**Oral History Interview with**

**Susanne Bødker**

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**Via Zoom**

**Conducted by Jeffrey Yost**

**Charles Babbage Institute**

**Abstract:** This interview is part of a series on Human-Computer Interaction (HCI) conducted by the Charles Babbage Institute for ACM SIGCHI (Association for Computing Machinery Special Interest Group on Computer Human Interaction). HCI Pioneer Susanne Bødker discusses early education and interests, and her undergraduate studies at University of Aarhus. She goes on to relate her experience for 10 months at Xerox PARC where she joined the Adele Goldberg's Smalltalk Group, an opportunity made possible by Kristen Nygaard's connections. The core of the interview focuses on her graduate education (studying under Morten Kyng, who she continued to collaborate with for many years) and long and impressive career. It especially emphasizes the combination of her theoretical and empirical work, and the importance of participatory design, and activity theory to her research and work. She discusses the NJMF, Utopia Project, and labor experience with technology as well as leadership she provided to the Center for Participatory Information Technology and CHMI.

Yost:  Hello! How are you?

Bødker:  I'm good, good. Yes. It's, Yes, I don't know. It's strange times, but I guess that's true for everybody.

Yost:  Yes, very much so. So, if you're ready, I guess I'll just begin with some questions?

Bødker:  Sure. Please. It's entirely up to you. I have no idea what's going to happen, so anyways…

Yost:  Ok. Well, I'll just ask a number of questions about your career and your work and your perspectives and we'll shoot for a bit over two hours, probably two and a half hours, and if you want to take a break at any time just let me know and we'll probably take a five or ten minute break mid-way through, if that works for you.

Bødker:  I just wanted to make sure that my phone was turned off, but it is.

Yost:  Ok. So, my name is Jeffrey Yost and I'm the director of the Charles Babbage Institute at the University of Minnesota and I'm here today on May 21, 2021 doing an oral history for ACM-SIGCHI with Susanne Bødker and I'm in Minneapolis and you're in Aarhus I take it, in Denmark, and it is early morning here and afternoon for you. So, can you, Susanne, can you begin just by telling me when and where you were born?

Bødker:  Yes, so I was born in 1956 and I'm quite local you can say. I was born some 50 kilometers north of where I am right now, even though at the time it was a much greater distance I think than it is today.

Yost:  And can you talk about your early interests in school, so pre-college, what subjects were you interested in in school and what interests did you have outside of school?

Bødker:  Yes, so first of all, I think of when I just went to school in general, I was quite interested in mathematics and I also think that when I started university, that was kind of where I saw myself. So basically, being a high school teacher in mathematics was kind of what I was aspiring for. Other than that, I guess I had a pretty normal teenage life in the town where I was born which is this sort of mid-sized Danish town. Nothing too outstanding or outrageous in any sort of way I would say. I went to the local high school. That's what people did there.

Yost:  And can you tell me about your decision process with regard to applying to universities?

Bødker:  Right. Yes, I definitely, I don't come from an academic family at all, so I was even the first in my family to finish high school, maybe, I mean I have a lot of cousins. I think maybe one or two of them was

like a year before me, but we didn't do high schools and we didn't do academia in my family. I had a math teacher in middle school who thought I should do something. He was actually quite keen that computer science was the topic of the future and he saw that as something I should do. I still remember my father and I went to this annual school talk with the guy where he tried to convince us that math and computer science would be a good thing for me. So, my parents were quite supportive. I started high school and I, honestly don't think I thought much about it, so the University of Aarhus where I ended up studying. It was the nearest university and that was kind of what I could see for myself doing in terms of moving away and so on. I mean, Denmark in that respect is quite—was and also still probably is – quite different from the US where there's a much stronger sense of finding the right college and travel to go to college. So, for me, it was a much more local thing. And I don't think I considered really any other universities. I did go and check it out and I liked what I saw, so that's why I ended up studying first mathematics at the University of Aarhus, and after the second year, also computer science. Basically, I think you can say I ended up with computer science because the other choice was to do physics as a minor. I didn't appreciate physics in high school, so I didn't want to do physics.

Yost: When computer science was first suggested to you, what did you think about that as a possible field?

Bødker: I think it was a big unknown, but honestly, when I was in high school, of course we didn't have computers. I mean we barely had calculators, but the local library had, at some point had an installation of a Danish computer where you could go and do some, try out some whatever it was, Basic programming, I'm actually not 100% sure. I don't remember that. So, I did a little bit of programming in high school. Not in school, but in the local library and I guess I thought that could be ok, but it was a big unknown and as I'm saying, I really didn't want to do physics so this was kind of the option I had for second topic. Choosing computer science as my major was something that happened later after I started the university.

Yost: At the library was it a standalone mainframe or minicomputer, or was it a time-sharing system connected to a university or government or company mainframe?

Bødker: No [not time-sharing], I think it was Regnecentralen (https://en.wikipedia.org/wiki/Regnecentralen). There was this Danish company called Regnecentralen that developed computers. My recollection of it is vague but I think it was some version of their early computers. They later did some computers for schools, but I think this is earlier. It definitely was a big,

clunky thing that got put up in the library and you had to go and sign up to have a timeslot with it so it wasn't something they had a lot of or where many people could use it at the same time.

Yost:  And so, you mentioned you started in mathematics so that was going to be your major but then you switched to computer science, is that correct?

Bødker:  Yes.

Yost:  Ok. Your very impressive and diverse research scholarship is quite interdisciplinary and so I'm very curious about what other areas of study you were exposed to and what you had an interest in, particularly the social sciences while at the university.

Bødker:  Yes. That is also a really good question. See, the Danish systems is very siloed, so you don't actually get a lot of choice when you're an undergraduate student. It's a very narrow topic in a way. I think what happened to me was when I found out that I really wasn't very good at mathematics and I struggled with it, and I was considering doing a minor in anthropology or something, actually also archeology – at the time when I found out about that, I was only missing like a very few credits to complete my minor in mathematics so at the end, I just was grinding my teeth and doing that instead. So, I've never done any formal studies in social sciences or human sciences for that matter at all. It's been, the other things had been through readings and some very good interdisciplinary reading groups we had with the people in the psychology department in the early, mid-1980s. So, we did a variety of interesting stuff including a reading group around an early or draft version, an early version of Winograd and Flores' book that we were discussing a lot with the psychologies and so on.

Yost:  So that was in graduate school?

Bødker:  Yes.

Yost:  Ok. As an undergraduate, did you have very much experience using the computer center, and can you describe the University's computer center at that time?

Bødker:  Yes. So, I'm old enough that we handed in jobs on punch cards to this, in this big hole in the wall on the ground floor of the computer science department. And then we would get this job run and something would happen. We also did have a couple of computers in the department that were a bit more hands on, so after the first year, we also used one of these, what was it, a [DEC] PDP-11 or something where you could actually walk up to it and you could touch it and you could actually set the

switches on the front panel and run jobs directly on it. Punch card would also fairly soon be replaced by different kinds of terminals that were, that you would use instead.

Yost:  So, a time-sharing system?

Bødker:  Yes.

Yost:  Can you tell me a bit about the curriculum for your undergraduate computer science major and were you exposed to HCI at that time as an undergrad?

Bødker:  I don't think there was anything called HCI at the time—

Yost:  Or human factors, or what later came to be called HCI.

Bødker:  No but let me reiterate a little bit. So in the Computer Science Department at Aarhus, there was a strong theoretical tradition but I think we also did a lot of things that are pretty standard curriculum, and probably with material that is still used in the various places so Tanenbaum's book of machine architecture and books on algorithms were stuff that we used quite a lot. We had some introductory programing. And then what was maybe unique to Aarhus was, at that time because of Morten Kyng and his affiliation with Professor Kristen Nygaard from Oslo, Kristen was actually in Aarhus. Even though it wasn't called HCI at the time, we actually did have teaching both in the first-year computer science class and also later, in participatory design, in the involvement of users in design and design processes at large. We did that in various forms. I think that was quite unique for my department. That was also our way into human-computer interaction at that point. So, while I was doing my master's also before starting my PhD, there started to be classes that were more human-computer 'interaction-ish.' So we had, for instance, a graphical work station where you could use a pen. I remember I did a project with that in a class that was called computer graphics where we used the book by Newman and Sproull on computer graphics. And that has a chapter, that is in my perspective, some of the first stuff that's really written as an introduction to human-computer interaction for students at large. So, I did that.

