Grounded Design in a Value Sensitive Context

Volker Wulf in conversation with Batya Friedman

Preface

Since the 1990s, Batya Friedman and colleagues have been developing
Value Sensitive Design—a theoretically grounded approach to engaging
with human values—such as autonomy, sustainability, and privacy—
in a principled and systematic manner throughout the design process
for technology.[1] To discuss experiences with and explore future direc-
tions for this design approach, a workshop entitled "Charting the Next
Decade for Value Sensitive Design" was held at the Lorentz Centre in
Leiden, The Netherlands, from 14—18 November, 2016. The workshop
brought together some 40 researchers and designers from diverse
fields, including computer science, design, ethics, human-computer in-
teraction, information, law, philosophy, and the social sciences.

Four conversations held throughout the week provided a range of
perspectives on value sensitive design and stimulated discussion for
the workshop. The series began with Lisa Nathan, University of Brit-
ish Colombia, who spoke about her long-term work with First Nations
people and some of her insights and perspectives gained from having
employed aspects of value sensitive design in that context. Then, Sarah
Spiekermann, Vienna University of Economics and Business, discussed
how she and her colleagues have been applying value sensitive design in
their engineering work with management information systems, with a
focus on integrating value sensitive design into waterfall models. Next,
Alan Borning, University of Washington, who has been a key developer
of value-sensitive design for close to two decades, reflected on some of

the ways in which he moved work forward and also demonstrated how to stay productively self-critical from within.

In the fourth and final conversation, Batya Friedman engaged in an exchange with Volker Wulf about his experiences with the Siegen approach of Grounded Design[2] and the intersection with value sensitive design. Volker began by presenting the core elements of Grounded Design, placing them within a historical context of user-centered computing. In discussing the various domains in which the Siegen group has applied Grounded Design, Volker reflected on key research practices such as collaborations between industry and academia, navigating organizational hierarchies, and managing potential conflict within research teams. During the course of the conversation, Volker also elaborated on the acquisition of research funding, the impact of funding schemes on research practice, and interplay between politics and research. When asked about how Grounded Design, which is primarily a bottom-up approach, might be used to complement something like Sarah Spiekermann's primarily top-down approach, Volker clarified his epistemological stance. We provide a transcript of that conversation here, including questions and comments from the workshop participants.

Conversation

Batya: For our closing conversation, we have Volker Wulf from Siegen University. Volker's background is academic, mainly in computer science and business administration. I have known Volker for about ten years probably, close to a decade, and we've been having conversations—many, many conversations—over the years, about various projects. Volker has worked very much in situated practice and in industrial settings—working with firefighters[3] or in steel-producing organizations[4]—bringing academia out of the university and into these organizations. He has also done a series of projects in communities, especially communities with immigrant populations, and I think that work is becoming more and more important as the global situation has

changed; looking at how you can use computing as a catalyst for people with very different world views and cultural life experiences to come together and create things together and perhaps work on dissipating the experience of being "other". He has done this in Germany with German and Turkish communities[5] as well as taking the model to places like Palestine.[6]

A large part of his work is also dedicated to what we might call the Arab Spring, or Uprising, or what might more generally be considered global situations of conflict and uprising. There, he has examined the role of information technology and social media.[7]

Volker: Before we start being more interactive, let me elaborate a little on what we are doing at the University of Siegen. We have been working together with a core group of researchers for almost 20 years now, and over this time we have developed a certain type of research mode. Since you always need to label things and you need to position yourself in academia, we have started to refer to this research mode as "Grounded Design".[8] The key idea is to understand design as an activity which takes place in social practice. It happens outside design labs, in the real world. [...] Grounded Design is where we can engage with an application domain in a designer-ish manner by conducting design-case studies. These design-case studies typically have three steps or perspectives for looking at our engagement. The first perspective is what we call the 'context analysis perspective', where we try to understand the social practices of a domain. Typically, this means we carry out ethnographical work, so we hang out with the people, but what distinguishes us from traditional science actors (who do very similar things) is that we do it in relation to a design idea. This means that we are interested in the technological opportunities which could be relevant for potential interventions in the field of application we are investigating. Sometimes we call them pre-studies, a sort of sequential way of thinking. The second step is one which is very common to most of you here: participatory de-

