, the client became a distraction for the clerk drawing the direction of the clerk's attention from the current object of concern. The computer as functional equipment was for this reason not desirable during a client meeting. It was more preferred when the computer was in a background relation to the side, acting as a resource, and the client was the main object of concern for the clerk to attend. The clerk could then make the computer available for short periods and then direct attention to the computer system, but still without completely losing the attention to the client.

Shared Regions

Several people can share a region, and this is what happens in a client meeting. People then have to relate to each other, and the other can be an object of concern. We observed how the computer in the shared region worked as something that both participants could relate and refer to as a shared resource. It then had a background relation to them both. It was on the side, feeding topics into the interaction between them, but the object of concern was still the other person. For example, printouts from the computer systems were available and controlled by both clients and clerks. Occasionally, the clerks also turned their screens towards the client in order to explain or show something, making things available for the other. The region had been organised by the clerk when he laid out printed papers in a specific order on the design and this organisation then dictated both the perspective of the client and the perspective of the clerk. It directed their attention to the printouts in a particular order, where one thing brought the next into presence, and

they pointed and discussed around the printouts, reading them together which brought topics into the conversation.

Undesired Directionality

One clerk continued to use the old menu-based system since it presented a familiar space for action, and the new system could not be trusted since that time all deals in Volvo shares had become Vostok shares. Here we can see how familiarity can create a place to know and feel comfortable with, but this small episode also indicates the phenomenal complexity of interactive computing machinery. As technology gets agency it not only presents the clerk with a perspective on a space for action, it can also be trusted or mistrusted in the perspective it gives.

The directionality of the region may also be undesired by presenting a too rigid space for action. When there are small possibilities for people make objects of concern available, the region becomes restricting. The region is then only dictating the movement, without allowing for restructuring of it. One example of that at the bank, was when the user had to go through step after step after step just because the computer technology required it:

"I logged in four times and had two views in the subsidiary mortgage institute. They don't communicate fully: our systems and theirs. It's cumbersome to change between them. The security views can look quite messy. Sometimes it's 15–16 rows for describing pledge. The system does not help and if there is an error you need to start again from the beginning! I, as a banker, can see that they should have the loan, but it's the scoring system that controls it. It is sometimes an obstacle even though I understand why it exists." (Clerk at the bank)

For the clerk, who is there already giving the loan, the process of moving through the scoring system is somewhat like passing through one airport security control after the other when you in mind already is boarding the airplane.

Swiftly Reorganizing Regions

An artifact could at one time be in an embodied equipment relation to the acting agent with data input at the fore of attention, and in the next be in a background relation as a resource for one or several of the people in the meeting. For example, a clerk talked to a client using the computer as a resource by glancing at some figures, and only moments later it was a tool for entering information. When the clerk turned the screen or made printouts it became part of a shared region and reorganized it for the participants. By acts of de-severence, of making things available for oneself and for others, a multi-stable character of the region is created.

The regions in the client meetings did, however, not support very fluent and swift reorganization of the region. A number of workarounds and insufficient strategies were used for people to be able to make things available. Examples of such insufficient strategies were printouts, or turning screens with the risk of exposing private information, or using the computer as a piece of functional equipment and ignoring the client.

Conclusions

The analysis illustrated how functional equipment was not desirable in the client meetings, since the object of care had to shift from the client to the computer screen. It was instead preferred to have the equipment to the side in a background relation (Ihde, 1990) to be

able to sufficiently attend the client. The computer equipment could also be in a background relation to both client and clerk in their shared region. We saw how the clerk made things available for the client in their shared region, thus directing the client's perspective on the space of action. Furthermore, we observed how equipment at times presented too rigid a perspective, simply directing but without allowing the clerk to restructure it swiftly. Still, the clerk could make things available, creating a multi-stable character of the region. This multi-stability that Fällman (2003) has noted for mobile technology appears also for technology normally considered stationary. We could clearly see that both changes in concern and changes in the regions will change the direction the agents were facing.

The multi-stable character of equipment and objects in the region mean that one and the same artifact may play different roles in a single activity, and move between foreground and background of the attention. This goes also for the agents involved, who can have different roles at the same time. How to orchestrate the flow of attention in the space for action is a vital but not altogether easy task for the interaction design.