Yost:  There were some pioneering Scandinavian projects in the '70s in participatory design, NJMF in 1971 to 1973, Demos in '75-79, and Due, D-U-E from 1977 to 1980. Were you aware of these projects and did you study them?

Bødker:  Yes, we were indeed because, as I was saying, Morten Kyng was one of the teachers that I had and he was heavily involved with this and Kristen Nygaard who was the main person behind the NJMF project was also in the department. I'm a little bit too young to have attended classes with him but

definitely he was there when I was doing my master's, and he left a big impression on people and on the curriculum during those years. So indeed. I was too young to participate in any of the projects, but I was aware of them. We talked about them and we were reading some of the materials. I also vividly remember that we had some talks by some of these union representatives, so shop stewards who were involved in some of the projects. Both actually from Norway and Denmark. So I remember at some point, there was a visit from this guy who had worked in the NJMF project from this thing called Kongsberg Våpenfabrikk which is the weapons factory at Kongsberg and he talked about this KV-POL, the production planning systems that they had there which was also written about in the NJMF project. So, yes, indeed.

Yost: In 1981, there was the launch of the UTOPIA Project you were soon to go off to become a visiting scientist at Xerox PARC. Did you have any involvement in UTOPIA before you came back for graduate school?

Bødker: No, well, my involvement with the UTOPIA Project before going abroad was really marginal, so the way it was here, I finished my master's degree and then, yes, I went to Xerox PARC and I also went to Japan and I was, I would say Kristen Nygaard was instrumental in making that connection happen. So we were, again, talking. I didn't do any work in the UTOPIA Project until I came back. When I left to go to the US, I was still thinking I would come back and do mathematics teaching in high school but Morten Kyng was holding on to me and begging me, maybe that's an over statement, but asking me to come back and do a PhD with him, being funded by the UTOPIA Project. So that was what happened. And I guess this was quite parallel with when, what you could call HCI, really started.

Yost: Can you tell me about your decision process to go to the US and to work in '82 and '83 at Xerox PARC?

Bødker: It's a very interesting story but it was actually the result of a lottery. So as a consequence of what I was saying, the study program in Aarhus was also very mixed up with mathematics and so on, formally my diploma was actually in mathematics. There is among mathematicians in Denmark, a scholarship which is funded by money from somebody who once did a program for, as part of life-long learning. So, he earned some money from that somehow and he set up this scholarship. And it's a lottery, so every year they pick just, I don't know how many, three, among the graduates in mathematics in Denmark and then they're off to travel for a year. And the only requirement is you provide a budget and you go to good places and then they pay. I suppose it may still exist but since

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computer science is no longer part of mathematics, I don't know anybody who has done this in recent times. But that was it. You win this lottery and you make a plan for where you go. Kristen said you should definitely go to Xerox PARC and so I did. At that time, they were saying, "Well, you know, we do get a lot of people who want to come and visit on their own funding, so it's not that easy." But Kristen had strong connections to Adele Goldberg who was the head of the Smalltalk Group at the time, so that's why I went. Then the plan was also to go to China. That never happened but I did spend a couple of months in Japan also as part of that thing.

Yost:  Before I ask you some questions about Xerox PARC, I'm curious about the gender mix of those studying computer science when you were an undergrad and a master's student at Aarhus. Can you tell me about the gender mix and the gendered environment for women scholars at that time?

Bødker:  Yes. It's interesting. Somehow, I think computer science being an upcoming topic, there were more women in the start of the program than what we have now, at least what we've had in recent years. So, I think we were 25% women in the curriculum at the time. And a couple of us also went onto do a PhD. So, I don't think at the time it was thought of as of very particularly gendered or not gendered. Actually, also in the mathematics department at Aarhus, they had a few strong teachers who were also women. What we didn't have was female teachers in computer science at the time, you can say. And I would say that going to PARC and to the Smalltalk Group, was good for me in that respect. That group actually had a handful of strong women, of course including Adele Goldberg who was managing it and I'm quite sure that it matters for my career from then on that I saw these strong, much more senior women who actually worked in research in computer science.

Yost:  That's interesting. Adele Goldberg was a trustee of the Charles Babbage Foundation that helped support us. I've had the opportunity to meet with her in the distant past.

Bødker:  I would say at the time she was also a mother of two young red-head girls and she managed her life quite well. She was making sure she to separate when she was working and when she wasn't working and those kinds of things were also something to be learned from, I would say.

Yost:  Definitely. So, can you tell me about your first impressions of PARC and the Smalltalk Group?

Bødker:  Sure. It is kind of interesting. I think that maybe it was mainly in hindsight that I realized how a unique opportunity this had been to actually go and work with them. Of course, I, we'd heard about Smalltalk and we knew about people there. I'd actually also met a few of the people who worked there in the years leading up to my stay because maybe it's not too far-fetched to say computer science was a

much smaller topic at the time. So I remember as a master's student going to attend conferences where also some of these people who were doing programming languages for instance at PARC came over and I would say, the division of who went to which research group conferences and so on was indeed not as big as today. I guess maybe also because the choices were a lot fewer or the options were fewer. So, PARC, coming there was interesting, and I think it's fair to say it was a very dynamic place. We were not, I was not, the Smalltalk Group and the group whose name I cannot remember but was run by John Seely Brown and included a lot of the LISP people and also the Lucy Suchman and Tom Moran and those people. We weren't up at the Boardwalk as they called it. We weren't at Coyote Hill Road. We were in an old building, a little bit further away so in our everyday; like, it was just those two groups, so it made it quite easy to meet a lot of people in those groups. Also, Austin Henderson was there. So, it was just, maybe it was only on the few occasions where we ended up go up to Coyote Hill Road, that you realized how big a thing this was. Going there was of course fantastic but it was meeting these nice people and doing interesting stuff in this little old, somewhat old, building in, further down the hill.

Yost:  So, you had been exposed to participatory design. Can you tell me about the design culture at PARC and how it was similar and how it was different from what you had been exposed to and were thinking about with regard to design?

Bødker:  Right. That's a terribly good question. First of all, I think the whole way of talking about design as something wasn't for anybody quite what it is today. I'm not sure we thought much about it at the scale of thinking about, "Oh, design, what is it? What could it be?" and so on. At the other end of that spectrum, I would say that the people who I met and the people I was most closely working with, all knew Kristen Nygaard quite well. And of course, he'd be there and giving his drill about the Scandinavian tradition, any number of times. So, I think everybody thought it was a little bit alien, strange, but also interesting. And so for me, it was mainly a chance to get to do something that was closer to technologies that everyday people could actually use and maybe even appropriate or tailor where I, the access to some of these work stations at PARC were just very different from what I was used to. We, at Aarhus University, we got our first personal graphical workstations while I was away. It was one of these PERQs from Three Rivers (https://en.wikipedia.org/wiki/PERQ). So, we didn't have those things before I went to PARC. One of many things that were totally alien at the time, like email, for instance, which we didn't use. But even at PARC, it was quite restricted to working locally and of course, I don't know who, of course you could probably exchange emails to other people who were on the APRANET but since I didn't know anybody in any of these other places, it didn't make much of a difference to me.  It was mainly for

local users. I still had to fax or write, or whatever, if I needed to communicate with anybody at home. Of course, it changed very soon after I came back but just to give you a sense, we tend to forget how things were. It was more about personal workstations. I think that this felt different for me when I came there.

Yost:  So, the ALTO had been developed in the mid-1970s, and of course, very pioneering system of the graphical user interface and PARC was completing development and launch of Xerox Star. Can you talk about your understanding of the ALTO and the Xerox Star project and your exposure to these?

Bødker:  Yes. It's easy to say that I don't think I really had much exposure to it. The Star project, I'm quite certain that I probably heard a talk or two by people like Dave Smith about the design of the Star but other than that my only connection was that at some point I got, since I was going to Japan, somebody introduced me to this guy, I think he was called Joe Becker, who was actually in charge of the J-Star, the Japanese version of the Star. But that was at the very end. So, nothing really. And the Smalltalk Group, we used the ALTO for sending email and so on, and it had these huge disk packs that you would drag around when you needed it to send your email. But otherwise it was the, the Smalltalk Group used these Dolphins and Dorados, those were the machines that got used for the development of the Smalltalk system and they were of course extensions of some of the same stuff. I wasn't ever involved at all with the development of the Star or with these thoughts of making that a computer for everyday use. So I guess what we came nearest to were all these endless discussions of, Alan Kay had this vision of the two children sitting underneath a tree, and they were having these small pads that they would program, maze war or whatever it was, on and they could also appropriate and tailor that as they moved on. And so, the struggle was on trying to find the smallest platform that Smalltalk could run on. So, there were some on-going discussions there where the people were redefining Alan Kay's vision or discussing whether it was necessary to go to these bigger machines to even make this happen and so on. So, I think that more was of the type of discussions I was involved with.