sign. That means we work with people in the fields of application. We do prototyping, developing ideas with them in order to arrive at a running system. So, the goal of the second phase or perspective is really something which can be rolled out, and this happens in the third step, the third perspective. What we have designed together with other people, we roll out in practice and see how practice changes when the practitioners appropriate our innovative IT artifacts. So, this three perspective or phase thinking we call "Design Case Study".[9] We have positioned these Design Case Studies academically in the Computer Support Cooperative Work community. As Batya has outlined, we started with very traditional workspace studies, like in steel mills or in government offices, and then we became interested in new types of cooperative work, like global software engineering. In that domain, we specifically looked at small-scale German companies who were searching for cooperative partners in Russia.[10] We investigated how these small companies were different from SAP or IBM in the way that they thought about offshoring their development, and we were very much interested in how that would work in practice.

Maybe I should add one more issue: Our research and design endeavors are shaping up quite a bit. I think what is true for everybody in the room but what is very often not spoken about is the way our group is funded. The projects and engagements we are involved in typically always need some sort of funding scheme. In the German or Central European sense, this is typically state funding awarded by ministries or the EU commission. So, in a way, the domains in which we act are also defined to a certain extent by research funding schemes which afford us the resources to become engaged with communities.

Sometimes we also have projects, where [...] the fields of application—often companies—pay us to do our job with them. But a lot of our work is really done in cooperation with, and with the funding of, government institutions. So, we also partly follow, although not in an opportunistic way, fashions in public funding. I say that because the sec-

ond area where we have done a lot of work is in civil security following September 11. Even in Europe and Germany quite a lot of money was spent on making people like firefighters or other aid agencies more efficient in dealing with disasters.

Over eight years, we worked with different firefighting institutions and we were interested in how we could help firefighters. Not so much regarding the command centers etc., but really the firefighters themselves, who move around in the burning buildings. We tried to understand what they did, how they did it and whether there was room for technology to make them more effective in finding victims or in getting out of the fire. That was quite a challenge for us since this area was very much loaded with visions of artificial map making and all other kinds of techno-centric design ideas. Working with the firefighters and understanding how sophisticated their practices were in navigating, in communicating under those very adverse conditions, we developed a variety of ideas of how to support their work. As some of you know, we developed what we call "landmarks": small devices in the shape of door stoppers. Since the firefighters have door stoppers with them anyway, they could use the digitalized door stoppers to mark parts of the building which they had already explored when moving on towards the fire. It also helped them to find their way back when they had to retreat from the fire due to lack of oxygen or other hazards. We also used this network of landmarks in a second design attempt to build a local communication network between the command post outside and the troop of fire fighters inside the burning building. Along these lines, we arrived at our first design idea which contributed to the building of an infrastructure and then we proposed our second idea, to add to this design.[11]

A third area of design interest deals with aging people who are themselves dealing with the challenges of an aging society. We very much work in local areas *around* our university because our approach to research is one rooted in practice. So, it is much easier for us to work in practice around the areas of our university than in practice somewhere

else. We looked specifically at a rural area and at the particular needs of the elderly people living there, to support them in continuing to live by themselves, maintaining their autonomy. We investigated their mobility and we developed a platform which linked public transportation, taxis, and ride-sharing opportunities.[12] We also looked at supporting their fitness by creating applications which encouraged them to do exercises which prevent falling, as falling is one of the biggest risks. Elderly people fall and break their bones and often need to move from their homes into care institutions etc.. So, this is a third, larger area of projects we have been working on for ten years. [13]

