

Understanding delegated actions: Toward an activity-theoretical perspective on customer-centred service design

Victor Kaptelinin^{1,2} and Lorna Uden³

¹ vka062@uib.no, Dept. of Information Sci. and Media Studies, Univ. of Bergen, 7802 Bergen, Norway

² vklinin@informatik.umu.se, Dept. of Informatics, Umeå Univ., 901 87 Umeå, Sweden

³ l.uden@staffs.ac.uk, Faculty of Comp. Engin. & Tech., Staffordshire Univ., The Octagon, Beaconside, Stafford, St 18OAD, UK

Abstract

The paper presents an exploration of service design from the point of view of activity theory. The analysis in the paper builds upon recent work in service design (e.g., Holmlid, 2007; Sangiorgi, 2009; Wild, 2010), and extends our own previous research, in which activity theory was applied in analysis and design of interactive artefacts (Kaptelinin and Nardi, 2006; Uden and Willis, 2001). The discussion in the paper focuses on how services are integrated into customers' activities. We argue that activities supported by services represent a special type of human activity: they are both collective (since they are performed by several actors) and individual (since their structure is primarily determined by the hierarchy of goals of one actor, i.e., the customer). According to the position, advocated in this paper, services can be considered as delegated actions. We tentatively identify a set of issues that need to be taken into account in service design, namely: core vs. auxiliary actions, poly-motivation, complex mediation, dynamic social distribution, whole life-cycle support, and long-term appropriation.

KEYWORDS: service design, activity theory, Human-Computer Interaction

Introduction

Traditionally, the fields of Human-Computer Interaction (HCI) and interaction design have been mostly concerned with analysis and design of digital artefacts, both conventional computing systems and interactive products in general (Sharp et al., 2007). It is becoming increasingly obvious, however, that the traditional scope of HCI and interaction design is too narrow and should be expanded beyond individual artefacts (Kaptelinin and Bannon, in press).

Interaction between people and digital technologies is no longer centred on individual technological artefacts. Instead, it is organized around configurations of devices, applications, and network connections, which collaboratively produce a valuable, meaningful outcome to the user.

For instance, a person travelling by plane may purchase their ticket via the internet, receive a reminder as an SMS sent on their mobile phone, and check-in at the airport using a self-service kiosk. Supporting the user in that case requires that not only individual technologies but also the system as a whole be properly designed. In a sense, the design of the system as whole is more important, since each component technology, such as a particular web browser, mobile phone model, or self check-in kiosk type, is not that critical and can be substituted with a similar technology.

Expanding the scope of HCI and interaction design beyond individual digital artefacts is a necessary step, but it also raises a number of difficult questions. One of the most central ones is: What is the object of analysis and design in HCI and interaction design, if it is not a device or an application? A possible way to answer this question is to consider "service design" as an object of research and development in HCI and interaction design. As witnessed by this workshop, this notion is steadily gaining ground the research community, especially in recent years (e.g., Holmlid, 2007; Wild, 2010).

In this paper we aim to contribute to the conceptual exploration of the concept of service design by bringing in the theoretical framework of activity theory. Activity theory has already established itself in more traditional HCI and interaction design research (e.g., Kaptelinin and Nardi, 2006). The framework was also employed in service design research by Sangiorgi (2009). Our analysis builds upon this research and makes an attempt to further develop an activity-theoretical perspective in service design.

The specific focus of the discussion in the paper is the activity of the customer. While service provision and consumption comprises a complex network of activities, the activity of the customer (an individual or collective entity) is of special

importance. Understanding of customers' activities is a critically important step in customer-centred service design, and successful integration of a service into customers' activities is the ultimate criterion of the evaluation of a service.

The remainder of this paper is organized as follows. The next section provides an overview of main ideas and principles of activity theory, and outlines the use of the theory in HCI and interaction design. After that we discuss how services, as opposed to individual digital artefacts, are integrated into the structure of human activities, and what factors are critical for the integration to be successful. Finally, we conclude with a tentative set of design sensitivities, derived from activity theory, regarding service design.

