

# Personas, Participatory Design and Product Development: An Infrastructure for Engagement

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## ABSTRACT

The design of commercial products that are intended to serve millions of people has been a challenge for collaborative approaches. The creation and use of fictional users, concrete representations referred to as ‘personas’, is a relatively new interaction design technique. It is not without problems and can be used inappropriately, but based on experience and analysis it has extraordinary potential. Not only can it be a powerful tool for true participation in design, it also forces designers to consider social and political aspects of design that otherwise often go unexamined.

## Keywords

Persona, design method, scenario, user-centered design

## INTRODUCTION

Cooperative design techniques that can be effective in in-house or custom development contexts are less effective in commercial product or package software development. Traditional “user-centered” approaches have been improved upon in recent years but current practices tend to fall short in several respects: Designers and users are not truly engaged, social and political aspects are filtered out, complexity and representativeness are difficult to identify and portray. In this paper we present a technique that, if used appropriately and in conjunction with other methods, can draw upon powerful psychological forces to restore these dimensions. The use of this method is rapidly spreading, including in our organization. In this paper we focus on presenting a theoretical case for the method, which may not be intuitively tied to participatory design.

At the PDC '90 conference one of us presented a paper identifying “obstacles to participatory design in large product development organizations” [15, 16]. Designers of mass-market, commercial software often can't identify with

complete confidence specific users of their software. Hoping to attract hundreds of thousands or millions of people, finding “representative” participants can be a problem. Organizational barriers are also substantial: Designers need to look outside their own organization, but external parties usually have little incentive to participate meaningfully over time, and development schedules rarely accommodate such involvement.

Although sustained user involvement seems desirable, its effect on commercial products can be unclear. When an in-house or custom project does not include participatory design, the resulting problems can be obvious. But how would Microsoft Word, the Mac OS X or Lotus Notes differ had participatory design been used?

## PARTICIPATORY DESIGN IN PRODUCT DEVELOPMENT Early Scandinavian efforts

Early in the participatory design movement, there was not an issue: Platform-independent software was not significant until the 1980s. Researchers in the UTOPIA project of the early 1980s, realizing the expense of developing for a single organization, went to great lengths to involve a large segment of the newspaper industry [12, 13]. But as work progressed, they anticipated the possibility of a general desktop publishing application.

The UTOPIA researchers identified benefits and challenges in working closely with specific users in envisioning a new product. Ehn [13] describes it as a ‘tradition/transcendence’ tradeoff. A new product may be more useful to new users, not to the current users who have developed skills and conventions around existing tools and practices. UTOPIA researchers saw a product potential, but worker participants desired a less generally useful system more closely synchronized with existing practices. The desktop publishing product was not designed.

Scandinavian cooperative design proponents and North American product developers became more aware of each other in the early 1990s. Both undertook efforts to marry the approach to the development context. At CHI '94 Morten Kyng's paper “Scandinavian design: Users in product development” described a traditional custom

project to support the Great Links bridge construction that also included partners interested in using the research to design products [20]. The PDC '94 call for participation sought input from those who “investigate the incorporation of participatory design approaches in new areas such as product development.”

### **Participatory methods from product developers**

Product developers worked to adapt and extend elements of the participatory design approach. These include low-fidelity mock-ups and prototyping [14, 19, 23], increased engagement and communication with potential users [18, 24] and an emphasis on site visits and understanding the work context [2]. These methods focused on raising the level of “user participation” from those achieved in traditional laboratory studies.<sup>1</sup>

Although these methods can be very valuable, elements of the Scandinavian approach were lost in transfers to product development:

- Long-term engagement with particular participants and the empathy, commitment and deep understanding that such engagement can bring;
- Attention to the sociopolitical and ‘quality of life’ issues that marked much of the early work, including values, fears, aspirations...

