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Cultures of Participation

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>> So, you know, what is important and I think one thing how I also thought about this presentation was I calculated there are 20 -- roughly 20 presentations, which you will hear over attending this symposium. And a rough estimate is that you will see probably in the order of a thousand slides. So I asked myself, [laughter] you know, what really sticks with you? Like what do you still remember in -- at the end of the workshop, in a week, in a month and this -- I mean, I asked myself when I give, you know, teach a class and I find out that the students I asked them months later, they have no idea anymore that we talked about this. So I tried to kind of put together a presentation with hopefully a few memorable elements to it. So first a couple of acknowledgments we have a couple of NSF grants, which study some of the work, which I'm talking about. Even the roots go much further back and David McDonald deserves credit for being somewhat one of the architects of the SoCS effort. And we have one of those grants. We have one of the Cyber Enable Discovery grants. Then also this work is not work which I just have done so if you have difficult question you can ask Heiger who sits here that has done a lot of work. So this related research at CU and there is a project, which my colleague Leysia Palen had and Joanne White is here and if you have questions about this you can ask her. And I own a paper about this which you can look up if you are interested which is on my website. So we have the center for roughly about 20 years. We had quite a few PhD students graduating and this was sort of a slope in which we developed. What we wanted to do basic research on real problems. And I had many discussions with Ben on his ideas that we should address national biologies. I mean you question just came up that we should be more problem driven. So this was the basic architecture to start off with important problems, then to work in the space of theoretical frameworks system building efforts, steady practice in doing assessment and then asking ourselves what is the impact of this research? And this file indicates I can start with different things. I can first do a data collection which helps me to contribute to my requirements what I really tried to do and so incrementally what this file tries to indicate by moving between these different things, it just may also provide a little bit longer term consistency, we get deeper incites. So I think that came up numerous times and I like this code. It's originally in German but in English translation would look like this. [inaudible] Philosophers interpret the world in various ways but what matters is to change it. And we have often framed sort of our research question by saying we want to contrast understanding how things are. And there we study existing systems. We do data collection. But then we also want to compliment this exploring how things could or should be and we want to develop new systems. And what I will do today is to show you a number of developments, which sort of are integrated in both of these aspects but like the previous slide also tried to indicate, we also wanted to try to do both things. So -- how do we understand these cultures of participation. It's a shift from consumer cultures. We as a focus was to put used -- finished goods to be consumed passively by other people to cultures of participation where the focus is to provide all people the means to participate actively and I will return to this place a number of times in personally meaningful problems because I think that is a concept which evolved over time in our research activities. So in the spirit of that problems are important, we can ask, well why -- what else type of problems which cultures of participation may be able to tackle. But we have problems of a magnitude, which even individuals or large teams cannot solve. And I will show you examples of this. We have problems of a systemic nature and little conversation just at the end of the previous talk indicated this. You want to have different minds collaborating because they do not file neatly in one discipline. We have problems, which are poorly understood and ill defined. The interesting aspect of this is if we cannot be involved ourselves as participants it's difficult to delegate these problems to other people because they do not understand them. And we have problems which model changing in unique worlds and therefore they

depend on open living information repositories and tools. So these are classes of problems and I will show you examples of how we tackled some of those. So let me start with showing you two movies and as Ben said I skied a little bit in my life and the first movie is a movie in the spirit of cultures of participation. So I talk about cultures of participation so I felt I should post at least one movie on YouTube to say I have experienced that. And you see, it's only one and a half minutes long. It has been there a few years. It only has 210 views so I don't put this up to show you know, how great I am. Actually, you know very poor result because the second movie, which I will show you, has 137 views. So, you know, what is the contribution of my movie? But I think the interesting thing is if you think about the cultures of participation we have to understand that the object and the people whom we want to address offer very different [inaudible] so the use of this movies is maybe to tell users about helicopter skiing if you have never done this and you are interested in this. I could submit it as application material for my skiing ability so if Ben invites me to ski with him I can say look, this is what I can do, are you willing to take me along on your ski trips. So I can do this. I can remember this vacation and so it's in, some ways, personally meaningful. So 210 views are okay. I didn't have the Intention to put -- use this movie to show it to the world at large. And then we can think about what other technologies into knowledge how to use this technology to create something like this. If we want to create a culture of participation, this is an important issue. And who has ever heard of Warren Miller just out of curiosity? So I will show you a little movie from him. And you know, these guys, they fly these helicopters over the skiers. The skiers are much better than I am. They ski in different terrain so I use this as hopefully maybe one memorable story of all of this so let me start with my movie. So I have no responsibility for the sound.