Activity theory AND HCI

An activity-theoretical perspective in HCI

Activity theory is a theoretical approach originating from Russian psychology (Leontiev, 1978). The foundational category of the approach is activity, understood as a purposeful, social, mediated, hierarchically organized and continuously developing interaction between people and the world. It is typically represented as a "S <-> O" (that is, "Subject – Object") interaction. Activity theory has become adopted in a variety of fields, including HCI (Bødker, 1991), where it has established itself as one of the main theoretical perspectives.

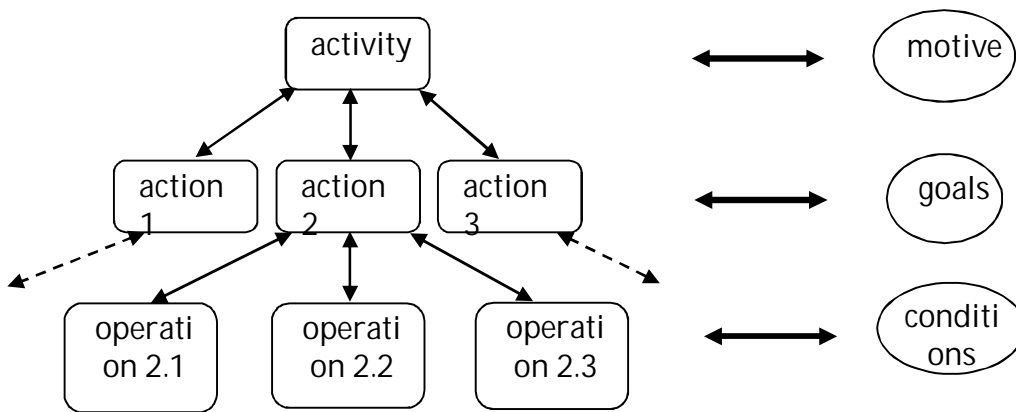


Figure 1: Hierarchical structure of human activity

The introduction of activity theory to the fields of HCI and interaction design contributed to recognizing the importance of understanding technology in the context of meaningful human activity and need for conceptual tools supporting such an understanding. In addition, adoption of the approach resulted in the development of a range of analytical tools and concrete interactive applications and systems, informed by activity theory (Kaptelinin and Nardi, 2006; Uden and Willis, 2001).

Main ideas and principles of activity theory

The conceptual framework of activity theory can be schematically presented as comprising two main ideas and five basic principles. The main ideas are: (a) the unity and inseparability of consciousness and activity, which means that human mind emerges and develops as a part of human interaction with the objective world, and (b) the social nature of human activity, which means that human beings do not interact with the world alone; the very nature of the interaction is defined by culture and society.

These two ideas can be elaborated into the following set of basic principles of activity theory:

Object-orientedness. All human activities are directed toward their objects (not necessarily physical things), which motivate and direct activities. Analysis of objects is a necessary requirement for understanding human activities, both individual and collective ones.

Hierarchical structure of activity. According to Leontiev (1978), activities are organized into hierarchical levels of activities, actions, and operations. An activity, motivated by a certain need, is carried out as a sequence of *actions*, that is, conscious processes, directed at *goals*. In their turn, actions are implemented through lower-level, routine processes called *operations* (Fig. 1). Actions can be poly-motivated, that is, subordinated to several motives and/or higher-level goals at the same time.

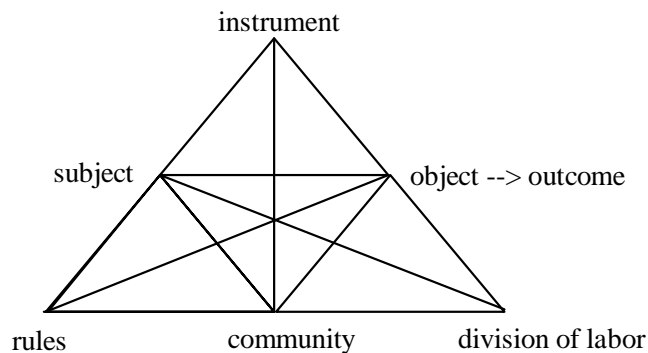


Figure 2: Engeström's activity system model

Internalization/ externalization. Any activity includes both internal and external components. There are mutual transformations between them. In the process of *internalization* external components become internal. The opposite process is called *externalization*.