The last aspect I would like to mention here, as another larger cluster of activity, is the issue of migration and how to help migrants integrate when they arrive somewhere. That means finding a decent quality of life in their hosting communities but also covers how migrants refer back to the countries and cultures from which they come. 12 years ago, we started working in my neighborhood. I don't live in Siegen, I live in Bonn, where we saw the 3rd generation of Turkish kids start school at the same time as my kids. They spoke worse German than the 2nd generation, their parents' generation. Together with a school in this neighborhood, we started to think of what we could do, and since I was in Mitchel Resnick's group at MIT that summer, we thought of modifying his computer club approach to somehow fit to these specific German conditions.[14] We extended the idea to a couple more neighborhoods in Germany, and over the last couple of years, we have also explored whether dealing with migration makes sense in other settings. One of the domains which we have looked into are the Palestinian refugees who had to leave what today is Israel and who have been living in refugee camps for 50 or 60 years under very particular conditions. We were interested in how we could potentially help integrate them [into Palestinian mainstream society]. Like in Germany [to help the labour migrants interact better with German society], it is about bringing these outsiders into

Palestinian society; encouraging the people living in the refugee camps to interact with mainstream Palestinian society.[15]

I'll stop describing our activities at this point. What I should say is that it is really important to understand that our research approach only works in teams. Our group consists of something like 25–30 researchers, but the most senior and those with whom I have worked with the longest are Volkmar Pipek, Gunnar Stevens, Claudia Müller, and Markus Rohde. [...] It really is a collaborative approach. There is so much intensity in the work, to undertake the 'design in practice' part but also to develop the academic reasoning.

Batya: Great, thank you so much, Volker. I'd like to make the observation that [...] value sensitive design has always, from the beginning, been conceptualized as an approach to be used alongside of and integrated with other approaches that work well. So, for work that is largely technical, the idea is not that you throw out your existing technical approaches and replace them with value sensitive design but rather that you continue with the methods that you are already using, that you work well with, and then integrate value sensitive design as a complement to what you have been doing. And I think when we heard from Sarah, when she was talking about her work—about the waterfall model that is used in business areas—she spoke of taking elements of value sensitive design and inserting them into that waterfall model.

So, my question to you, Volker, is this: In this grounded design process that you are engaged in, where and how do you see value sensitive design being inserted and able to make a contribution that goes hand-in-hand with your approach?

Volker: If you design, if you intervene in practice, you always act normatively in the way that you help. I mean, even if you do it in a participatory manner, you bring in your stances and already by selecting certain design projects and certain design challenges you set a norma-

tive agenda. So, I think if I speak about values and value sensitivity, for me the first step is to choose design problems and a field of application with which I really want to engage. That is a valuable decision. As I said, sometimes we are a little bit opportunistic towards funding opportunities because we have to pay a rather large group every month, but we have not yet taken on design projects of which we were not normatively very convinced. You know—projects where we would agree to perhaps improve or help a practice which ordinarily we do not really want to support in this way. That is the first issue. Secondly, of course, normativity comes into play as soon as we start doing participatory design [...] If we are designing together with the people in the fields of application, of course we reflect on values—on their values, on our values, on value gaps and all these things. We do not do this as explicitly as you would in a value sensitive design framework but of course it is a given. [...] Finally, if you write things up and reflect about what you have done, you certainly judge some things as being important to document and others as less important. Again, that is also a kind of normatively-driven activity, in the sense that you have to decide which parts of what you have achieved you want to highlight versus what you do not want to show and how you finally describe it.

Batya: Thank you. I have just two more questions and then we will open the discussion to the audience. I'd like to ask about the diffusion of value sensitive design in industrial practice. You have a lot of experience with various kinds of industries, not only the computing industry, but a whole range of other types of industry. Could you please give this community some advice about how to do, or stimulate, or catalyze, this kind of diffusion? What are your thoughts on that?

