

Participatory Design & Meta-Design - Where's the Bridge?

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Abstract

Participatory Design (PD) and Meta-Design (MD) are both design approaches aiming to empower end-users. Despite this shared aim, the scientific communities involved with both approaches remain largely disparate. This paper investigates the similarities and differences between both approaches, based on their core elements. Then, it proposes three dimensions along which both approaches could be integrated. Finally, it suggests directions for future research.

Keywords

Meta-Design, Participatory Design, Theory Integration, End-User Development

1. Introduction

Participatory Design [1] and Meta-Design [2] are both user-centered design approaches, but they differ in scope, focus, and the role of users and designers. In this position paper, I explore how both approaches might be bridged and potentially combined to build upon each others' strengths. I do so by first revisiting the underlying core elements of each approach, and sketching out the differences and similarities between both approaches. Finally, I propose a few directions of interest for combining both approaches.

1.1. Meta-Design

Meta-design (MD) and end-user development (EUD) have been proposed as a conceptual frameworks for designing flexible systems that can adapt, or be adapted to the changing needs of end-users even after these systems have entered their 'use-phase' [2]. MD promotes the idea of 'underdesign', or 'design for designers', emphasizing on the notion that designers should not aim to deliver finished, closed systems to their end-users, but rather open-ended systems that allow end-users or 'end-user designers' to adapt or expand systems as their needs develop.

Despite MD being grounded in the assumption that "*future uses and problems cannot be completely anticipated at design time*" [2], the framework has yet acquired limited traction as a tool for design. One reason for that might be that meta-design does not provide an explicit vision of who the end-user actually is, it just assumes there are end-users whose needs and desires regarding a system will eventually change. It does not explicate how (meta-)designers could or should engage in the process of identifying and characterizing these end-users. As such, it does also not support explicating in what ways end-users' needs might change over time.

At the same time, in practice there are many examples of socio-technical systems where end-users engage in the modification or extension of technologies, based on lived-experience and domain knowledge [3]. Still, such adaptations are hardly ever envisioned nor supported by the original designers of these technologies, and become especially challenging to conduct by non-professional designers in the context of interactive technology [4].

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1.2. Participatory Design

In contrast to MD, Participatory design (PD) has been (and still is) more widely used in design (e.g., [5]). Participatory Design is a design approach that seeks to actively engage all stakeholders — such as patients, partners, specialists, etc. — in the design process to ensure the final product meets their needs and is user-friendly.

While PD is an excellent approach for incorporating the lived experience and professional knowledge of a broad range of stakeholders in the process of designing a technology, traditionally it is applied within the context of a 'design project'. That is, the process is bounded by a beginning and an end point, typically the point where the designed solution is implemented in context. This puts limitations on the extent to which a PD-designed technology remains fit to the needs of the end-users over time. The longer the time after the design project has ended, the greater the chance that stakeholder requirements have changed and the technology becomes a poor fit, or even obsolete.

2. Bridging two worlds

The previous sections might seem to position Meta-Design and Participatory Design on two opposing ends of a trade-off: either one gets the advantage of long-term modifiability (MD), or one gets technologies that perfectly fit the needs of stakeholders (PD). Of course, this is a false dichotomy. Meta-designing a technology does not preclude the possibility of deeply engaging with stakeholders in the initial phases of the design process. In fact, both approaches are rooted in a similar motivation: giving end-users greater control over the products and services that are being designed for them.

2.1. Identifying the bridgeheads

In order to identify opportunities for bridging between the two approaches, it is interesting to look at the core principles underlying both. Table 1 lists key concepts underlying Participatory Design and Meta-Design.

2.1.1. Temporal scope

Firstly, we need to note that PD focuses much on understanding and designing for users from the context of a design project residing in the 'now' - the '*design time*' [6]. Of course, wherever possible, designers applying PD will attempt to foresee and support future needs with their designs, but in its basis, PD is situated within the context of a design project. Such a project is usually bound by a fixed start- and endpoint, and the involvement of the end-users is usually limited after the project ends. Contrary, MD explicitly focuses on creating provisions for supporting future needs. As such, it is focused more on supporting end-users during '*use-time*' [6]. Users are likely to be involved during *design time* as well, but the methodological focus is on longitudinal support of end-users.

