



Beyond Generalization: Research for the Very Particular

Insights

- Working with the particular gives more valuable knowledge than generalization.
- Prioritizing the ordinary over the flamboyant ensures sustainable outcomes.
- Triangulation and iteration are core approaches in research for the very particular.

In this article, we discuss HCI research that does not aim for universal or generic solutions, but rather focuses on addressing the particular challenges of particular people in particular situations or activities. We clarify what we mean by *design and research for the very particular* with examples from industry and academic research, highlight benefits and potential problems, discuss our suggestions, and conclude with a list of open questions for HCI researchers to consider.

The discussion presented here is a result of a series of debates at the Center for Participatory IT at Aarhus

University in Denmark, and we are indebted to many members of the center for their contributions. These debates addressed the ways in which HCI makes and uses generalizations, and the ways in which we can make better use of particular cases in our research.

WHAT DO WE MEAN BY DESIGN AND RESEARCH FOR THE VERY PARTICULAR?

One size does not fit all. This applies not only to devices and physical artifacts but also to the methods and theories we use in HCI to study those things. The particular in IT research

means that theories, methods, technologies, and applications are created in the context of particular people, undertaking particular endeavors, with particular agency. In this case, the goal is *not* to abstract the findings to such a general level that we lose track of how they are useful in this situation. The particular people that we have studied, and worked with, should understand the findings and see how they apply to and benefit them.

A famous example of a particular approach is that of the late Stephen Hawking, who lived with amyotrophic lateral sclerosis (ALS). A team of engineers at Intel designed technology for Hawking, with great success. There were many benefits of having the luxury of an entire team designing for one particular person. Not only was Hawking literally given a voice but there were also significant contributions to interactive device design and text-to-speech software systems. In an ideal world, everyone would benefit from such a personalized approach. One could see Hawking as a Formula One driver. As with Formula One cars, most people would probably not be able to “drive” Hawking’s setup without continuous support from a team of technicians. And certainly Intel would not expend this amount of effort on any other individual, meaning that the Hawking approach is not available to everybody. While we’re interested in the kinds of insights you get from such a project with the very particular, we are critical of the way that these insights may *not* have spread to other people in similar use settings, with similar problems, with the same level of commitment. Though the technology has been open sourced, we ask ourselves: Where are the HCI papers that design and study technology for other people with ALS?

BENEFITS

There are several benefits to taking a very particular approach in HCI. It can enable us to capture the richer and more complex nuances of a particular situation or user, hence also directly challenging the assumptions we make as researchers. Accordingly, it makes you a better researcher when you have to rethink your assumptions and adapt your methods. It’s also harder and more challenging when you cannot simply use your standard method and setup, and need to develop new methods for the research at hand.

We worry that the craving for generalization does not always increase validity or impact, but instead may at times abstract reality into a form where results can no longer be fed back to actual design questions in the real world—which is exactly one of the benefits of doing research for the particular. Accordingly, rather than insisting on generalization at all times, we suggest a cumulation of particulars. These particulars stand on their own. Reducing them to their generalizable aspects, as is common in the natural sciences, would eliminate what makes them particular in the first place.

One benefit of such an approach is that it allows researchers to do impactful work, hence also making a big difference in one person’s life. Another is the possibility of studying local and situated practices and the appropriation of the technology, where the users feel ownership and use the technology to achieve their goals in new ways. With this approach, we can learn from the unusual and unexpected ways in which people use technology.

The possibility of doing such research may ultimately be what sets academic research apart from the work in large technology companies. Academic research may address alternatives and explore exceptions, whereas research for technology companies needs to lead to general

and universal features that will sell as many products as possible.

PROBLEMS

When discussing the Stephen Hawking case, we were critical because what he experienced is a luxury for the very few. While we’re interested in the insights one can get out of doing such a project, it is also important that insights, designs, and solutions get spread to greater numbers of people in similar use settings with similar problems.