We contend that the personas approach described below can restore these elements. Because it supplements other approaches, nothing is lost beyond a manageable investment of time. First, though, two other important approaches from the mid to late 1990s:

### **Ethnography and design**

Numerous reports in Participatory Design, CSCW and HCI conferences, journals and books focus on applying ethnographic approaches to product development [e.g., 3, 11]. Challenges in moving ethnographic work into design include fitting the time course of such work to product design cycles and, of equal significance, communicating the analyses of ethnographers to designers and developers. The difficulty of this latter task is manifest in the heavy stress on team involvement and communication in the related but shorter-term contextual design [2]. Another challenge is that ethnographies often identify disruptive effects that almost inevitably accompany the introduction of a new technology, the tradition/transcendence issue.

### **Scenarios without personas**

Designers have long used scenarios to organize, justify, and communicate ideas. These often do not involve users [e.g., 5]. Recently, participatory design and human-computer interaction researchers have focused on the use of scenarios

to engage users and development team members, notably in the collections *Scenario-based design* [6] and *Scenario-based system development* [17].

We focus on scenarios because they share attributes with personas and at first glance can be more compelling. However, we will argue that scenarios are less effective unless built on personas.

Every reader is no doubt familiar with scenarios, but as a framework consider Carroll’s recent overview [7]. Scenarios are stories. They have a setting, agents or actors who have goals or objectives, and a plot or sequence of actions and events. His example: “An accountant wishes to open a folder on a system desktop in order to access a memo on budgets. However, the folder is covered up by a budget spreadsheet that the accountant wishes to refer to while reading the memo. The spreadsheet is so large that it nearly fills the display. The accountant pauses for several seconds, resizes the spreadsheet, moves it partially out of the display, opens the folder, opens the memo, resizes and repositions the memo and continues working.”

Keep the example in mind.

Carroll notes that scenarios can help designers and analysts focus on assumptions about people and tasks that are implicit in the software. Scenarios can encourage reflection during design, they are concrete yet flexible – easily revised, extended or fleshed out. They can be viewed from multiple perspectives, abstracted and categorized. Finally, Carroll notes that they promote a work orientation and, citing participatory design, says “one can increase (their) effectiveness by couching them at an appropriate level and directly involving users in creating and using them.”

The extensive literature on scenario-based design has little discussion of the “agents or actors.” Little is said about defining an agent or using it appropriately, nothing is said about the values or aspirations of an agent/actor.

The participatory design community has used scenarios heavily to engage “future users.” This includes acting out scenes of current or future envisioned work activities as mutual education into work practices, technology constraints, and new possibilities [18].

Bødker [4] has extended scenario use to include more of a focus on reflection in action, describing three possible roles: to present and situate solutions, to illustrate alternative solutions, and to identify potential problems.

Scenarios are clearly superior for promoting reflection and discussion among team members and possible users than, say, formal specifications.

Scenarios come with substantial risks and problems. There tends to be little discussion of the data, if any, on which a scenario is constructed. If constructed by actual workers,

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<sup>1</sup> Iterative design based on lab studies was itself considered participatory by some, e.g. [10].

one might trust a scenario more, although people can be guided more by exceptional experiences than by commonplace experiences.

Often scenarios are created to justify a particular feature or technology. They may include unrealistic assumptions about work practice or technical feasibility. A quarter century of working with scenarios in design has left one of us feeling that scenarios are rarely useful because they are rarely empirically grounded. Starting with the most reassuring, the data would be ethnographic; drawn from contextual inquiry and analysis; obtained directly from participant-users, derived from demographic or market research, taken from observations of usability studies, or combinations of the above. More often, scenarios are used *in place of* real data on work practice. Scenarios are not a problem, but how they are used usually is.

Bødker [4] describes an innovative use of scenarios, Two detailed scenarios were constructed around the use of the same proposed technology: a cheery utopian vision and a nightmarish, dystopian vision. These promoted discussion focused on avoiding problems and enhancing positive uses. This indirectly illustrates the weakness of single scenarios: They are not anchored to reality strongly enough to be more than arguments.