Yost:  And what was your day to day work like? Were you fundamentally focused on a bunch of tasks on the Smalltalk project or did you also have time to read and explore ideas and meet with people and have a richer, what we might think of as a post-doc experience even though—

Bødker:  Yes.

Yost:  —you were pre-doctorate?

Bødker:  I did all of those things, and I could do what I wanted. I was involved with a couple of projects in the Smalltalk group, one that was run by Dan Ingalls which was about in a sense doing a more graphical

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representation of the programming environment of Smalltalk, or object-oriented is not the right word but visual and manipulative version of the Smalltalk interface. The project really never, as such, I think ended up with anything major. But of course, we later see more programming by some of these mechanisms and their different concepts that were also building on this.

Yost:  In the 1970s, an interaction group of Allen Newell and his doctoral students Stu Card and Tom Moran started, and they became research scientists at Xerox PARC. Did you have much interaction with that group and with Stu and Tom?

Bødker:  They were downstairs. They were in the group that was downstairs, and I remember them like as these three people. But I don't think I ever talked to Newell, but of course, both Stuart and Tom at the time, and also later. Of course, they are people that I know and I talk to eventually and I would say that we had a very interesting collaboration between Aarhus University and Euro PARC much later, and I think that the connections that I had with both Tom and Austin Henderson and Lucy Suchman were quite part of making that happen. But I did not do anything directly with Stu or Tom or for that matter with Allen Newell at that time. The book came out, I think while I was there, and I vaguely remember that but not much really.

Yost:  Looking back, were there elements that you were exposed to at Xerox PARC that influenced how you thought about design, users, participation?

Bødker:  Well, several things. One of the things that I had discussed later with Tom Moran was this shared interest that we did have about prototypes and prototyping, but I honestly cannot specifically point to how it dates back to PARC. But for me, it was still very much this business in a sense of seeing all these technical possibilities. But I also will say that in the Smalltalk Group, they did have these various people that they worked with. Some of them were artists but they were also doing some design work with children. For instance, Laura Gould who was there did quite a bit of that kind of work while I was there. Of course it was kind of inspiring to see that you could do, the technology was available that you could show these things to people and give them hands-on experience with these technologies, which, of course, we couldn't. Where I came from, we also got some of these other graphical workstations while I was away, so it's of course all, it's connected but I don't know what came first. So, I think there were quite a number of elements that were inspiring. But I'm always also thinking that the work of Lucy Suchman was tremendously influential also to my work and my connection with her. But of course, she hadn't finished her PhD while I was there, and I really have no recollection that I ever discussed these

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topics with her while I was at PARC. I remember that I came over to the CHI conference in San Francisco in '85 and I remember meeting Lucy and she had copies of her thesis and I got one, but I cannot remember that I had a specific interest in any of that before then.

Yost:  The pioneering conference which became CHI in Boston the following year in 1983 and retroactive first CHI was held in 1982 in Gaithersburg, Maryland and it grew into a much larger event than Bill Curtis and Ben Shneiderman, the organizers, initially thought it would be. And there was an evening meeting of a number of key organizers that turned into a planning session for turning SIGSOC into SIGCHI and starting a professional organization. Were you able to attend Gaithersburg?

Bødker:  No.

Yost:  Did you hear about it at the time?

Bødker:  I cannot recall, to sidetrack you. The thing I do remember from the time was CPSR Computer Professionals for Social Responsibility which was started and was run by people I knew such as Laura Gould who I just talked about and some of those people. I remember that but I really have no recollection of the CHI start, any of that stuff, no. I mean, there must've been a reason why I thought it was interesting to go to, to the CHI conference in San Francisco but I don't know.

Yost:  We're fortunate to have some of the records of Computer Professionals for Social Responsibility at the Babbage Institute. It's some very interesting material and records. You went to Japan for several months. Can you tell me how that came about and describe that trip and that opportunity?

Bødker:  Yes. It was quite difficult, actually to get in touch with anybody in Japan and to arrange a stay there. In that sense, I think that where I ended up was mainly a random connection through some random people in my department more than it was a very deliberate choice of a good venue. So, in the everyday life the two months I was there was mainly I had a lovely view of Mount Fuji outside my, at a distance, from my office window. So that was nice. But everybody in Japan at the time were tremendously keen to taking guests and also organize visits and use their network. So I went on, I cannot even remember, but a lot of visits to various research labs, and it was at the time of this so-called 5th Generation computer project that they had in Japan so I also met with some of those and saw some of that and was involved with some discussions of that. So it became, I would say maybe more of a hub or base for visiting various places where I was and it was a real, it was definitely very different from PARC where there was an everyday life and some research projects going on and things like that. That was not

at all the case. And you didn't bring your computer at the time, so it was also two months of pen and paper, which was also interesting but different.

Yost: Had you studied AI much at all and what was your perspective and impression of the 5$^{th}$ Generation project at the time?

Bødker: I hadn't studied AI much and I think it came to be interesting just a little later I would say. At PARC I met people like Austin Henderson and some of the people who were doing on all the LISP programming and all that stuff but I think I saw it more from the programming and programming language perspective more than as part of this AI agenda which I am totally aware was also underlying some of this stuff. So I think my connections with AI were mainly starting more through this, through first of all the event of expert systems and that whole thing because that of course connected back to some of these assumptions you make about what people can do and cannot do and what computers are good at which we were always quite interested in at Aarhus. And then as I was saying, we had this study group of Winograd and Flores book and also the Dreyfus and Dreyfus book came out, a few years later. So, we were quite engaged in discussions of the limitations of AI in the '80s at Aarhus. But I think it was mainly after I came back. I knew Terry Winograd also when I was at PARC, I guess I met him also through Kristen Nygaard because they were good friends. But Terry also did some amount of consulting for PARC as I recall it. So, I knew him, I met him several times there. I don't think we ever discussed AI. We were more discussing things like Computer Professionals for Social Responsibility if you see what I'm saying.

Yost: In returning, you came back to Aarhus to pursue your PhD and you're working under Morten Kyng, can you describe him as a mentor and later collaborator?

Bødker: Yes, maybe I can. It's a good one, of course because when you look back on, we've known each other for so many years that it's even difficult to remember. He was strong, I mean, but they were these, both Morten, in particular, also Lars Mathiassen at the CS department who were both inspired by Kristen and very interested in some of these early projects but also very much looking at computing from the perspective of how can you teach and how can you educate, how can you create awareness for people about computers. I think it's actually still, when we talk about participatory design and all of that, there was a strong education agenda that I think we need to remember. We need to remember that also today. It's not entirely as if people just understand, people at large, just understand every element and aspect of what computing is including and getting back to some of the more recent side-effects of the newer forms of AI. I would say that this is still something that should be on the agenda and for us

still is on the agenda at Aarhus. So, Morten was very strong on that. Of course, we had a very—so the UTOPIA group at Aarhus was very small group, we were three or four people. So of course, we worked quite a lot together also in those years and also traveled quite a lot together because we were going to, in particular, to Stockholm to work with the rest of the UTOPIA Project. And staying at people's houses and so on because I guess we were young, and it wasn't so much going to a hotel and staying in a hotel all the time. So, we ended up knowing each other quite well in those years you can say. Morten has always been tremendously good at starting things and I think maybe he and I have in some ways been a good match because I've been better at carrying things through than maybe he has sometimes. So, in that sense, this was the case for quite many years. Now, we really haven't worked together as much in quite many years except for an occasional paper writing that we still both find interesting.

Yost:  UTOPIA was launched in 1981 by the Nordic Graphical Union. Can you tell me about the Nordic Graphical Union, what that was?