This illustrative case has shown that we can regard interaction and service design as offering perspectives in a space of action for acting agents, who grasp a finite perspective depending objects of concern and equipment, and reorganize the space.

What are then the consequences of such a notion of interaction and service design? It is a notion of interaction and service design that is concerned with the service moments as they appear to the individual agents who co-create the service throughout an encounter such as the client meeting at the bank. The co-creation involves a reorganization of each other's perspective on their shared region. The region that has been set up by the designer offers a frame of possible perspectives and an orientation, which dictates the movement of the involved agents. They then grab a finite perspective based on their objects of concern and reorganize the region accordingly. The analysis of the bank case put emphasis on a low level of interaction, and that kind of analysis can support designers and researchers articulation of the effects of their design at that level. Higher abstraction levels of service design have not been addressed in this paper and it is not certain that the theoretical framework presented here is relevant at the activity or system levels of a service system.

There are also other aspects of the phenomenology of interaction and service design at a more holistic service level that also are underdeveloped and deserve attention. They include accounting for the phenomenology of self-consciousness in service delivery as well as empathy, intersubjectivity, collective action, and the role of culture. The most challenging aspect of this research endeavour is to integrate these various pieces into a full-bodied phenomenological theory of interaction and service design. There is quite a bit a research yet to be done to achieve this greater goal.

To conclude, interaction and service design can be seen as offering perspectives in a space of action for acting agents, who grasp a finite perspective depending objects of concern and equipment, and reorganize the space. This proposition reframes interaction and service design and opens up opportunities for reflecting on design at the most detailed level of the lived experience of service moment after service moment.

Acknowledgements

In Proceedings of the 2014 Design Research Society (DRS) conference. June 16-19, 2014 in Umeå, Sweden.

References

Arisaka, Y. (1995). On Heidegger's theory of space: A critique of Dreyfus. *Inquiry 38* (4), 455-467.

Arvola, M. (2010). Interaction designers' conceptions of design quality for interactive artifacts. In *Proceedings of Design Research Society (DRS) 2010*, Montreal, July 7-9 2010.

Buchanan, R. (2001). Designing research and the new learning. *Design Issues,* 17(4), 3-23.

Ciolfi, L. (in press). Space and place in digital technology research: A theoretical overview. In S. Price, C. Jewitt, C. and B. Brown (Eds.), *The SAGE Handbook of Digital Technology Research*, London: SAGE.

Coyne, R. D. (1995). Designing Information Technology in the Postmodern Age: From Method to Metaphor. Cambridge: MIT Press.

Dourish, P. (2001). Where the Action Is: The Foundations of Embodied Interaction. Cambridge: MIT Press.

Fällman, D. (2003). In Romance with the Materials of Mobile Interaction: A Phenomenological Approach to the Design of Mobile Information Technology. (Doctoral dissertation). Umeå: Umeå University.

Holmlid, S. (2007). Interaction design and service design: Expanding a comparison of design disciplines. In *Proceedings of the 2nd Nordic Design Research Conference, NorDes 07*. Retrieved October 31, 2013 from http://www.nordes.org/opj/index.php/n13/article/view/157.

Ihde, D. (1990). *Technology and the Lifeworld: From Garden to Earth*. Bloomington: Indiana University Press.

Malpas, J. (2012). Heidegger, space, and world. In J. Kiverstein and M. Wheeler (Eds.), *Heidegger and Cognitive Science*. Basingstoke: Palgrave Macmillan.

Rossitto, C. (2008). Managing Work at Several Places: Articulating the Notion of Nomadic Work in Student Groups. (Doctoral dissertation). Stockholm: Royal Institute of Technology (KTH).

Secomandi, F. (2012). *Interface Matters: Postphenomenological Perspectives on Service Design*. (Doctoral dissertation). Delft: Technische Universiteit Delft.

Segelström, F. (2013). *Stakeholder Engagement for Service Design: How service designers identify and communicate insights.* (Doctoral dissertation). Linköping: Linköping University Electronic Press.

Winograd, T. & Flores, F. (1986). *Understanding Computer and Cognition.* Norwood: Ablex.

Mattias Arvola

An Associate Professor in Cognitive Science at Linköping University in Sweden. He works primarily in interaction and service design process and methods, but also interaction and service design theory, concepts and paradigms, and applied human-centred computing.