In a further insight, Bødker notes “It gives a better effect to create scenarios that are caricatures... it is much easier for users and whoever else is going to relate to the scenarios to assess things when they see full-blown consequences... Not that they ‘believe’ in the caricatures, indeed they do not, but it is much easier to use one’s common sense judgment when confronted with a number of extremes than when judging based on some kind of ‘middle ground.’”

Keep this in mind.

## **PERSONAS**

Realistic scenarios appear to be a perfect tool for design: They depict the work practices one hopes to support. Their weakness is that they are not engaging. How well do you recall Carroll’s accountant scenario, minutes after reading it? Reread it. Dull. Scenarios are often difficult to reconstruct and hard to extend with confidence. Engagement is important. That is why Bødker argued for caricatures, unrealistic extremes that are more engaging, more memorable.

Personas are a method for achieving engagement *and* reality. We are finding them to be a powerful design tool in practice. Persona use does not require eliminating scenarios or any other method: It is a foundation on which to build scenarios and data collection. It is an infrastructure for engagement.

Personas are fictional people. They have names, likenesses, clothes, occupations, families, friends, pets, possessions,

and so forth. They have age, gender, ethnicity, educational achievement, and socioeconomic status. They have life stories, goals and tasks. Scenarios can be constructed around personas, but the personas come first. They are not ‘agents’ or ‘actors’ in a script, they are people. Photographs of the personas (in our experience, ‘amateur’ volunteers were better than professional models) and their workplaces and homes are created and displayed in public places.

At first glance this could appear to be a step backward, away from the work context and the specific actions we want to support. To some extent of course we really want to support the achievement of goals. The accountant did not really want to open a folder to access a memo, s/he wanted to get a particular piece of information, and perhaps another solution might have been better.

But to the extent that this is a step backward, it is taken to obtain a far more powerful level of identification and engagement that enable design, development, and testing to move forward more effectively.

Cooper [8] presents a dramatic case for the use of personas in design. The use of abstract user representations originated in the field of marketing [22] but Cooper’s use of personas, their goals, and activity scenarios is focused on design. Cooper’s claims are based on anecdote and on appeals to reason, not on data. He does not describe in detail how personas are constructed and he makes numerous claims and exhibits a disdain for empiricism that seem ill-considered. But our experience confirms the power of personas, and we and our colleagues have worked on ways to integrate personas with standard methodologies. Personas can be used badly; our impression is that Cooper, a designer, has very good intuitions, but for most of us a more solid foundation will prove necessary.

Cooper marvels at the “surprising” power of personas, but does not endeavor to explain their power. Below we argue (with the benefit of hindsight, of course) that perhaps it should not have been so surprising. We then provide an overview of how we are employing them and some of the tradeoffs and issues remaining to be resolved.

In parallel with Cooper, a few others elaborated the actors in scenarios, using contextual inquiry [27] or fleshing out user categories into “user archetypes” [21]. Cooper is clearest in positioning personas as the starting point, around which user goals and scenarios are constructed.

## **The power of people**

Early proponents of participatory design went to such lengths as playing football with workers who would be using (and helping design) software. Can we achieve comparable effects with fictional people, and if so, what is the cost and what are the benefits? Are their risks?

*Soap operas, situation comedies, dramatic series.* There is no question that fictional people can be extraordinarily engaging. Many viewers fully engage with characters in programs such as *As the World Turns*, *Friends* and *ER*.

People in these extremely popular series for the most part resemble normal people. They may look better or be wittier on average, but their appeal is in part that they can be identified with (or against). They are often moderately complex—because we observe them over time, caricature is not essential.

Designers explored the use of shocking, caricatured personas in a short-term study and reported engagement and discussion [9]. We have found, as did Cooper, that extreme characters and shock are not necessary. One factor is the duration of the exposure. A single film can benefit by having an extreme hero or villain, but this grows dull in a longer series. Characters in a series become more complex, more realistic. Similarly, once established personas can be an ongoing presence, evolving to reflect data gathered from real people. That said, issues of stereotyping and casting against type in persona construction remain and are discussed in the final section.