Bødker:  For a young woman like me, it was interesting because they were largely a group of elderly men. I mean, the people who were officially engaged with the unions, with the labor unions in the Nordic workers union but also in the national unions that were also involved. So, the head of the Graphical workers union in the Nordic one was Gunnar Kokås. He was a real sort of granddad type, so he was a lovely, lovely person. But we just discussed recently because we were writing a textbook about participatory design. Of course, it was a very male work environment, it was also, maybe it's even difficult to imagine today, but it was very political. The Graphical Workers Union in Scandinavia were tremendously political. So, the communist and social democrats didn't talk to each other. So as a researcher who is stepping into this, you were all the time treading this very fine line about who you could sit with and have lunch because they definitely weren't sitting at the same table and stuff like that. Nowadays this whole political labor movement and maybe even left-wing is much more blurred. It's actually interesting to think back on, but that was just if you wanted to talk to social democrats, you wouldn't go and sit and have lunch with a communist and vice versa. So that was also a new thing when you came as this young, innocent academic. I think even though everything was much more political at the time, it was very special. So, the political handling of the UTOPIA Project was nuts. I didn't do any of that. It was Morten, it was Pelle Ehn and Yngve Sundblad who did all of that. So, I can't talk to the formal set up of things really.

Yost:  Can you tell me about your work on this project and was it heavily overlapping with your dissertation research or was that separate but somewhat in parallel?

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Bødker:  It was quite integrated, I would say. Most of what we learned in the UTOPIA Project was about you could call it the design methods of how you would engage these skilled types of workers in thinking and talking about technology. And I think there were many elements of that that were also quite strong in my dissertation. So, for instance, the idea of a hands-on experience as something you would need in order to relate to these new and very different technologies went on to become my dissertation. Among other things but try to find out what, why that was and what that really was? So that was important. Also, there was a long tradition of going back to Kristen Nygaard of thinking that what you needed to do was to do specifications or do systems description as they were often called. And I think we realized that was not sufficient when you had to deal with these advanced technologies such as What You See Is What You Get technology and so on. So, there is a trajectory there, that also led into my PhD. We were also just, in the project experimenting quite a lot with very different forms of interaction. Also, somehow, I think we talk about the interface later, but I think a lot about what we take for granted about our interfaces. Today we are sort of frozen at a time, but it was actually later. So, we also had a lot of interesting thoughts about how you would use—there was actually built like a set of mock-ups, a different kind of pointing devices or mice that would be particularly suited to do this advanced layout work and so on. And so, there was a lot of stuff like that happening in the projects. So, I think when you think about it, there was probably maybe more of this aspiring for various forms of advanced interaction. That was something that in particular Yngve Sundblad at KTH in Stockholm was the main person behind, and in my dissertation work, I also went on to have a collaboration with him and with Kerstin Severinsson-Eklundh who was also a researcher on the UTOPIA Project who also became much later a professor in the KTH in this Center for Interaction and Design. So, it's difficult to say there is one thing but there's definitely many things, where the UTOPIA Project was the start of more theory work, more advanced design and more different things.

Yost:  Can you tell me a bit about the tradition of Scandinavian design with functionality and minimalism and how that was drawn upon and influenced in ideas of the UTOPIA group and your own ideas with regard to computer interaction?

Bødker:  Gosh, that is a good question. I'm not sure I can answer to that because I don't recall that this was a discussion we ever had. And I think that in particular, people like Pelle Ehn has later on gone on to doing more of thinking design and being inspired from design. But again, I actually don't think this was something we talked about very much at all. So, I don't know how to answer it really.

Yost:  Ok.

Bødker:  Because, and of course, you probably know there were, Scandinavian design was strong all the way back to the 50s and the 60s, so I'm sure there was a lot of implicit-y influence in many ways. But I can't tell you.

Yost:  What can you tell me about the aspiration of workplace democracy and to what degree did you feel it was becoming a reality or partial accomplishment, and I understand it kind of came to a halt and can you discuss that trajectory?

Bødker:  Yes, well, again, I suppose that in a sense starting back before my time, at least before I was aware of it. There was this movement of, that led to the NJMF project that was about bringing experts out into the lives of everyday people in a different way so also putting, there were in Denmark this thing called the Painter Report where they had some chemists studying what materials were really in the paint that painters were using and stuff like that. So, this sense of industrial democracy I think also started earlier also in Germany and in Scandinavia as part of industrial democracy projects. There were a lot of these, a lot of things developed such as models for local negotiation of technology in the workplace. And it also did get integrated in the national collective bargain agreement. So, for a while there were, there was this thing called technology agreement that specified in great detail actually how workers in any workplace should be involved in decisions about technology and then from there on I'm not actually—I don't know 100% but I think if you look at the Scandinavian countries, the situation today is different from country to country. But it's also very much just a matter of the fact that it's very different between the countries how much is legislation and how much is actually left for the negotiation between employer and employee unions which it is in Denmark, all governments keep their hands off, and it's true also for the social democratic government. It's still true, they're very hands off in terms of getting involved with discussions about workplace, specific arrangements for workplace set up and workplace democracy so all is left to these negotiations between the unions and the employers at different levels. So here definitely nowadays, there is no technology agreement. There is a central overall agreement between the labor union movement and the employers. And as part of that, employers have to council with the employees with the unions every time they make major changes to the workplace. So, in general, I think most of the cases where this is happening is if you're laying off 30 people or a hundred people, you don't do it without pre-negotiation with the union. It's not about if you can layoff anybody you want, and it's not about the individuals but it's about these systematic changes. And anyway, technology is on the list for that. Since my colleague is our main union representative at Aarhus University we've actually had some discussions lately about what that means because to our

understanding, we are never, staff at Aarhus University, are never heard or counseled or even have influence on how we get new systems. But in principle it is there, and somehow it may just be that technology is no longer the main issue. But it would be interesting to find out whether there are any recent examples of how this is used activity in various branches of work to influence the use of technology. For instance, if it gets used in those cases where, for instance, artificial intelligence is used for selecting clients for various social services or whatever, has the technology been negotiated? I don't know. But I do know that each situation is different in Norway and in Sweden, but I can't tell you what's happening nowadays there either, to be honest.

Yost:  You had mentioned that in grad school you participated in interdisciplinary reading groups. Can you tell me about your exposure and perspective on Marxist theories of work and technology as well as potentially other social theorists with regard to work and technology and industrial production?

Bødker:  I can try. There's a very heavy rain shower. I don't know if that's destroying your sound but anyway, ok.

Yost:  No. it's fine. It is actually raining here too.

Bødker:  Yes, but it's just very strong right now. But anyway, the psychologists at Aarhus University had a long and very strong theoretical influence from activity theory as we call it now. I guess in the, in those days it was quite common that you would be able to actually read some of those texts in Russian or in German among these people. And there was a strong theoretical group at the department there led by Henrik Poulsen who happened to be Morten Kyng's step-father. So, in the sense you can say that maybe we did. Part of that whole business of why we ended up having these discussions was mainly due to the fact that Morten knew quite a few of the people in the Psychology Department. So, I think that's one influence. The other thing, for instance, people like Pelle Ehn who had a much stronger social science background, and a strong background in also some of these more social science traditions were also part of it. So, I would say it's interesting because the way I look at activity theory and also many of the social science figures we were interested in was not, well they were Marxists. Yes. They were very influenced by philosophical Marxism for instance, the dialectics and so on. But for instance, the Russian thinkers were not Soviet psychologists, they were Russian psychologists, and, as it happens, this is a whole long story, but definitely they weren't. There's this thing called Soviet psychology; they weren't part of that. It was political in the sense as Marxism and so on, and I suppose originally some of these people had also largely gotten into that space because of their interests in Marxism politically, but how can I say it?

We should always remember that activity theory and so on was not mainstream in the Soviet Union. The nuances are much greater than that and so I think we picked it up more for the philosophical, for the understanding that the world is dynamic and that there are certain things that are driving these changes and that, as in opposition also partly to cognitive science where things are, the world is happening in our heads, but with these theories it's actually this mirror reflection between us and the world outside us and we mutually shape each other more than anything. It is that more than very specifically political if you see what I'm saying.

Yost: Yes. In 1985 as a doctoral student, you were one of the main organizers working on a conference on the development and use of computer-based systems and tools. Can you tell me about organizing that event and about the event and its influence?