>> I actually -- do you need the sound?

>> Yeah. A little bit. [playing movie]

>> Ah. It's a good one. [laughter] Go, go, go. Up, up, up, up, up, up, up, up, up. Yes. Woo. [inaudible] Oh. Yes.

>> So you see them come out of this -- [laughter] Oh yeah. All right. [inaudible] Come out. Get up. I've got you under my skin.[laughter] All right. Oh now we're talking. [inaudible] [laughter] [movie ends]

>> Okay. So you know, this is low cost production. No production values. I mean some technologies which we had, the person was sitting there was filming us. We come out and you don't recognize anyone unless you know who it is and so on. So let me show you the Warren Miller movie. The same happen for this link?

>> Possibly.

>> Oh, where am I?

>> [playing movie] So how long have you been living --

>> So this is ten seconds of advertisement, which I didn't know how to edit out. In the cultural participation, I would like to note this; I could have started at 10 seconds. So [laughter] [playing movie]

[Music]

>> So as you can see they are much better skiers than I am. And I ski also [inaudible] [laughter] The experience that you're getting at that moment is something that can't be quantified.

>> It really gets your heart going and it's always a lot of fun. I don't think that's ever going to get old.

>> I don't know if there's anywhere better in the world to be than right here right now.

[Music]

>> So you can watch the movie yourself. It's on YouTube. So why did I show you this? Well the point is if you talk about cultures of participation, I mean we have the opportunity to create movies which are potentially available for the whole world, but obviously we don't want to compete or we cannot compete with respect to production values with a movie made by Warren Miller, but I think this notion of personally meaningful, if you want, you know, a child and plays -- he or she plays at the beach you don't want to hire a professional company to make a movie of them but you want to make it to do this for if the child grows up or to send it to a grandma and so on. So here are a few remarks, which we collected, or which we collected and this is the selection of why cultures of participation may be an interesting concept to pursue? So the first one is from [inaudible] and he says basically, if we participate in the decision even if the outcome is the same, he likes the decision more. I think this is an important issue, which comes up in numerous cases. The second one is from [phonetic] Christof Alexander. He is the guy who owns a book about patterns and he believes that people should be involved in the design of the buildings in which they eventually live. The third one is from the open source communities, which also says, you know, the agricultural is fundamentally linked to questions about human motivation and I will come back to this a little bit later. There is a very nice book that I can recommend from von Hippel about democratizing innovation. He says users that innovate can develop exactly what they want. It also seem to be relying on manufacturers to act as they often imperfect [inaudible]. And the last one is from a book by Benkler who which I think provides some sort of maybe [inaudible] foundations and ideas about cultural participation. So for me, I started thinking about this issue started over 10 years ago when I wrote a paper entitled "Beyond Couch Potatoes, from Consumers to Active Contributors." And I was all enthusiastic and thought, you know, I'm an active contributor. This is a good thing to do to participate and everything until I found out that sometimes I really liked to be a consumer. And I think I also got a lot of criticism for this paper and I think this led us to what I now consider an important distinction that we can fail in two directions. That sometimes I want to be a designer but I'm forced to be a consumer. And this is in personally meaningful departments. Things we truly care about. But we can also fail in the other direction namely, we want to be a consumer but we are forced to be a designer. And this is for personally [inaudible] departments. So if you walk in an airport today, you are forced more or less to check in yourself. You can think about banking elements. You can think about checking out at supermarkets, where some of us, you know, we want to be consumers but are forced to be designers. So this is a, I think, an important distinction where this notion of personally meaningful plays an important role. So there are concepts, what we really want to develop is a coherent framework for this notion of cultures of participation and there are a set of emerging concepts, like one concept used by numerous groups is consumers to indicate that we break down some borders between producers and consumers. Another concept is pro-ams to break down the differentiation between professionals and amateurs. There are slogans like user generated content, wisdom of crowds, crowd sourcing, long tail. And I think what's needed is a better model to understand and foster the cultures of participation and this would also include that this is part of a model to better understand technology mediated social participation. So we can in the very initial attempt to come up with some elements of such a model is we try to identify some strengths and you can engage the talent pool of the whole world in the cultural participation. You put owners of problems in charge. I could make my own movie. You make all indifferent voices heard. You reach extensive coverage. I think one of the great things for me in Wikipedia is the immense amount of coverage and you expose artifacts to public scrutiny, which may make -- which may influence quality in a positive way. I think along this, we should also select on what our weaknesses of cultures of participation. So one can say collective is not always better. And which condition is it better and which condition is it not better. We may suffer of a loss of individuality. There may be an accumulation of irrelevant information. I mean the number of YouTube movies is basically infinite as we sit here. The statistic says every minute, whatever three hours of movie watching that's uploaded, whatever the exact numbers are and most YouTube movie