*Method acting and the value of detail.* When an actor prepares for a scene that takes place in, say, the living room of the house the character lives in, one exercise is to create a history for each prop, each piece of furniture. When was this table bought? Which meals are eaten on it? Where did this desk come from? What has the character put in the top drawer? The next drawer? How often is it used? And so on. None of these details are specified in the script. None directly impinge on the scene. But by specifying the detail, the actor may intuitively behave in a more natural, normal way. If one frequently uses a desk one might walk by it or glance at it in a particular way...

Some of this detail may be invented, but many actors spend days or weeks observing and talking with real people like those to be portrayed. The character is fictional but the behavior is based on real data: precisely the goal with personas. If successful, the actor can accurately intuit a character's behavior in a new situation. A designer can intuit the behavior in novel situations of the people on whom a persona is based.

*Social reasoning.* Beyond engaging the attention of designers, developers, testers, and others, a detailed persona enables them to draw on experience to fill in more aspects of behavior than are included in a scenario or specification. This utilizes a powerful human characteristic. From birth or soon thereafter, every day of our lives, we draw inferences, make predictions, and form expectations about the people around us based on partial knowledge.<sup>2</sup> We are not always

right, but we learn from experience. We continue to extrapolate. This universal capability is enlisted in the design process by personas. It is not enlisted by faceless accountants lying inert on the page.

As Cooper indicates, once a set of personas is constructed and provided with sets of goals, once team members have accepted and assimilated them, then meaningful scenarios can be constructed around them. We differ from Cooper in arguing that the scenarios should draw on observations and knowledge of the real people who inspire and continue to inform the personas.

### **Experience with personas**

One of the authors, along with many colleagues, has been actively using personas and refining the technique for using them for over 2 years. We are preparing a paper detailing our method and experience. A few key points:

- Unlike Cooper, we feel strongly that persona use needs to be carried out in complement with a strong, ongoing effort to obtain as much quantitative and qualitative information about users as possible, to improve the selection, enrichment, and evolution of personas and sets of personas. Personas complement other techniques.
- Links between personas and the supporting data should be explicit and salient. When personas are not perceived as credible, they are not used. We create “foundation documents” for each persona that contain a life story and various details, with footnotes and links to specific data and research reports that support and explain our choices.
- “Grass roots” persona efforts, when a few people on a team decide to try the method, have typically had less impact than desired. Getting high-level management to buy into the use of personas is critical. On first encounter the idea may seem too unscientific, “arty,” to engineers and others. It can take a leap of faith for the first teams in an organization to try it. Having management say “We’re all going to do it” – and provide people resources for creating and promoting the personas as well as a budget for posters, T-shirts, and other promotional materials to keep personas visible – is a major step.
- Communicating about your personas should be multifaceted, multimodal, on-going, and progressively unfolding. We’ve created many variations of posters, flyers, and handouts. Have a detailed web site. Utilize email (fact of the week, email from the personas). Recruit

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primates’ ability to predict the behavior of others by recognizing their mental state [26]. Subsequently it has become a large field of research in child development [1]. ‘Social intelligence’ is a broader term, often used in describing animal, robot and software agent behavior.

<sup>2</sup> ‘Theory of mind’ was a term first used to describe

study participants based on personas and report findings grouped by persona. Think of the effort as a campaign.

- A successful persona campaign includes instructing the team about how to use the personas along with providing tools to use them. Cooper describes persona use mostly as discussion tool. “Would Dave use this feature?” This is valuable, but we’ve generated additional activities, added them into specific development processes, and created spreadsheet tools and document templates for clearer and consistent utilization of our personas.