Unfortunately, we have seen a number of cases in literature over recent years that are either too flamboyant or too do-gooding, both being equally problematic. Susanne Bødker [1] discusses how unusual or well-meaning communities are often chosen over less extraordinary or less politically correct ones, even if the research outcome could be the same. Similarly, we see cases in HCI literature that seem to intrigue us because they are remarkable, not because of the research value. For example, in the child-computer interaction field, children with high-functioning autism are involved more often than children with other disabilities. This phenomenon cannot be explained by the prevalence of autism in society alone, but also by the availability of research funding, and perhaps because such children are less difficult to work with and easier to identify with than other groups.

This skewed focus is problematic when technologies are introduced into the real world, which often consists of mixed groups of people and situations. To avoid false generalizations, we need methods to move between one kind of particular and another, methods that we do not encounter in the literature, as far as we know.

Many of our classic HCI usability methods cannot be made to work because they presuppose generalization. Dan Olsen [2] argues that usability evaluation has three assumptions: a standardized task, a relatively small problem scale, and walk-up-and-use, which we argue rarely hold in research for the particular. Doing research for the particular needs to put an end to such practices.

Long-term collaboration often results in a dependency between the users and researchers, for example,

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when a prototype becomes part of the users' transformed practice, or when researchers end up with a strong personal commitment to the users. This is good but also a challenge to the researchers in terms of planning. Additionally, in many cases, one may ask: Are we the right people to step in and work with these particular people and situations? We can do only limited things; we have a technology-design focus; and sometimes other competencies are needed. Others in the community have also discussed problematic issues with technosolutionism, our at times arrogant perspective of believing we can solve very complex social problems just by introducing technology. How do we know when we have reached our own limits?

As publicly funded researchers, we have an obligation to think about what kinds of results we achieve and to spread knowledge to a wider audience. If this cannot be done directly as generalization from particular cases, how else then can we disseminate the results?

We see a further challenge in the tension between doing particular research and the publish-or-perish mentality. This is mainly because projects take a long time and outcomes may be unclear beforehand. The research may need new methods and theories to first be invented, further adding to the complexity and uncertainty of one's personal career.

Lastly, when we say *the particular*, people always mention Erik Stolterman's work [3], where he focuses entirely on the difference between what is needed for design (the ultimate particular) and what is normally seen as needed for research (general findings, theories, etc.). However, our agenda focuses on how to work with the particular *in research*, a topic that Stolterman does not address.

RECONSTRUCTION OF THE PARTICULAR IN HCI RESEARCH

To reconstruct the particular in HCI research, we take a humble stance. We prioritize the ordinary, favor richness and heterogeneity over generalization, seek sustained results across successive participation projects, and value triangulation on a broad spectrum of methods and approaches.

The particular does not mean extraordinary groups of people. If very particular research is done, we argue that it tends to be either with someone like Stephen Hawking, who was quite privileged, or with extraordinary groups of people, because, as a community, we find it interesting to read those papers.

Our suggestion: There are so many particular people or cases that can be studied and many other instances of the particular that we could consider. As researchers, we do not necessarily have to do research with an unusual group of people to report interesting findings.

Kvale's method as an alternative approach to HCI research for the particular. In Kvale's method for the qualitative research interview [4], understanding the interviewee's world requires the interviewer to tap into the interviewee's subjective account. This is a mutual process between the interviewer and the interviewee, co-constructing a subjective account. The qualitative research interview does not see subjectivity as a hindrance or as a source of error, but rather as the very basis for the production of valid and valuable knowledge. Another process of generalization also takes place: Instead of eliminating the subjective, new interviewees are added until the point of saturation, when no significant new knowledge occurs.

Our suggestion: Kvale's method can be used as a model for research for the particular in HCI, as a supplement to how research mostly manifests knowledge in the resulting technological arrangement and organizational change.