we probably never want to see. So the lack of coherent voices that I think -- and I won't have too much time to go into this, but companies offload work to customers. So there's an interesting question what our topics often do-it-yourself society. And I just mentioned, you know, already some examples with checking in your own -- checking in our self, checking out your own groceries and the problem is customers lack the experience and the background knowledge to do tasks efficiently and effectively. And you can even think, you know, that we have two types at our own paper. I actually, while I was here, I had to struggle with a publishing company because they gave me such a tough time that I wasn't exactly following the publishing guidelines, but I don't have the broad knowledge because I don't do this all the time like -- there was a separation of expertise in the different areas. So this is just a table of different systems we looked at in which we have taken into account. You may know some of those -- I mean the encyclopedia of life. Jenny has studied this. She has a soft spot about it. Again out of curiosity, who has ever heard of SketchUp and 3D Warehouse? You? You? Who has ever contributed a model to this 3D Warehouse? Here are a few more, the scratching violin. I think and that's a really interesting one, PatientsLikeMe, which is sort of an alternative way of exchanging information again very much in a personally meaningful way. So basic story there is you know, we may be interested in Parkinson's disease and we may have intellectual interest in going to understand this disease but at the moment if someone tells us we have Parkinson's disease ourselves or a close family member has Parkinson's disease then this becomes personally much more meaningful. And I think PatientsLikeMe is an interesting network to analyze from this perspective. So what I want to show you are the few examples, not in any detail. The first one, as I said, talk to Jenny. The last one I have applied these ideas to my own teaching activities and if you have enough interest you can go to my home page, there are links to a number of many causes which I have developed and talked about applying these principles to see the more cultures of participation. So SketchUp, this is a system where you create 3D models. Then you can upload them to a 3D Warehouse and the question is, you know, what would -- and when I asked you who has -- who knows SketchUp, quite a few hands went up. When I said, who has ever contributed a model to SketchUp, nobody did this. You shouldn't worry about this because we have the whole world population as potential contributors and there are a lot of people who develop SketchUp model. [music] So what I wanted to do is to basically show you another little movie, what will motivate people to participate in SketchUp and this will give an account of

[Pause]

>> The top one.

>> Thanks.

>> [video playing] A lot of the reason that I started modeling building is because [inaudible] It was, you know, interesting seeing big cities like New York to have all these models popping up. Seeing that it could happen in Calgary or Vancouver or [inaudible] was just exciting. I think the big model [inaudible] bridge is a prominent structure in downtown [inaudible] And when you see this bridge pop up is definitely unexpected. What I model basically is my city but it's also my neighborhood. It's where I live and where I work and so when I do models at work it's sort of seeing the city the way I see the city.