2.1.2. Focus on tasks & activities

When comparing their basic principles, it becomes clear that both PD and MD both share a focus on tasks and activities, albeit in different ways. Where MD states that meta-designed environments must *support tasks that people engage in*, PD broadens this notion to not only encompass the (technical) environment being designed, but also the very activities and tasks that the design process is addressing. Although not listed as one its key principles, MD theory proposes a similarly broad framing through the lens of 'cultures of participation' (CoP) [7]. In essence, CoP theory emphasizes on the need to allow people to take up, switch or abandon roles and tasks within a community bound by a (meta-designed) system as their needs and interests develop. As such, changes in such CoPs occur not only in the technical system, but also in the social layer surrounding it.

2.1.3. Designer-user spectrum

Another interesting commonality between PD and MD is the shared notion of role separation between (meta-)designers and end-users. Both approaches identify these as different roles within the design and use of a system. However, where PD explicitly separates these groups, emphasizing the roles both groups should occupy within a design process (e.g., preventing designers from blindly following whatever a user suggests), MD has a more nuanced view. MD does recognize different levels of 'designerly involvement' - ranging from 'passive end-users' to 'meta-designers'. Moving along this scale, end-users gain more and more involvement in designerly activities related to the system at hand. For example, in the case of Wikipedia, end-users might just consume information, make small textual changes, contribute entirely new articles, or even be involved in the overall design and management of the Wikipedia infrastructure. Like PD, MD emphasizes on role separation, but MD explicitly connects the notion of (*meta-*)*designer* to a role, and not to a person. That is, persons may occupy different roles over time, and learn to become (meta-)designers within the scope of an environment, depending on personally relevant goals and needs.

2.1.4. Exploring future possibilities

A final comparison that can be made between PD and MD concerns the notion of supporting users in exploring future possibilities. Two of PD's fundamental principles relate to this notion, one expressing the need for designers to allow end-users to deviate in thinking and experiencing from their original practices, so not blindly accepting these practices as fixed. Another principle stresses the importance of being able to experience a design (and not just think about it in the abstract), in order to allow users to formulate demands for it. PD puts the responsibility for realizing these two principles primarily with the designer. Meta-design, in contrast, emphasizes the need for systems to 1) support end-users in contributing actual designs themselves, 2) support end-users in sharing such designs, and 3) allow end-users to perceive the benefits of contributing. The contrast here is interesting - PD assumes end-users need to be guided and stimulated to step beyond the current practices and solutions, while MD assumes end-users will voluntarily and more or less independently do so, given proper infrastructural support. In PD, stimulating end-users to think about alternative designs is posited as the job of the designer, where MD puts (part of) this task with other end-users (see *social creativity* [7]).

2.2. Building the bridge(s)

Now that we have identified the similarities and differences between PD and MD, we can look forward towards bridging between both approaches. Rather than fleshing out the contours of a new approach, my aim here is to outline a few lines along which both approaches are complimentary.

2.2.1. Temporal scope: From Immediate Problem-Solving to Long-Term Evolution

Participatory Design is primarily concerned with engaging users during the initial design phase to develop systems that respond directly to their current requirements. This approach, while effective in producing contextually appropriate solutions, may not account for the evolving nature of user needs over time. Meta-Design, in contrast, facilitates the ongoing evolution of systems by empowering users to modify, adapt, and extend the design post-deployment.

By integrating PD and MD, the design process can initially address specific user needs (via PD), while embedding adaptive frameworks (via MD) that enable continuous user-driven system evolution. Thus, PD provides the foundation for immediate functionality, while MD ensures that systems can adapt to future, unanticipated needs. In practice, many MD project might already employ a participatory approach in the initial phases of the design process (e.g., see [4]). Yet, there is a difference between '*just involving the users in a design process*', and conceptually adopting the fundamental aspects of PD [1]. True integration of PD and MD might require further research, investigating how both approaches could be more closely integrated not only the conceptual, but also at an operational level.