Generalizability is a bonus, not the main goal. Originally, Eric von Hippel's notion of *lead users* focused on users who, on their own initiative, developed innovative processes or products for their own use. Somehow, this analytic research has been reframed into an innovation strategy that focuses on involving lead users in generalization, which is an entirely different agenda.

That being said, it is possible to design for particular people and also obtain generalizable results. For instance, Gajos et al. [5] explored an alternative to mass-market, one-size-fits-all interfaces by automatically generating custom interfaces that are optimized according to every user's

particular abilities and preferences. Interestingly, they found that their approach also benefited able-bodied users in terms of speed and accuracy. Similarly, many accessibility researchers apply their techniques to other situations in which people are situationally impaired (e.g., when reading a mobile device in sunlight).

Our suggestion: We should strive for the value in the particular, not for the potential generalizability of these techniques, results, methods, and theories. A reasonable goal could be to study the particular instead of deliberately aiming for more general results. We could change our research intentions by being more reserved in our striving for generalizable results.

Triangulation as a method for the particular. In-the-wild methods are one approach to research for the very particular. However, they don't help researchers to attack one particular situation or design with as many different perspectives and methods as possible.

Our suggestion: When approaching research for the particular, we should use the broadest possible set of perspectives and methods. This changing of perspectives may also help us step out of an overcommitted mindset where we are too close to the particular group of people we are working with. Accordingly, triangulation of methods [6] is helpful when it comes to exploring and connecting several methods in a particular setting.

Participatory design. Historically, participatory design (PD) did not see itself as only working with particular people, yet it actually had a lot of similar goals and issues in mind and could be used in particular situations. In our interpretation of Pape and Thoresen's approach [7], cumulation means working specifically on one case, then shifting to the next, somewhat similar case, bringing along technological prototypes, research findings, and methods. Such an approach provides the researcher with an outstanding possibility to study and learn from situated practices and different appropriations of technology.

Successful rapport puts researchers in the position of a privileged insider, but can we dissolve these bonds and become an outsider again? Stepping

out of particular people's lives and ending a project must be a transitional process in which researchers consider relationships, feelings, ethics, and the experiences of all the people involved, as well as expectations and dependencies of the results. Our primary identity is to be researchers; we need to both consider the immediate results and give attention and weight to the opportunities in the sustained legacy [8].

Our suggestion: When setting up the next project, make a thorough plan for how to sustain knowledge and results after the project is over. One way to sustain the results is to empower particular people to continue on their own. This is why methods are needed to transfer the knowledge and results after the project's conclusion. Further, we suggest an iterative approach to cumulation. Initiatives will likely fade over time, but by iterating the process with cumulative means and knowledge, it is possible to create momentum for new initiatives and regularly remind the particular community that things can be done differently. So, PD is helpful not only when designing with particular people but also for sustaining the results both during and after the project.

OPEN QUESTIONS

Finally, we conclude with four open questions and considerations regarding research for the very particular that we would like the community to consider:

- How can researchers draw research findings from the very particular if they do not stand on the outside to generalize? Should we avoid being drawn into a personal commitment that prevents us from “looking out”?
- When HCI researchers aim to generalize and (supposedly) design for the general public, our “general

population” tends to comprise computer science students who happen to be around and available. While this is justified in some cases, maybe we should be more explicit about the extent to which our results are particular?

- What we as HCI researchers can achieve is only one step on the road toward solving complex societal problems. Starting from research for the very particular, the process unfolds significantly more and may include contributions from many other disciplines. How can we become more aware of and understand our biases and the limitations of our expertise in such projects? How can we strive to inform others of our results so that they can be used (also in other disciplines)?

- How much are we influenced by expectations in terms of impact and generalizable results from funding bodies? While research for the very particular has obvious societal relevance and impact on the group of particular people we work with, it may not always lead to results that can be applied outside the particular case nor have a large economic impact.

ENDNOTES

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