>> We found tremendous value in modeling our downtown because we wanted to have an opportunity for other people to be able to experience our downtown. We can actually bring people into the downtown thanks to SketchUp by making 3D models of our buildings, using the way it's embedded into Google Earth we were hoping to start with just one block on -- known as Waverly Place, it is the center of the downtown and we're going to start with that block and then the project grew. [music] And ended up, I think we had 23 volunteers and each took 3 buildings so that portion of the project is complete but people can't let go because SketchUp is so addictive to do they're doing more buildings and they're going further east to add that three dimensional aspect to it really gives you a feel for walking around the downtown.

>> I think what I'm most excited about seeing it in 3D is the relationship that this campus has with the city of Boston. It's really hard for people who've never been here to understand what it is about Boston University that separates it from other schools and it's hard to communicate that through 2 dimensional images so we brought in the 3 -- [movie ended]

>> So again, if you want, you can watch this movie -- if you want you can watch this yourselves. But I think this question which, you know, turns one of these collaboratively constructed sites of cultural participation into success was as a failure, I think is closely related that we need a better understanding of motivation [music] and what motivates people to do so. We participated -- I mean SketchUp was owned or was part of Google. In the meantime it has moved on to another company. But say brings 300 top modelers once a year to Boulder and discuss with them further developments so there are 10,000s of people constructing 3D models. And I mean the question is -- someone brought up the Wikipedia, you know, is sort of, there are questions is the dynamics still the same. There's hope for this also. So the 3D Warehouse you collect all these models. There are different roles like curator models and say Encyclopedia of Life also has studied this very closely, what are the role of curators and we have looked into curator roles. There's also interesting questions, what tools do we give to curators to do say a job effectively? And what do you get out of it? This is a model using 3D which you get if you turn on the 3D flap from downtown Denver and this building in the foreground is the Denver [music] Public Library I showed you earlier as a particular model developed in SketchUp. So this is the first example, which I wanted to give you and it was -- I mean it's a big success if you count the number of people who participated in this. So another outcome in NSF was creativity and IT and we got a couple of projects from this program. In one -- two projects were supposed to develop [music] new wiki style environment. There, the whole community, meaning all people who had transferred from this program would get together and as you see over there is a link to a graduate student community so we took document consortia contribution from a certain conference to see this environment. We thought the idea was that graduate students doing PhD thesis on the topic of creativity and IT could work together, could interact with each other, and we develop new ideas about support mechanism and so on, but success was at best modest. It never really took off. It never reached really the tipping point. And I mean, we ask ourselves repeatedly, you know, what -- did we not do a good enough job? Why could we not motivate people to participate in it? I mean, first of all maybe who had seen this before? Ben, but no one else. So, I mean, this is an interesting question is the first level is how do people become aware of such sites? And there are, you know, 10,000s whatever, and I mean we tried to get the community involved and -- actually from a different NSF program, a group at Arizona State University just got another grant to revise this work, which we have done, and potentially carry it further. But very modest success and we still don't -- we tried to analyze the data. We interviewed people and we still have vague ideas, not adequate explanation why did we not succeed. So our recent grants deal with energy sustainability so maybe fitting Ben's call to address problems of national importance. For those of you who have never thought about this, what happens there and what ideas are is you have an electric grid and then currently there's a huge development. There's lots of money involved to build a smart grid and that means you build a smart distribution network. You have smart meters in advance smart infrastructures. We attended a conference a little while ago and people said there were 300 conferences just last year addressing problems related to the smart grid development. What we are interested in is not, you know, to create more energy to distribute more effectively but we are interested in the human grid. The social environment where how much, you know, do people need to understand to move from passive consumers of electricity to active contributors. Being informed by smart meters it may be changing their behavior towards how they use energy. So here are a few things, most of what I said here on this slide, I said already. I mean, one interesting thing is like, one really can speak of energy illiteracy and most people, and this is well documented through interviews and I don't know how you would respond to it, you know, what is electricity and so I think, well, you plug a plug into the wall and electricity comes out. And how do you, you know, understand it? How do you measure it? Why should you care about this? The information

presentation is poorly designed so if you pay your own energy bill, how does it work? Anyone? How do you -- you get an energy bill?

>> Yeah.

>> You look at it?

>> Yeah.

>> You understand what it means?