Volker: In order to work together fruitfully with other organizations—and there is not much difference between industry and other organizations—what you really need is to gain trust. Often, when we begin

working with a company, they start with a problem which is not really important to them, just to see what we do. To really enter into an interesting engagement with your cooperation partners, you need to build up trust with them. It helps to do this over a longer period of time, maybe in a follow-up of different Design Case Studies, if you want to follow our terminology. So, I think building trust is a very important element. And this is sometimes not easy because of the values. Siegen is a region of traditional industries. Quite a number of our industrial engagements right now are with small and medium size steel or investment goods companies, family owned, and sometimes there is also a considerable value clash between what we find appropriate (interesting visions) and what the organizations think. Sometimes this means it is not easy to come to an agreement on projects.

Batya: Yes, as you were talking, I thought … I really wished that Sarah [Spiekermann] was here because I'd really like to know whether these are two entirely different ways of approaching things. You have those grounded design approaches for any given project where you go in and spend a lot of time. It is very much in place, very slow moving and very much from the bottom up. I would like to ask Sarah—I know she is not here—on the nature of her approach, which is fundamentally and overarchingly top-down.[16] And it would be really interesting to examine the ways in which we might be able to change our practices, and to think about how they can be brought together.

Volker: For a community like mine, if we have done a Design Case Study, our understanding is that its results are first of all only valid for the setting in which we conducted the study. So that is all we can say. Only in those circumstances have we really understood the practices for which we have made our designs, and only there were we able to understand how appropriation has changed or is changing social practices. That is the challenge we face. So really, we can only say something about the

first step of any of our cases, all of which are very, very particular and highly dependent on their contexts.

What we are trying to explore right now is to compare these cases. If we have cases which are, from their basic architecture, from these three perspectives, somehow performed in a similar mode, then we can compare them; and if we find similarities or differences between these cases, design-relevant similarities and differences, then we can start building tentative concepts in a sensitizing sense.

Can we create concepts which we would claim need not be transferable to any other field, but which could be of help to people who are challenged with a similar design problem? We are also thinking of somehow linking these mid-level concepts more closely than so far mentioned in literature to the sources from which the concepts arose, in the sense of linking back to the raw data from which we have abstracted these concepts. We are thinking of doing this but have not as yet designed any technical solutions to support such linkages. The designs we are thinking of are, for example, that you click on a mid-level concept and then you go down to the design case study at a deeper level, and to the data in the study from which the concept was derived. So, in a way we are looking at finding stronger links between conceptual thinking and the cases it came from.

Batya: Yes, this is similar to what Jason [Millar] was talking about. You will certainly have a privacy concept concerning these papers but can you still link them? Maybe this would be a good time to open things up. Are there any questions [from the audience]?

Audience: […] On the board level, we have people who think about designing and who help out the Chief Excecutive Officer, Chief Technological Officer […] but on a very different [operational] level, we have those great user and customer experiences [people] … They look like separate levels but actually they are from the same source, what design is

all about. But there are essentially still two levels: a strategic level and an operational level. And I think it is interesting to see [...] that they enforce each other.

Volker: That's completely true. I have seen cases where the decision of the upper management strongly influenced what we could do on an operational level. [...] It is an old case. We had been asked to work with them [a steel mill] in our way. The task concerned maintenance engineering. We were asked to improve the co-operational relationship between external maintenance engineering offices and the internal maintenance people. It was in the late 90s, so it was about 3D-CAD systems and video conferencing—trying to explore what they needed to look like. [...] When we were half way through, along came the steel crisis. This particular steel company got into problems and the top management decided that there wouldn't be any more outsourcing of maintenance engineering. Maintenance was reduced in the budget anyway... So the basis of our project was suddenly gone.

Maybe this is an extreme case but working by means of participatory design happens, of course, in the social structure of organizations [...] and there are power differences all the time which affect you, and somehow you need to navigate your way through them. Not only that, but you need to navigate through them in a way that lets you keep your integrity as a designer.