Mediation. To achieve their meaningful goals people employ various mediating artefacts, or tools, which reflect the previous experience of other people. Tools shape human activities, thus enabling the accumulation and transmission of social knowledge.

Development. Activities undergo continuous developmental transformations. Analysis of such transformations is of critical importance for understanding human activities.

Versions of activity theory

The original version of activity theory was developed in the 1950s-1970s by the Russian psychologist Alexey Nikolaevich Leontiev (1978), who was heavily influenced by his mentor Lev Semenovich Vygotsky, as well as other contemporary Russian psychologists, such as Sergey Leonidovich Rubinshtein. This version of the theory primarily deals with activities of individual human beings.

More recently, another version of activity theory, aiming to take into account collective activities, was proposed by the Finnish education researcher Yrjö Engeström (1987). The underlying model of the Engeström's framework is derived from Leontiev's "S <-> O" model by including a third node, that is, *community* (C) and then introducing different types of mediational means for each component of the three-way interaction (Fig. 2).

Currently Leontiev's and Engeström's frameworks are the most common variants of activity theory. The application scopes of these two frameworks, while partially overlapping, are rather different. Leontiev's approach provides a more elaborated set of analytical tools for understanding and supporting individual human activities, while Engeström's activity system model is more suitable for analysis and support of large groups and organizations.

Service as an object of analysis and design

Tools and services: From tool mediation to delegated actions

So far, the activity-theoretical perspective in HCI research has been primarily concerned with *tool mediation*, that is, with how technologies are appropriated by individuals and groups, how individual and collective activities are transformed as a result of tool appropriation, and how interactive tools should be designed in order to make a positive impact on human activities (Kaptelinin and Nardi, 2006). As mentioned, with some notable exceptions (e.g., Sangiorgi, 2009), there has been a lack of activity-theoretical analyses of services. Therefore, a legitimate question to ask is: Can the activity-theoretical perspective in HCI be extended beyond tool mediation to analysis and design of services?

As argued below, there are reasons to think that the conceptual framework of activity theory can be usefully applied to understanding and support of services, as well. At the same time, such an application provides a challenge to the activity-theoretical perspective in HCI and requires that its concepts and methods be further elaborated.

The most basic premise of the activity-theoretical perspective in HCI is that technological artefacts should be analyzed in the context of meaningful human activities. Arguably, this premise is equally applicable to interactive services.

Consumers experience value through their activities and how service fits into the context of activity systems. Therefore, we need to understand how service is embedded in the context of consumer activities and how the value of different activities is experienced. Researchers have suggested that value emerges from within the customer's activities (Woods 1981; Normann 2001; Grönroos 2008). Value is therefore experiential and subjective (Sandstrom et al 2008). Customers experience positive value when they are able to do something that they enjoy, or feel that they have achieved a desired activity.

Because customers seek to create experiences of value for themselves through their activities, and that different activities are interlinked and complement each other, it is important that we can observe and analyze consumer's activities.

Many researchers (Normann 2001; Vargo et al 2008) argue that experience of value can vary according to the context where it is realised. Heinonen (2004) defined context as the situational context, such as time or place of the service encounter. Context is also defined by Gupta and Vajic (2000) as the physical or social setting of the encounter. Consumers will experience value when they are able to engage in an ongoing concern or complete a particular task successfully (Ravald 2008).

While the most fundamental requirement to both technological artefacts and services is their proper integration into meaningful activities, the roles and functions of technologies and services in human activities are somewhat different (if closely related). Technological artefacts predominantly serve as "tools" and "instruments" mediating individual and collective activities. Services, however, cannot be easily defined using these terms. What are the characteristic features of services, differentiating them from technological artefacts?

To answer this question we need to consider the specific nature of the activities supported by services, that is, customer activities, into which services are integrated. A closer look at such activities reveals that they can be characterized as both individual and collective ones. On the one hand, services, as opposed to technological artefacts, always imply a collective effort, an activity performed by at least two agents. Value creation through services is a collaborative process and is always co-created (Sporher et al., 2008).