>> I have too many computers. [laughter]

>> Yeah. So and the feedback which we get is really not persuasive enough to change human behavior. So all these questions which we pursue and intersection of human behavior and individual level and social level and technology. So we worry a lot about feedback mechanisms and how this could increase the potential of energy savings and the question was, what kind of feedback and given when? In this case we relied, sort of, on previous work, which we have done as well as other people to incorporate this into these approaches. So also when people spoke earlier about interdisciplinary collaboration. So this is a whole discipline which labels itself as equal as and what they tried to do is rather to provide feedback in The form of if you have used so many kilowatt hours to provide feedback in a way which really makes people more which makes things more understandable. So we do -- because we look at data, even I said we are always interested not just to look at data but to build on the inside of data. This is data from a large study, which a colleague of ours at the University of Colorado conducted. And what it basically says is that if you have realtime plus feedback, which is realtime feedback down to the individual appliance level that this leads to energy savings. So rather than getting a bill at the end of the month you cannot surf in school the right kind of software environment you cannot surf this on your whatever iPhone or laptop, you could surf now with the system in place, what is the energy consumption from your home -- which currently happens. So we use this and this is a system, which is [inaudible] constructed. Another interesting issue is which role do social norms play? So if you compare yourself with neighbors, how much energy do you use? And is that you are the biggest energy hog in the neighborhood, is that an important element which people should be aware of? And I mean an interesting question, which surfaced a number of times, is how much does this reach into privacy issues? But we tried to study sort of the literature on social norm understanding some of the experiments, which people have done and applied to this research. So this is some work on energy related stuff. For a long time, we worked on urban planning problems. And we worked with tabletop computing environments. And the basic idea was to bring people from different backgrounds together. So it's just where really interdisciplinary constituencies discussing issues so this notion of cultural participation, we do not only see it that this is sort of to be studied in online communities. I think this is another very interesting application domain of analyzing cultures or communities. So I showed you several examples, some we did with other organizations together. Some we developed ourselves. Some of them were at best marginal successes if not failures. Some of them accum-- attracted a lot of people. Along with kind of stepping back with this individual development, we wanted to create some conceptual frameworks to think about these issues, potentially applicable to all cultures of participation and I put this stuff in red because this is -- I will not talk about if you look at my slides, you can read about it in more detail. So what I want to talk about briefly about is meta-design and richer ecologies of participation. So meta-design is something what we have pursued for some time and we see it as that we design for designers. If we talk about cultures of participation for the people to participate means they engage in design activities. So I think it would be an interesting question to pursue, you know, with your final common knows the user and with everything else will fall in place. I mean, knowing the user, what kind of user? Is the user empowered to act as a designer? If we allow the user to act as a designer how much control do we give up and so on? So one of the interesting

things is that if you look at all kinds of artifacts, there are two times. One is the design time and one is the use time. And a lot of methodologies from user end of design to participatory design. I primarily look at design time. But at this time you cope as a world as imagined. We predict what will happen later. There is a use time; you can cope with the world as experience. Here you have to deal with predictions. Here you have to deal with reality. Here you deal with planning and here you deal with situated action. And if you have followed sort of the literature around expert systems and so on, while they have not worked too well is because these open systems need some involvement, need continuous development after they are designed. And if you want the users to have something to say, we need to pursue something like meta-design to make this happen. So next topic which I briefly want to mention is to think about richer ecologies of participation. And in the past we sort of had, you know symbol -- and I mentioned this earlier, distinction between software developers, users, producers, and consumers, professionals and amateurs. And in the future, there will be more roles and if you look into some environments, you have producers; you have people who engage in writing, packing. I mentioned already that in the 3D Warehouse or in the Encyclopedia of Life, they study very carefully the role of curators. Then another element initiated originally by [inaudible] book was to say well if you look at these goals you should not just look at the individual level, but we should look at a community and she could provide evidence that you had some developments of power users, local developers, gardeners and Jenny and Ben wrote a nice paper about "Reader to Leader Framework" and this has many similarities with our way to conceptualize this and -- at one level you have unaware consumers so you may not never heard about SketchUp. Nobody heard about the creative idea of Wiki. So if you are not aware then there's no way to participate and the first thing is that as a consumer you come away with possibilities you might turn into a collaborator, you might turn into a designer and you might turn into a meta-designer. And the interesting question is, you know, what motivates you to migrate along this path? And what the people get mad about Wikipedia is -- even it's not put into this diagram, people also may go back for a more demanding role and says well, I don't are the time. I, you know, I have done my part and so on. And so an interesting question is, how do we facilitate this? And what is the right number of people to have in the more demanding roles? So okay, to show that we try to put -- collect data, a couple of my students did a PhD Thesis along to study open source communities and one of them identified these roles in open source communities. So for example, a bug reporter would report a bug. A bug fixer would not only report the bug but also send a fix along. So obviously a bug fixer is a slightly more demanding role. And many -- I would argue that many communities or cultures of participation have a structure where the roles may be different label but I think they have great similarities with this ecology and it shows that ecology is not just sort of a binary state between two different things. So in the last part, let me argue that to this sort of thinking about cultures of participation it establishes new discourses and I argued for motivation. And one thing we have thought a fair amount about is participation is an issue of value over effort. So if people feel they get an immense value out of it, they also don't mind the effort. If the value is small, then there should also be a small effort otherwise nobody will participate. Another good example, which I will show you my last movie, is about fun as a motivating force.