Audience: [...] I would be interested to hear from you where to turn for the kind of funding opportunities that we are all after to enable the research projects we like to engage in. Oftentimes the way the model for the funding works—from how you apply to the kind of outcomes they are looking for—does not match very well to the kind of research that we would like to do in an ideal world. Do you have a long wish list of things that you wish that could be better supported? I think one of the things would be the idea of how to create a system for sharing. Link-

ing the outcomes and the findings of the case studies with raw data because if you developed something like that, who would post into it [...] over time? So, you could imagine research-funding institutions playing a role there. Are there other things that you wish for? And do you have a mechanism for providing feedback for funding, like how they can better support our research?

Volker: [...] We do not have much experience with this either, but what we have started is to try to do meta research. This means we try to have one member of our team who investigates our own research practices in the sense of better understanding how we are driven by how we are funded; how we are institutionalized; how we have personal backgrounds, and how our projects have emerged. All these issues play into that. For research projects like ours, I think it is very helpful to have a meta research layer on top of it—also to help us self-reflect.[17] And I can tell you that this was a very painful process even for me personally, because you are really confronted with all the problems which you prefer to push away and which you don't like to see. This meta research has brought forth strong conflicts in our group, but I still believe it was helpful. I hope so, at least. It also helps us to better reflect on what we do and what we have achieved.

Globally, I think the funding schemes are quite different. In the US, most people are on NSF grants which have the advantage of being rather freely definable. On the other hand, I don't think the funding scheme encourages you as much to engage with the domains of practice. Or you can choose how much you engage. In the central European funding schemes, we are really forced to work with them [the practitioners]. In many funding schemes, I would never get any money if I did not find a company, an IT company, that is interested in the more or less commercialized elements of our projects. So, the schemes are very different.

Honestly, what I would like most is for our funding agencies to also think about self-reflectively evaluating their funding schemes; but as

you can imagine, this is a very political issue. Of course, I am extremely careful saying that in a too public way because, as the saying goes "don't bite the hand that feeds you". But I think this whole applied research domain, speaking from a central European perspective, could do better. I think our research funding schemes are not well enough designed and not evaluated enough in practice.

I'm not sure if you, Jeroen [van den Hoven], would agree, but in my experience, having worked for 25 years in this domain, I think we could do better there, too. On the other hand, I can say my career would be completely impossible without [these funding schemes]. You know I would never have had a chance to survive in academia without this practice-oriented stream of funding; that's very clear, too.

Batya: There is a question, but before we go there, I would like to follow up on something you said. With all these conflicts and sometimes also clashes in values surfacing in your team, it seems like [...] there might be places in our team, too, where there are conflicts. Certainly in the work in Rwanda, where we had to make some really hard decisions, different team members felt very strongly about it. In our workshops, we use only a certain subset of the materials. So, which items do we choose? Whatever we choose represents the collection in a certain way. And we had very contested conversations around that within the design teams. So, what I am wondering is, in your situations, what do some of these contested conversations look like, and also which strategies do you have for working through them? [...] So, when you fight, what do you fight about? And how do you resolve these conflicts?

Volker: There are different types of conflict. As a result of this meta research process and the ensuing internal discussion, the conflict which mainly occupied me within our group throughout the last six months is that doing our type of work is really stressful and challenging for the individual actors [researchers]. They have to do all this work in prac-

tice and on top of that, for their PhD they have to write papers, and the
papers need to be good papers; and at the same time, they need to get
money. We have to write applications for new funding all the time be-
cause the chances of funding being awarded are something like 10–15%.
Maybe we are a bit better than average, but we still have to write five ap-
plications to get funding for one project. In the case of my groups, there
is a huge amount of pressure, specifically on the young and mid-level
actors. This leads to friction, and somehow, I may not have been fully
aware of this at all times.