On the other hand, activities supported by services are not typical collaborative activities, in which the whole team is working toward a common goal. In the case of services collaboration is asymmetric, its goal structure is subordinated to individual objectives of one of the participants. The asymmetry is reflected in the very meaning of the term. Although there are different definitions given to service, we concur with Vargo & Lusch (2006), that service is the application of resources *for the benefit of another*. In other words, service is seen as the process of doing something *for* and with another party.

Therefore, services are actions, which are embedded in the activity structure of one actor (the customer), but carried out by another actor or actors. Accordingly, we suggest that, from a customer-centred perspective services should be considered *delegated actions*.

The basic principles of activity theory: Implications for service design

Some of the general requirements that need to be met in order for services, understood as delegated actions, to be effectively and efficiently integrated into the structure of customer's activity can be clarified by turning to the basic principles of activity theory, described in section 2.2 above.

Object orientedness. Object gives an activity a direction and determines the meaning of its component parts. Understanding the actual objects of customer activities in service design is important for two reasons. First, finding ways to support the customer in reaching their objects can help identify potential ways of value creation for the customer. Second, understanding the objects can help establish the scope of the provision of services, that is, differentiate between *auxiliary* actions (which the customer might want to delegate) from *core*, "undelegatable" actions, which customers in fact would like to carry out themselves (e.g., we typically do not want a travel agent to *travel* instead of us...)

Hierarchical structure of activity. Understanding the structure of customer activities, in which services are embedded, is crucial for a successful service design. Such an analysis can reveal the role and place of delegated actions in an activity as a whole. Special attention needs to be paid to *poly-motivation*, that is, multiple motives and higher-level goals (such as avoiding excessive costs), collectively defining whether or not a service should be requested, and, if yes, on what conditions. It should

also be taken into consideration that a specific configuration of active motives and goals can be different in different contexts.

Many researchers believe that value that emerges from within these activities is relativistic and context-dependent (Vargo and Lusch 2008; Raval 2008). Value is created for customers for themselves using resources offered by a company (Vargo et al 2008). The customer is thus an active integrator of information and services. As a result of this, the company has shifted from being a producer of value to a supporter of value (Grönroos 2008). Customers need to do certain activities. They must (or want to) interact with companies to be able to do them. According to Raval (2008), "Because customers use the company resources within their own activities, they evaluate these resources according to how well they are able to support them.

Mediation. Designing services, rather than individual interactive technologies, requires that complex configurations of interactive and non-interactive artefacts be taken into consideration and, if necessary, reconfigured. Instead of simple mediational means, analysis and design should focus on *complex mediation* (Bødker and Andersen, 2005), comprising networks of technologies and people.

Internalization/ Externalization. Typically, service providers do not *constantly* communicate with their customers. There are alternating phases of communication and non-communication, and one of the aims of service design should be striking a right balance between these phases to make sure that a service is both efficient and non-obtrusive. From an activity-theoretical perspective the alternating phases represent a *dynamic re-distribution* of an activity along the individual-collective dimension. The sequence of the phases is determined by the inner logic of an unfolding activity.

Development. Services and activities develop over time, and developmental transformations take place at several levels simultaneously. Let us consider two types of developmental processes relevant to service design. First, there are lifecycles of particular instances of services: a service is selected, initiated, unfolds, is completed, and eventually is disposed of. Service design should aim to support whole lifecycles rather than selected parts or phases of the whole process. Second, some services, such as internet banking, need time to be fully appropriated and can eventually become success stories despite initial customer resistance, frustration, and distrust.

Conclusions

We believe and argue that a framework such as activity theory that looks at ongoing human interaction with the world and encompasses relations with others, and the socio-historic mediation of learning and development is an alternative approach that can be used to develop services that meet users' needs. Applying activity theory to service design means to take seriously all aspects of activity from activity motive formation to the triggering of operations under certain material conditions.