Bødker: Yes, well in 1975, there was an Aarhus conference that was much more union-orientated that got organized by Morten Kyng, and the people around him. And I guess we had an idea that we would do an '85 thing that would be a more international version of something where there would be a good debate and you could discuss alternatives on many fronts and many levels. So, it became also the first of, I mean, we've had one every ten years in Aarhus and I'm expecting that we'll have one in '25 also even though, I may, hopefully there will be other people to organize it other than me. It's become, it's quite deliberate that it's every ten years and not every year or every two years. The idea is to see what's happening and see what's could be new and what the debates are and where the alternatives could go and do that every ten years. The first one was—it was interesting because there was also a certain amount of rioting against this conference format where there were presentations and so on, even though of course we were already then quite aware of what has become much more obvious since then in academia, it's all about papers and talks and citations and all of that stuff. So, we had endless discussions about how exactly to do this and what it was grounded in were some working groups that would meet throughout the conference and spend half of each day during the conference discussing particular topics. And some of them are still very fresh, of course not all of them, but I just recently was picking out the working group that actually was about expert systems. And if you read their discussions, a lot of that again, would also apply to AI today you could say. Unfortunately, maybe in some senses but still… So, there were interesting papers, interesting keynotes, a lot of young rebels but also we had through the careful work of Morten, enrolled a lot of senior people in the program committee and people who knew what they were doing so there were also people like Kristen but they were definitely other people, Christiane Floyd and Rob Kling for instance, who were involved who also had solid

academic credentials in the areas that they came from. They were the program committee and that part was all very straight forward as it was in those days. We had this, all the papers submitted in 11 copies and we were sorting them and handing them out and shipping them back to the program committee for reviews and all of that stuff, which fortunately we don't do anymore because we got technologies for that. But it was interesting. The program committee meeting was interesting. The conference was interesting. Then there was this idea that there should be a book and then for reasons it ended up coming out later as I remember it, as a present to Kristen Nygaard for some birthday that he had. That's why the book is '87 and not '85.

Yost:  You've discussed activity theory a bit, but can you tell me a bit more about your dissertation research and how it evolved and the methods for examining user interfaces within the perspective of activity theory with your research?

Bødker:  Yes. It's interesting because in this working group or discussion group that we talked about quite a lot, there was a young psychology student who was thinking about user interfaces, and he was giving a presentation and he was saying it's not an interface, it's an interspace. And I just thought that was tremendously interesting. And then he spent very many years before he graduated and I can't even give you the details, but I thought that that statement was actually interesting enough to start just thinking about how can we—if it's not an interface, what is it then? How can we then think about what it is? That very much became the starting point for my whole work on activity theory and trying to find out what it was in activity theory and in these related learning theories and so on that would in a sense lead to such a statement. So, my dissertation is a very theoretically piece of work trying to apply the activity theoretical groundwork to human-computer interaction. It also does use both the UTOPIA Project, but also some of the work from Xerox PARC as examples in that. And I was fortunate enough that it got published and that is also maybe an interesting anecdote in the greater world of HCI because the—I went over to California, I went to San Francisco for the program committee meeting of the first PDC conference, I think it was something Lucy Suchman arranged, maybe it was a CSW conference actually. Lucy Suchman was the chair and I also went and stayed with her. At the CHI '85 conference I tried to get a chance to go and visit Don Norman in San Diego for various reasons that didn't happen. But Ed Hutchins got back to me and said, "Why don't you come down to San Diego when you're in California for the PC meeting." And I did, and I remember meeting Ed at the airport, and he was holding my dissertation, the local publication. And so, one thing that came out of that was when I then met Don Norman, he said "You know, this is going to be published. I'm going to make this book published,

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publishable in my series." So, Don Norman really has a very explicit role in making that book happen. The other thing that was interesting was that it was the first time Yrjö Engeström who many know was an activity theorist by, was spending time in San Diego with Mike Cole. So, not because I was there, I think partly because I was there, I also witnessed the first meeting between Don Norman and Yrjö Engeström which was also quite interesting in a way. So, of course, a lot was also happening in San Diego along the lines of doing stuff with activity theory and distributed cognition and what have you. So there was a big, there was a good theoretical space in the early years of—I mean I talked about it as second wave CHI and this group was part of thinking about the fact that all the cognitive science modelling of human-computer interaction was not sufficient and something else needed to happen. So that was also an interesting outcome in a way of my thesis work that I ended up with them there at that time, and my book became published as something else than just this local print. We had this local book series at the time at Aarhus University.

Yost:  But that brought it to the wider world.

Bødker:  Absolutely! Yes. It's interesting to see that it still is read regularly. And of course, that would not have happened without Don Norman.

Yost:  In addition to that very important assistance and push to getting it published, did he become a colleague that you interacted with frequently thereafter and can you discuss Don Norman as a colleague?

Bødker:  I don't think I ever interacted intentionally with him for longer periods but he's always been there as this—Don has his own way with things and he also sometimes writes things that I don't like and so on. And that is also true the other way around. I remember doing some work some years ago with Usable Security where we were discussing his way of doing models as a way of saying this is not working for usable security. And Don in his very typical style was saying, "You know, this is an offense! This cannot happen!" And we wrote back and forth a little bit and a few years later I met him at Helsinki, he was at the airport going into NordiCHI and he offered me a ride in the taxi and so we were still on speaking terms.

Yost:  So, you've mentioned CHI in 1985 in San Francisco, your first CHI conference, can you tell me about your impression of that conference and how you saw the professionalization of HCI at that time?

Bødker:  It's of course always slightly overwhelming to, as a young person to go to big events like that. I'd actually attended—Eurographics was in Copenhagen in '84, and I remember going to that one. That's

also a fairly big conference and so I think when you're young and maybe when you're not, you may not know as many people, you're staying around quite a lot with people you know and your local, your friends who will somehow also be traveling with you. I was there together with a few of the people from the follow up after the UTOPIA Project so they for instance were also there. And to follow up on the missing attempt to get in touch with Don Norman, it was actually also where I first met Liam Bannon because, and I can say this, because we've talked about the story often. Because he was a post-doc with Don at the time, he apparently had heard that I tried to get in touch. So, I was sitting in a chair and all of the sudden somebody came up and sat next to me and started talking to me as if we knew each other, and said "Do you want to come to San Diego?" and I was like, "Who are you? What is this thing?" and it turned out to be Liam and he said, "Come to San Diego!" I couldn't but we became friends and we're still working together whenever we can. So, he was there. And I came back much stimulated but also frustrated and slightly, coming from the Scandinavian tradition, the whole first wave HCI was strong at that conference. And I think it wasn't sort of like, "Wow! I learned a lot." To be honest, but I'm not sure what else to say, really. An overwhelming thing where too many things were going on that some of which I really couldn't relate to.

Yost:  Can you, since various researchers will use this oral history, can you briefly discuss the first wave?

Bødker:  Well, the first wave is for me the very model-based human-computer interaction that's based on cognitive science or classical cognitive science modeling. So, the Allen Newell book that we talked about already and stuff like that is what I connect to the, with the first wave.

Yost:  One thing with CHI in the first year is there were a number of people from human factors and quite a number of people from industry at Gaithersburg and government at Gaithersburg and Boston, and it became far more an academic organization as the '80s progressed and that at least in part I think, led to in 1991 the User Professional Association which became UXPA getting started. Was that ever an event that you attended?

Bødker:  Nope. I didn't. I worked at some point with some Danish usability labs and they went there but no, I've never been.

Yost:  I'm about at the midpoint or a bit beyond. Did you want to take a break now?

Bødker:  Maybe it wouldn't be such a bad idea just to rest up and to come back.

*[10-minute break]*

Yost:  So, in 1991 you were promoted to associate professor. Can you tell me about—you published your book—and can you tell me about how your research is evolving at that time and what are your greatest interests as you perhaps have more freedom as an associate professor to study what you want?

Bødker:  I think for me, life has been a balance back and forth between doing theoretical work and then also going back and doing some empirical projects. And I think that was important and so both making use of the theory that I developed but also getting challenged to do new theory has been important. So my work around that time included also, other than having maternity leave in the first half of 1991, we did an interesting project with the local labor inspection regarding one of the things we talked about earlier the possibility of maybe educating or rethinking technologies that were already in use. So, educating the users to rethink differently about them and so on. And I did some work with Randy Trigg at that time. He had worked with Lucy Suchman at PARC and then done wonderful technical work actually also at PARC with—and he came and he, we did this project and we did a few other projects with him at the time at Aarhus. So, this business of going back and forth between projects and working with people and then thinking about them is what I like, and this was a period where this also happened. So, also think we had some interesting papers out in the years following that. Actually, around that time, it was also, I do have quite a few publications on top of my book in one form or another with Liam Bannon and also in other ways, and I would say that time was also quite interesting in Aarhus because we had many people coming to us also for longer periods. So, Liam Bannon, Jonathan Grudin, Randy Trigg, and Joan Greenbaum, to mention a few, were people who came and worked with us and talked with us in the department and that was all very inspiring.  I also think that learning to publish in English is a skill that shouldn't be ignored for people who aren't brought up in the British or the American system and they were quite helpful in that respect, I would say.