Another very interesting issue is that my group is interdisciplinary
in the sense that about 50% of the people in the group have backgrounds
in computer science, while the other 50% are from very different back-
grounds: there are sociologists, journalists, psychologists, political sci-
entists, designers, etc. For those who are not from a traditional [IT] de-
sign background, this also causes an identity issue. It is not so clear cut
for them—if they [should] deeply engage with us, will/would they find
career opportunities with our type of approach, would it make sense
for them to follow on with us, and so on. There are also lots of conflicts
and issues to discuss.

But with the more senior members, of which I mentioned a few,
there is a certain value consensus. So when I talk to Volkmar [Pipek],
we do not fight very much about politics or about where to go. We have
known each other for a very long time and we know what the other will
think … For example, there are many decisions that need to be taken,
but this is a bit easier because there is a certain normative consensus
in the group—which is, however, always challenged in every specific
discussion. But for me personally, the most touching conflicts which
evolved during the last year were more about work load, career oppor-
tunities, academic identity, etc.

Audience: When you talked about going from the bottom up, starting to
collect lessons from design cases that you worked on, building knowl-

edge in meta research, I was reminded of the architect Christopher Alexander and his group who went out and looked for recurrent solutions to former problems [...] and wrote a book on them. And then [this approach] migrated to oriented programming and further [moved] to interaction design. I am really curious if you think that [Alexander's approach] would be a path, a methodology for this [...] research.

Volker: One of my Ph.D students, Sebastian Denef, wrote his thesis exactly on applying design patterns in a socio-technical manner.[18] He worked on this with firefighters ... and by the way, he graduated from Delft University because he had this strange particularity [in his C.V. which excluded him from obtaining a Ph.D easily from a German university as they do not easily award Ph.D degrees to people who studied at a university of applied sciences.] So all the good students leave the country and do their Ph.Ds somewhere abroad, and he did his in Delft.

The issue in our case is as follows: the academic results in our domain are typically socio-technical in nature. Bill Gaver has a really nice way of thinking about how to speak about a portfolio of his artefacts [created by his group]. That way [by means of a comparative portfolio approach] he can discuss them and critically link them to each other.[19] But Gaver is always only concerned with the artefacts themselves. Our design endeavor is socio-technical. We want to observe the IT artefacts in social practice; how they move social practice. Our documentation is even more complex than that of Alexander.

Audience: I would like to point to Tom Erickson who has been writing a whole lot about interaction design. He himself points to Orlikowski who talks about organizational patterns and I find communication patterns would be another way of conceptualizing this. They are not socio-technical, not too close to technology, but closer to how we speak, how we communicate.

Volker: I can say that we are still in search of appropriate levels for conceptualization. We have written two papers where we tried to introduce these concepts in a bottom-up manner.[20] To be honest, I am not perfectly happy yet with the level of concept building which we have achieved. We are actually still exploring how to do it in an appropriate way.

Audience: I have another question with regard to the normativity of your design approach. [...]. I have been accused of being political in my approach, so I wonder how to escape that accusation [...]

Volker: Yes, we do micro-politics, of course. All design interventions are micro-political. You can see them from that perspective and discuss them from the perspective of micro-politics, of course.

[...]

Audience: Maybe one response to that would be to move the discussion initially away from your own work and then raise the more general question if there is something like [...] value-neutral technology at all or whether it always interacts with values and, if so, to challenge the 'accuser' whether he or she would want to ignore that aspect of the discussion [...]

Batya: [...] Fundamentally, it is about intervening. It has that in common with the field of education; education is an intervention. Talking about kindergarten, we can say if you send your kids there for two days a week or five days a week, like full-time—that is political. And what kind of education is provided by the kindergarten programme? Perhaps it is less of a dangerous question and more a business issue. And when it [such an approach] stands in contrast to something like social science [research paradigms in which we are] just trying to describe phenom-

ena, then it is a different kind of knowledge and even world view to the one [we create in our academic community]. So I think maybe this is a nice place for us to end [...] Thank you!

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