Participatory Design	Meta-design
Focus on <i>Design-time</i>	Focus on <i>Use-time</i>
Design conditions for the <i>whole use activity</i>	The environments must <i>support tasks that people engage in</i> .
Users and designers have <i>different backgrounds</i> and belong to <i>different communities of practice</i>	<i>Designers must become meta-designers</i> . They should use their own creativity to create sociotechnical environments in which other people can be creative by shifting from determining the meaning, functionality, and content of a system to encouraging and supporting users to act as designers. They must be willing to share control of how systems will be used, which content will be contained, and which functionality will be supported.
The <i>practice of the users is the starting point</i> for design. At the same time users need to be <i>confronted with, and to experience new ideas</i> in order to transcend their own practice.	<i>Changes must be technically feasible</i> . As a necessary prerequisite, there need to be possibilities and mechanisms for extension of designs.
<i>Users need to experience the future design</i> in order to pose demands for it.	<i>Low barriers must exist to sharing changes</i> . Evolutionary growth is greatly accelerated in a system in which participants can share changes and keep track of multiple versions easily.
	<i>Benefits must be perceived</i> . Contributors have to believe that what they get in return justifies the investment they make.

Table 1

Key characteristics of participatory design and meta-design. Adapted from [1] and [7].

2.2.2. User Roles: From Participants to Co-Designers

In PD, users are positioned as active contributors to the design process, collaborating with designers to co-create systems. However, their role typically diminishes once the design phase is complete. MD extends the participatory ethos by promoting a long-term, user-driven design model, where users transition from participants to co-designers. They are provided with tools and environments that allow them to modify and evolve the system beyond the initial design phase.

This complementary relationship fosters a continuum of user engagement, wherein users first contribute to the creation of the system (PD) and subsequently assume the role of co-designers with the capacity to adapt the system over time (MD). This shift enhances user agency and promotes a sense of ownership over both the initial and future iterations of the system. There is an opportunity here to look more closely into how this transition between 'design contributor' towards 'end-user designer' could be facilitated. For example, Cabitza et al. have proposed an extension to the meta-design paradigm, in which a *maieuta-designer* (derived from maieutics, a Socratic form of inquiry and discussion between individuals) acts as a complementary role to the meta-designer, but "*more oriented to the social aspects of EUD practice than to the technical ones*" [8]. It also puts demands on the role of traditional designers, who must be supported in expanding their designerly activities beyond the system or artifact, and engage in the training and growth of a community of future end-user designers.

2.2.3. Design Outcome: From Specific Solutions to Open-Ended Systems

Participatory Design often results in specific, tailor-made solutions based on user input, producing well-defined systems that address particular needs at a given time. Meta-Design, on the other hand, produces open-ended frameworks or environments that can be adapted and reconfigured by users to accommodate their evolving requirements. Yet, even meta-designed systems are not 'hollow shells of possibilities', but instead functional systems that address existing user needs *and* providing the possibility for change or expansion. The Seeding, Evolutionary growth and Re-seeding model [9]

formalizes this line of thought, by envisioning open-ended (meta-designed) systems as 'seeds' that allow for organic growth (through end-user input) and occasional 're-seeding' to curtail the system's boundaries. Yet, there is an opportunity to systematically explore how end-users can be included in not only the design of an initial 'seed', but also in scoping what the boundaries of that seed might be, as well as in identifying what tools, services and socio-technical arrangements might be required to support future end-user designers in continued development.

3. Conclusion

In this paper, I have contrasted and compared the approaches of Participatory Design and Meta-Design. Both approaches share a similar aim of end-user empowerment, but apply different approaches. While related, the two approaches still largely exist and are applied as separate frames on the design of technology. This paper argues for a number of directions for more closely investigating the touch points between both approaches, and suggests routes for connecting and integrating them into a more holistic approach. Future research should aim to explore the possible integration of both approaches so that designers might be facilitated in co-creating systems that are embedded in the empowering foundations of both Participatory Design and Meta-Design.

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