What sets activity theory apart from other approaches is that the anchoring in a collective/shared practice allows us to talk about more than just individual skills, knowledge and judgement and not just about generic human beings. According to AT, we can talk about the appropriateness of a certain tool for a certain praxis and study how the introduction of a particular artefact changes practice and how practice may change the use of artefact. As practice develops over time, concern for the historical context of an artefact in use is essential.

As we argue in this paper, the general framework of activity theory can be applied not only to interactive technologies, but to service design, as well. The analysis in the paper specifically focuses on customer's activity,¹ The analysis allows us to characterize services as delegated actions, and suggest a tentative set of issues relevant to service design: issues of core vs. auxiliary actions, poly-motivation, complex mediation, dynamic social distribution, whole life-cycle support, and long-term appropriation.

References

- Beyer, H. and Holtzblatt, K. (1998). *Contextual design: Defining customer-centered systems*. Morgan Kaufmann, San Francisco.
- Bødker, S. (1991). *Through the interface: A human activity approach to user interface design*. Hillsdale, NJ: Lawrence Erlbaum.
- Bødker, S. and Andersen, P. B. (2005). Complex mediation. *Human-Computer Interaction*, 20, 353-402

¹ It should be noted that understanding the activity of service providers' – or service activity -- is a different issue, which requires a special type of analysis.

- Grönroos, C. (2008) "Service logic revisited: who creates value? And who co-creates?", *European Business Review*, Vol. 20 (4), 298 - 314
- Engeström, Y. (1987). *Learning by Expanding: An Activity-Theoretical Approach to Developmental Research*. Helsinki: Orienta-Konsultit Oy.
- Gupta, S. and Vajic, M. (2000). 'The contextual and dialectical nature of experiences,' In *New service development: Creating memorable experiences*. J and M Fitzsimmons (eds.), Sage Publications, 33 - 51.
- Holmlid, (2007). Interaction design and service design: Expanding a comparison of design disciplines. Proceedings of *Nordes 2007*.
- Kaptelinin, V. and Bannon, L. (in press). Interaction design beyond the product: Creating technology-enhanced activity spaces. To appear in *Human-Computer Interaction*.
- Kaptelinin, V. and Nardi, B. (2006). *Acting with technology: Activity theory and interaction design*. MIT Press.
- Leontiev, A. (1978). *Activity, Consciousness, and Personality*. Englewood Cliffs, NJ: Prentice-Hall.
- McBride, N. and Elbeltagi, I. (2004). Service-oriented human computer interaction and scripting. In: Sarmiento, A. (ed.) *Issues of Human-Computer Interaction*. Idea Group., 1-20
- Multisilta, J. (2009). A service science perspective on the design of social media activities. *IJWET*, 5 (3), 327-342.
- Normann, R. (2001). *Reframing business: When the map changes the landscape*. Chichester, UK: Wiley.
- Ravald, A. (2008). *How is customer value created*, Hanken School of Economics, Helsingfors.
- Sangiorgi, D. (2009). Building up a framework for service design research. Proceedings of the 8th European Academy of Design conference,
- Sharp, H., Rogers, Y., and Preece, J. (2007). *Interaction Design: Beyond Human-Computer Interaction*. 2nd edition. Wiley.
- Sporher, J., Vargo, S.I., Caswell, N. and Maglia, P.P. (2008). The service system is the basic abstraction of service science. Proceedings of the 41st International Hawaii Conference on System Sciences (HICSS 41).
- Uden, L. and Willis, N. (2001). Designing user interfaces using activity theory. Proceedings of the 34th Hawaii International Conference on System Sciences (HICSS 34).
- Vargo, S. L. and Lusch, R. F. (2006). Service dominant logic: Reactions, reflections and refinements. *Marketing theory*. 6(3), 281-288.
- Vargo, S.L and Lusch, R.F. (2008), "Service-dominant logic: continuing the evolution", *Journal of the Academy of Marketing Science*, 36 (1), 1-10.
- Wild, P. J. (2010). Longing for service: Bringing the UCL Conception towards services research. *Interacting with Computers*, 22 (1).
- Wood, W.A. (1981). *Consumer Behaviour*. North Holland, New York, NY.