Yost:  In talking to some scholars in HCI and in the US, it seems it was a struggle at times to gain full recognition and respect for HCI within computer science departments with regard to those in long established traditional areas of operating systems and programming languages and such. Was that true in your department or was the type of work that you were focusing on respected from the start and given an equal standing?

Bødker:  I would actually say that this has been a very long battle but the first part of it was before me. For instance, bringing Kristen Nygaard to the department and hiring people like Morten was a big struggle. I will not say that I didn't have any challenges because I did. But I think that to some extent the situation was slightly better. At the time when I got hired there was a big battle about whether I could

start as a PhD student. It was maybe even a bigger battle than whether—but also whether I would end up in a more permanent job. Of course, there were discussions. I don't think the resources were that great either at the time. But the department at Aarhus at the time kept having a very strong divide for very many years. And I want to be honest and say that probably it has been mended more in recent years partly because some of the then senior people retired. I honestly don't think that they thought that Kristen was a very easy person to deal with. And that had effects for quite many years. I think there is a recognition that the work that we're doing is important to computer science and in a sense, all the more reason for bookkeeping and accounting for how many citations people have and how many of this and that and the third thing has actually maybe made it clear to many people that the kind of work we do is also recognized and so on. So, I think it's less a struggle now than it was in the past, really. It also, there were also for various reasons, we did have a spin-off of the HCI that got started when they did this arts or humanistic computer science education which has been known under many different names. But if you look at what Aarhus University is today, we're probably over 70 people who are doing HCI research, and surely not all of them are in the computer science department. So, we also have this big group and a wide field of people who are collaborating back and forth also in and out of the computer science department. But I think we are still the toughest in terms of formal merits and citations and all that. But it's not as if HCI is doing any worse than the rest of the department. So, the whole department is a very strong and internationally recognized department. And I think that maybe also just the recognition that is the case that whatever we do it's recognized internationally so you can relax and not feel too embarrassed about your colleagues on the whole whose work you don't understand, things like that.

Yost: In the '80s and the '90s, to what extent did you see a kind of Danish style or approach, a Scandinavian approach, European approach, and how did that relate to what was going on in the US? Were there significant differences and can you describe them?

Bødker: I do think that this whole taking an interest in what real people are doing in their everyday life has been characteristic to what we have been doing. Now I'm just talking the very broad picture, relative to what is often the case in the US. I also think that for various reasons, so I was quite involved with the development of the CSCW and the ECSCW conferences, in particular, from the '90s onwards. And I think there have also been some distinct differences between the kind of work that you would do and get accepted for the European conference versus the American one. It's a strange or funny combination maybe of more interest in real people and taking people seriously and understanding and

appreciating what their needs are, what they do and so on. But also, on the other hand, working more theoretical. And so, I think that somehow it's definitely true for Americans CSCW but I think it's also to some extent true for American HCI that it's, it's more like you build technology to evaluate and you do something with them.  Whereas, I think that many of the projects and so on that are interested in providing a theoretical bases for HCI, also for the future, are European. I have one of these European Research Council advance grants that is trying to do that. There's two in Paris, namely the one that Michel Beaudouin-Lafon has and the one Wendy Mackay had that are going in the same direction and I think they're unique. I don't think it's seen so much in the American concept, it may also, maybe part of it is also like, I have a feeling that European research is a little bit more interested in more long-term perspectives. So, I think both are more interested in empirically studying processes that are developing over longer time. But also, just spending more time with phenomena you can see. So, a lot of the US strategy, for me, is very much this sort of—now we have three papers or five or ten papers, however many papers you have for the next CHI conference, and then you move onto the next thing. But being able to reflect and think about it and account for things in a somewhat longer time perspective, I find a little bit lacking in general. So of course, it's probably also partly due to different funding schemes and what have you. I mean, I think there's not one single explanation to why this is the case.

Yost:  You kind of anticipated my next question. I was going to say, did the funding from unions as well as government in Denmark lead to differences in research compared to a lot of corporate funding for Xerox PARC, and before but also after ARPA/DARPA. The Defense Department, was so central to research funding early, in the formative years of CS research, in the US, it also increasingly pushed in the direction of, away from basic research and more towards applied research that could actually be for defense purposes in the 1970s, but by then the NSF had ramped up support to basic CS research.

Bødker:  Yup. In Europe, at least now, I think the, what is good in Europe is exactly the European Research Council because apparently they've been quite willing to put money into HCI research and it has to be high risk, high gain, and all of those things. It makes it possible, really, to take some of these bigger steps. I actually think partly my experience is in that it's a little bit difficult to get some of these published or published in some of these traditional venues, and I'm thinking that it maybe because we're just not used to seeing strong theoretical papers or, and stuff like that in CHI and in some of the journals, unfortunately. But I'm not saying it can't be done. I think that for instance the *HCI journal*, and that's also true back in time when Tom Moran was running it, has been more willing to take the risk, than the ACM journals have. And I'll say that I've been on the editorial boards of both ToCHI and HCI

Journal, so it's not because I want to point fingers at anybody, but I think when you look at it, it's actually true. Tom had a strong personal engagement also in getting some of these slightly different papers out. And he also risked clearing one whole issue for publishing a paper that Christiane Floyd wrote about out of Europe, or out of Scandinavia many years ago and stuff like that. So, ACM, is of course fundamentally an American organization no matter what they do and what they say. SIGCHI is not the most American of the areas, really. I also definitely know that Austin Henderson did a lot of work for reaching out to various non-US sites when he was involved with that. So, like this thing that happened over a few years called the East-West HCI conference, I think it was called, where there was a collaboration with Russia and Eastern Europe right around the fall of the wall and all. That stuff is a good example of attempts that were made. But still it's very fundamentally, it is American. Maybe you don't see it if you're in the US but surely when—

Yost:  As a historian, it seems that way to me.

Bødker:  Yes.

Yost:  But I'm somewhat outside the HCI community looking in. The first European CHI I believe was in 1993 in Amsterdam. Was that at all significant in your eyes to at least partially opening up CHI to wider perspectives and geographies or was it—

Bødker:  But we should also remember that conference was also a collaboration with the Interact conference. It was not only that, the first CHI conference outside the US, it was also opening up to collaboration with this more international organization (IFIP). I didn't attend the conference honestly, but I just was thinking which was which there, I don't know what was more significant that the ACM started to actually collaborate with people who had a more international perspective on what the conference could be or the fact that it was hosted in the Netherlands. I can't speak to that, really. But surely something happened.

Yost:  In addition to taking a more theoretical approach with a good amount of your work, you've also written, and perhaps this is related in some ways, practically focused, that participatory design researchers should be an activists. Is that an idea that is resisted in HCI and among many American and, or North American HCI scientists?

Bødker:  Well, I think it's more mixed than that. I don't think it's such resisted. What I do think is that there is a lot of focus on and it's, to some extent true also of the management at Aarhus University. This idea that when you work to develop new technologies, it's because you want to build something that

can revolutionize the world and can make money from it, so patents. But also, "Hey! Everybody wants to be the next Steve Jobs or the next Bill Gates," and I'm actually thinking about it much more as what is it that you can do when you're working in a publicly funded university and university system as we are here. I think that it's less about coming up with a new big thing but more about exploring the space possibilities that people have. So, I like to talk about alternatives. So, I'm thinking that if we can consistently demonstrate to people that there are alternatives, then that's the job we have when you're funded by public and state money because that's what democracy is about in a certain way, to help people see that they have a choice, that there're possibilities. So, I think that it's more predominate in the US than here that there is this idea that this is the new thing that can be patented, built, sold and so on. But I also think it's in a sense of fundamental misconception of what it means to work with technology that it would always lead to new solutions. But again, we also of course know that a lot of the innovation and that is true also in the US and not just here. It does happen with public money. There's this book by Mariana Mazzucato about that and, I guess, she's pointing out that even in the US, public money, even though it's often defense money, but nonetheless had mattered a lot more to the development of technology than Xerox, Apple, what have you, together over the years. So, I also think there's just this misconception in the world about what it is that leads to change in this technology space. So, it's kind of a long story but I think—

Yost:  Right.