### Benefits of personas

- Strong focus on users and work contexts through the fictionalized setting
- Engagement of our powerful ability to extrapolate from partial knowledge of people to create coherent wholes and project them into new settings and situations
- Persona creation makes our assumptions about our target audience explicit. Once created, they help to keep the assumptions and decision-making criteria explicit. Why are we building this feature? Why are we building it like this? Our teams make decisions about features and implementation every day without communication and sometimes without even recognizing the assumptions they have made about who will be using the product.
- A conduit for information about users and work settings derived from ethnographies, market research, usability studies, interviews, observations, and so on. Personas utilize the power of narrative and storytelling to enhance attention, memory, and organization of detailed user data. How many of your team members actually read through market research and usability reports? How much of it do they remember? Once a set of personas are familiar to a team, a new finding can be instantly communicated: “Patrick cannot use the search tool on your web page” has an immediacy that “a subset of participants in the usability study had problems with the search tool” doesn’t, especially for team members who now see Patrick as a person as real as, say, Mark Green on “ER” (or substitute a favorite television character).
- Focus attention of team members towards a specific target audience. Overall it can help establish who is and by default who is not being designed for. It can also help focus one at a time on different kinds of users. For example, a quality assurance tester can one day “Test as Irene” and on another day to “Test as Ichiro.”

In our experience, this works for testers and other product team members in “bug bashes.” An experienced tester reported feeling that he was identifying “the right kind” of problems in drawing on knowledge of a persona in guiding their test scripts and activities.

Compare this to an observation from a study of interface development [25]:

Some people realized that tests conducted by Quality Control to ensure that the product matches specification were not sufficient. One manager noted, ‘I would say that testing should be done by a group outside Development. ‘Cause Development knows how the code works, and even though you don’t want it to, your subconscious makes you test the way you know it works... See, those people in the Quality Control group have nothing to do with customers. They’re not users.’

In fact, two members of Field Support were reported to have found more bugs than the Quality Control group in the latest release, and they had accomplished this by working with the product as they imagined that users would. Testing by Field Support was an innovative experiment, however, and not part of the accepted development process.

‘The Quality Control group has a lot of systematic testing, and you need some of that, but at the same time, you need somebody who is essentially a customer. It is as if you had a customer in house who uses it the way a customer would every day, and is particularly tough on it and shakes all these things out. That’s what these two guys did, and it was just invaluable.’ (Pollock and Grudin, page 64.)

The two Field Support engineers were able to “test as Irene” (or someone else) because of their extensive experience with users. That Persona use results in similar positive reports is encouraging.

### Risks of personas

Getting the right persona or set of personas is a challenge. Cooper argues that designing for *any* one external person is better than trying to design vaguely for everyone or specifically for oneself. This may be true, and it does feel as though settling on a small set of personas provides some insurance, but it also seems clear that personas should be developed for a particular effort. In making choices it becomes clear that the choices have consequences. For example, they will be used to guide participant selection for future studies and could be used to filter out data from sources not matching one of the persona profiles.

Related to this is the temptation toward persona reuse. With an investment in developing personas and acquainting people with them, it may be difficult to avoid over-extending their use when it is time to disband one cast of characters and recruit another one.

We’ve also seen a certain amount of ‘persona mania’ within our organization and others. There can be a temptation to overuse personas; at worst, to not employ other user-centered methods, ongoing data collection, and product evaluation. Personas are not a panacea. They should augment existing design processes and enhance user focus.

### Personas and sociopolitical awareness

We will conclude by addressing another key element of the early participatory design movement that has been filtered

out of most subsequent efforts and techniques, that of social and political consciousness. Early efforts were explicitly focused on improving the quality of working life for those workers most at risk of unrewarding consequences of information technology [12].

The tool of persona use forces one to decide precisely whom one is designing to support. Each persona has a gender, age, race, ethnic, family or cohabitation arrangement, and socio-economic background. This forces existing assumptions about users to the surface and provides an effective avenue for changing or countering them. One could populate an entire persona set with middle-aged white males, but it would be obvious that this is a mistake.

Cooper writes that “all things being equal, I will use people of different races, genders, nationalities, and colors.” He quickly adds that “political correctness” is not his goal, but realism, and that he stereotypes if he feels it will provide more credence and avoids casting strongly against expectations if he feels it will undermine credibility.

Participatory design researchers and practitioners will appreciate the subtleties and the potential of this dance.

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