Bødker:  So I don't know, but definitely thinking about how you can point people in different directions whether to or for technology and when I say people, it could be at all levels like governments, local governments, citizens at large or people working in particular areas or people in their homes, what have you. Right now, in terms of choosing technologies for your home, it's all a matter of going down to the shop and choosing between one thing and the other. But nobody, how do we really understand what these different choices mean also in the slightly longer term? Somehow, I have a feeling that in most recent times the Facebook and all the others have shown that technologies are not innocent but that it's only very recently that these discussions have been brought to the attention I would say of the general public.

Yost:  Yes, we held a major symposium at the Babbage Institute called "Just Code: Power, Inequality, and the Global Political Economy of IT" in which we explored power dynamics and power relationships, exacerbated by the control of capital and basically lack of regulation and how it's impacted people of

color and gender discrimination, disability discrimination. And it was our largest event ever. We had 345 people attending.

Bødker: I also think that the recent whole story about vaccines is an interesting case of this because it also, it seems at least looking from the outside that for a while, researchers have known how to do these vaccines but there have been no business cases for improving the vaccines. Now all of the sudden with COVID, there is money and there is a business case for it, and all of the sudden, the vaccine becomes important and all of the sudden there's also a vaccine for HIV and what have you. Of course, they've more or less been able to do those for quite a long time. But nobody had paid any interest to it but now because of COVID, then all of the sudden everybody's interested in vaccines. So, this is of course not something that's only about computer technology, but it's been a strong phenomenon in computing.

Yost: In the mid-90s, I believe it began in '94, there's a project in Cape Town, South Africa, the Health Information Systems Program [HISP]. Can you tell me a bit about that and also compare and contrast this program with the Danish 4S program?

Bødker: I've not been involved in all of them so it's a totally outsiders' perspective I would say. Starting with the 4S program, it's one of the things that Morten Kyng is good at, having these visions. He saw that in the hospital systems, it's true in Denmark, it's probably also true in many other places in the world, so much money was spent on these systems that were to some extent quite dysfunctional. And they knew they were just produced by some big international capital. And so, in a sense even the politically most conservative of doctors found it really frustrating that there were cutbacks everywhere in the hospital system just to have to pay all of these big bucks to these people who were then providing some rather useless systems. So, it was actually in a sense a good case for asking people if they would participate in trying to do this differently and then rethinking how open-sourced technology would be a good idea in this space. And that's what they're doing. And I don't have so many recent details about it. They're definitely working on it still. We'll have to see whether eventually there's a strong enough basis that they will start to have a real, say that the whole Danish hospitals system would start to use open-source technology instead of these big corporate systems. I don't know. I think that's a big step to be taken there that, who knows? But, again, it's an alternative. It's interesting to point out and to have that discussion with people I would say. And again, the African project; they've taken a different path for collaborating locally with people in various places and I think it's been impressive that they have been able to keep this up for so many years, but I can't really, I don't know enough about the details of how

it's going, what they're doing and what not. But I think it's a good example of some of these long-term commitments. Both are maybe good examples of that I'm also looking for and thinking are important and not just these one-off things that can lead to the next CHI paper and then onto the next thing.

Yost:  I haven't asked you any questions about your role as an educator. Can you talk a bit about your philosophy in educating both undergraduate and graduate students and what you find to be especially effective tools and practices with education?

Bødker:  What we have done in Aarhus, again since the time of Kristen Nygaard, has been to send out our students to study at real design, real development processes in companies and NGOs and we've done that as case studies. For many years. We don't do it as much right now as we probably could. I mean, right now we won't do it because it's tricky because of COVID but I think we should do more of it again once we can get a chance to and more structured. But I think confronting the students in a sense with the reality out there and not just having them think that what computer science is about is to develop some really nifty algorithms for their databases for that. I think it's the most important thing I've done over the years, and it by far beats any specific contributions of trying to bring my own research into the hands of the students even though I also do that. So, I think that is important and everybody should do it.

Yost:  In 1998, you became the co-director of CHMI and that of course was funded by the Danish National Research Organization. Can you tell me about the launch of the Center and your primary goals in co-directing?

Bødker:  Yes. It is in a sense interesting that in Denmark we've had three rather strong traditions for theoretical traditions I would say for human-computer interaction and maybe again painted with a little bit of a wide brush but you know that the national lab at Risø had a long tradition of, through the work of Jens Rasmussen who was probably in a sense the most well-known Dane at least in human factors and HCI and his work on control rooms and all that. So they had a very strong group they're doing that kind of research and we had our group and or rather we had two traditions at Aarhus University, one was the activity theoretical one and the other, a more semiotic perspective that was rooted in the work of Peter Bøgh Andersen who was then a professor in the Arts department. And what we tried to do in that Center was to do bring those three theoretical traditions together. I think you can say it led to some really interesting projects. We also did really interesting empirical work. It's quite interesting to see that one of the things we wrote in that Center that never really got published except as an internal report is

among my top cited publication. So, it's a long story why it didn't become published and I don't think I want to go into that. But, again, there was some really hard-core theory work that happened in that center that ended up for instance as this internal report, and again, that people apparently appreciate since it's still cited and so on which I really find surprising I must say, I hadn't noticed had it not been for in a sense for Google Scholar who brings out all these things. I'm not ever sure I would've remembered that this was a thing but it gets citations and it was an interesting job and it was a great group of people and hang-arounds because one thing were the students we had the people we paid there was also just a wider interest among researchers both in Denmark and also internationally around the work we did. So that was interesting and again, it was where probably one of these high risk, high gain activities like that some funding resources do at certain times. They weren't too happy with us, so we didn't get an extension which a lot of these centers had. It was largely what made life impossible for us in that respect which also then speaks to maybe why we didn't get this paper published was the strong organizational interest in particular of this national lab of having all their stuff front and center and everything the Center did, which was not so easy for us in Aarhus and also not fair, but it meant that—you know, it was not the people we worked with, it was definitely something coming from the outside. But it meant that it just couldn't continue another five years, which we might've have been able to otherwise.

Yost:  You've emphasized that it's both important to learn from success and failures. Can you briefly mention one of each and what you've learned?

Bødker:  I should've prepared myself for that one, shouldn't I? I genuinely think and again, that's maybe getting back to different traditions and so on that in human-computer interaction, we are very bad at writing about our own failures. It is kind of down to the fact that you see: "…and the users liked it" in many papers and in that sense I think sometimes it would be more interesting to do a, write about what the users didn't like, if you see what I'm saying. But it's very difficult to do. So, over the years we tried many things and done many designs that the people definitely didn't like and that didn't work. And I think we should, this is probably true for myself as well, it would just be better than trying to publish some of that stuff. So I'm also thinking, but you said you are a historian, but what kind of stays and in hindsight are the important things and what you think are important at a particular time aren't necessarily the same things. So, with the UTOPIA Project, there was definitely this strong focus on building and technology that should get out there and that newspapers should use. There are all sorts of reasons outside ourselves that for why that didn't happen. But Morten and I had a conversation not too long ago where he said the way he often—he's very good at looking at things strategically—but you

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know if that hadn't happened, then probably the UTOPIA Project wouldn't have been known by anybody. It was in a sense because it didn't happen then because we had to focus on other things such as the design methods and write about those and they were new and all that, that the UTOPIA Project is still known. Had we built a system and two years later hadn't have done what we all look at today, nobody would have cared.

Yost:  From 2012 to 2016, you were co-manager of the interdisciplinary center, Participatory Information Technology. Can you tell me about the goals and the missions with this Center and the work that you did?

Bødker:  Yes. As it happens, we're still doing activities in that Center. So, the University, Aarhus University, for unknown reasons or rather the vice chancellor of Aarhus University or whatever you call him, thought that doing interdisciplinary research was a very important step into the future. And so he assigned some money for these interdisciplinary centers and we ended up applying for this center on participatory information technology which was a collaboration across the departments at Aarhus which is called Information Studies or now it's called Culture and Communication and us, computer science. So, I was running it with Kim Halskov who was a professor in the other department, and I think it led to quite many specific empirical and theoretic projects and discussions. But also, just to this, a unique chance to actually gather all these people on a regular basis and have them talk and discuss. So honestly a lot of the money we had went into meals and meeting rooms, just to provide the facilities for people to talk. And this is in a sense all still happening. We had some rather successful ways of doing an external seminar every year in August where we invited people to come and have discussions. And people were—it's kind of interesting when you're invited as not just as a keynote speaker or a speaker to a foreign department but you also know that there're also be these two or three other people coming on the same day and you have an audience and the idea is debate and discussion. So, we found a good format for that. We tried to continue with that. Now COVID has, we don't have quite as much funding as we used to, so COVID has also changed this a little bit but I think we still want to continue doing it for in a sense also into the future. Right now, we tried to—since we also always had had an internal retreat in December, we're trying to switch them around just because we think it might be easier to actually travel in December than it is in August. So, we're doing an event in August but that's an internal one. But I think really our—what it means is that we have always had or always for this many years had a very strong friendship and collaboration across the departments in terms of the PhD students and the post-docs and so on. And this is as both a social thing but also, they publish across the departments, across

the groups, across people all the time and we do a lot of things together also where we're sort of more or less social. So, I think that is nice and we are all the time debating whether it should still be called Participatory Information Technology, or we should just call it human-computer interaction at Aarhus University. So, I think that probably right now the way it's going also to—we've had at AU a tendency of not calling things HCI. I think it's for historical reasons. But branding-wise and also when you're hiring new people and communicating with the rest of the University and the department, it may be a mistake to not use the HCI brand. And I think that's the debate we're having.

Yost: Over the past couple decades as computing and networking has become ubiquitous, has there been more inter-disciplinary interest in connections with fields there haven't been in the past at Aarhus University, especially in the social sciences but also perhaps the humanities and the arts?

Bødker: For most parts, I would say the connections have always been there.

Yost: Ok.

Bødker: At the same time as this Center for Participatory IT started, we also, there was another center called Interacting Minds, and that is an interdisciplinary center studying people's minds in the world. So, it also has connections to some of the stuff we've been doing, and I think that is a connection that continues also for new grant proposals and stuff like that. Unfortunately, the Psychology Department, which was very strong, don't have much of this research anymore. I think it's a strange effect of the fact that clinical psychology was so high in demand. So, some 15 years ago, whatever, they had to focus all their resources on training clinical psychologists. So it was at the same time as some of these other old professors retired and so on, there was really never some new people coming into the space who were doing these theoretically—so Klaus Bærentsen who has been part of it all along, who also had done human-computer interaction is the only one there now and I think that is a bit of a pity but I think they lost it. It's one of these things that can be difficult to bootstrap when time has passed and people are gone and all of that so it really means starting over and he doesn't have the energy for that so that's fair enough. That's a bit sad.

Yost: Your university is a global leader among the global leaders with interaction and design, and in Copenhagen, the Copenhagen Business School is among the best business schools in the world and arguably near the very top in Europe. Have there been many collaborations and given the fact that probably a lot of leaders of corporations come from Copenhagen Business School, do you feel you've

had an influence on researchers there as well as students there, future business decision makers, with regard to design in practice?

Bødker: I think it's; the answer is a two-way thing and one is that yes, we do have a collaboration with Copenhagen Business School. Since they've also done HCI and also information systems and stuff, also since the beginning of times. We also do have a very strong business school at Aarhus University. And maybe strangely enough, we don't have quite as much collaboration with that, but we have it. But I think part of the challenge of being in a very strong, competitive environment in many areas is also that they—I'm not sure how interested they are, if you see what I'm saying. Which I think is a little bit sad. But they're very strong in all sorts of things; economics and finances and what have you. It feels as if at times education get to be what they are or also because there are people who influence this because it's their fields and so on. So, we have not had very much specific influence on any of this, but we do have— there are people there who are interested in what we're doing and that's both true for Aarhus and Copenhagen.

Yost: I asked you earlier about the first wave of HCI. Can you talk about the second and third waves and how you see the discipline evolving over the years?

Bødker: Again, first of all, I think it's probably important to understand that I like to talk about them as waves and not generations and I don't think it's because one goes out the window when the next one takes over. So, for these three waves, they co-exist. There's still research going on in all of them. I had a, I went to the, right before the whole COVID lockdown happened, I went to give a talk at this Halfway to the Future thing that was organized in the UK. And anyway, just to say that I think it's really, in that sense, an open question whether there would be a fourth or fifth wave and even that question is interesting. But the second wave for me is the focus on the use of technology in human practices, maybe in the sense in formal practices. I think the second wave is often connected to work. I don't think it needs to be exclusively about work but to study people's use of technologies in particular in shared practices and to look at what's actually happening in the situations to also take to include some of the work of Lucy Suchman into what I think is the second wave to study the work, not necessarily the work at a workplace but the activity as it's unfolding and happening which is of course also why stuff like ethnomethodology has played quite a significant role in the empirical methods of the second wave of HCI. The understanding of how practices form and come to be and are influenced by the technology or are shaped by the technology but also shape the technology, shape the use of the technology. That's what I would say is the essence of the second wave. And the third wave is, there was this, started to be,

I guess sort of saying, "Well, you know, all this work is so damn boring, right? So why don't we try to think about how people experience life and what we do outside work and all of that." Which I would just say there's nothing wrong with that. So, more experience orientated frameworks, more methods that talked about that and also be focuses on feminist or other kinds of approaches to HCI. I think it'd probably be seen as third wave. And when I try to talk about it, there are some interesting tensions between these so as I'm saying I don't think that one comes and the other goes, but it's interesting and we're getting back to maybe some of the stuff we talked about earlier when you asked about what the impacts were on, of these early Scandinavian projects on life and society in Scandinavia today. It's almost as if we have more choice when it comes to everyday technologies than when it comes to what you can do in the workplace and I think we should remember that. So at least what you can do, I mean, it may be very individualized but you can go and take one kind of phone or another kind of phone or something off the shelf and put on the apps that you want to have. That's not the case for the technologies that people apply at work. So I think that somehow we should go back and have a new discussion of what it means, technology in the workplace in this current day and age, not just take it for granted, and take whatever we got placed in from of us but to actually work with choices also there. I do think also, the other way around, that the focus on collective practices and so on shouldn't be forgotten and my concern is with the third wave a little bit that it's becoming too individualistic, that's it's about individual experiences and so on which I really don't buy. So, we shouldn't forget that we're in this world together and we do things together and that's shaping us and we're shaping it.

Yost:  You are the principal investigator of the ERC Advanced Grant project which started in 2017. Can you tell me about this project?

Bødker:  Yes, I definitely can. I have become a little bit annoyed with the ways we think about technology as pretty much something for us all individually, and it's from the personal workstation to our phone and so on, so I want it to bring into this picture again this more collective perspective, so that's part of it. So, it's called Common Interactive Objects and I'm fundamentally interested in how we people together can shape technology, and getting back to my past at Xerox PARC and so on, Alan Kay had this thought about the clay of computing and I actually think we really hadn't delivered. We really don't understand what the clay of computing is, at least not in a way where we as non-tech specialists can help shape our technologies. That is slightly philosophical and framing of the project and so what we do is, we do a lot of work to try to study what it is that people do together with technologies and try to come up with alternatives. And we do that also in terms of trying to think about how the computer is

new materials and also other modalities and so on can be useful in this process. And then how that connects to how we can shape together and how we can understand that. So, in the tradition of how I've been working all along. It is a combination of theory development and some empirical projects where we work with some user studies, study some activity, build some alternatives and think some more about those. And we don't know where it's taking us but that's one of the good things of the ERC, the grants, that they have to be high risk, high gain, so, we'll see. We still have almost, well, a year and a half, so a lot can happen still.

Yost:  Before we conclude, are there any topics or things I haven't asked about that you'd like to discuss?

Bødker:  Oh, gosh. We talked about quite a few things, haven't we?

Yost:  We have.

Bødker:  No, I don't think so. I think it's been many different things. I am as we talked about concerned about what an international community for HCI is and could be. And they're all the time these changes also for involving new parts of the world and so on in that, and I think the participatory design conferences have now started to go for instance, to South American and Africa, and so on and we should, I should definitely also do more of that, going to Yokohama, Seoul and Hamburg. That's not really going international. But I know the organization and making these decisions is of course difficult and some of this is tremendously impractical so I'm not sure when it will happen.

Yost:  Well, thank you so much. This had been fascinating and really appreciate you taking the time today to—

Bødker:  Ok. I hope it can be used. And if it—

Yost:  It's definitely very useful and will be cherished by SIGCHI but also by historians and social scientists studying the history and sociology and anthropology of HCI.  So, thank you very much. Within probably about a month, we'll have a transcript for you, and then you'll have 30 days to make any deletions or edits that you want to the transcript before it becomes public.

Bødker:  That's fine. Excellent!

Yost:  Ok. Have a good rest of your day. Thank you so much.

Bødker:  Yes. Thank you! You too. Bye!