[Music]

So in some ways, you know, if you really want to design new systems, if you want to find out ways how we can motivate people to participate, maybe to think about how can we exploit fun, may be a worthwhile activity to reflect upon. We have looked at this numerous times, debated it and one interesting question which we can't answer because it's not our movie and [inaudible] involved random people is how sustainable is this effort? I mean if I picture myself, yeah, I mean, you know, these piano stairs may be exciting but after I went up some piano stair ten times do I now have enough? So these are the interesting question to be asked. I mean, other interesting issues are questions of control, which you have in cultures of participation because people can modify the system and as the original designers always, you know accordance with this, the notion of ownership, autonomy, quality. And so people have written papers about what's reflected upon us but I think these are concepts which are equally important for if technology

mediated social participation unites our efforts, I would argue that these concepts are relevant concepts to be reflected upon. So developments always have tradeoffs so we talked about some tradeoffs between personalization context away systems and privacy issues yesterday so what we can identify and have time to identify advantages of cultures participation but also disadvantages and one of the things that is really critical in my mind is participation overload and participation is more demanding than just absorbing information and we have talked a lot about information overload but participation overload is really -- can become a serious problem and this is, I think, where this concept of personally meaningful consent. I mean, I would like to participate in many more things but I don't have time for and so I'm sure that all of you feel the same way. I mean, you know, you brought up whatever concept that I can set all the privacy slack but you know, is that what I want to spend all my time on. I just encounter -- I use Microsoft hotmail and I encounter a problem and then I was exploring the space and I could probably spend a week just to understand all the options which I have. It's not on the top of my list. [laughter] So participation overload is a very serious issue. And then there is the interesting question of do we create fragmented cultures because we have too many idiosyncratic voices? So we want to have different voices. We want to make all voices heard, but to which extent, you know, does that create a sort of modern version of the Tower of Babel. This is to engage people personally in the element of activities, you can say and I mentioned this already, we have all become telephone operators in reservation check in clerks check out clerks, file expensive reports and types of papers, many more things and if I picture myself as a faculty member, I do this very rarely. I'm not good at it and so this raises interesting questions of do it yourself societies. And then we can ask, you know, who are the winners? Just like with the issues that people debated, you know, we provide information to Google. Who are the winners? Is it Google or is it us? Now another interesting question is if you -- I don't know how you feel about it, I asked my students who were your age and I said well, if you have a 15-year-old sibling, do you think they are already more digital natives than you are? Meaning, you know, they were ten years younger than most of you. And they said yes, yes. My whatever sibling already deals with all of these issues very differently. So an interesting question is if we see things as burdens, you know, is it only because we were educated, we grew up in a certain way? So if you walk into an airport, do you check in your luggage yourself? Do you get your own boarding pass? Some leftovers who give the luggage to an agent? No. Nobody anymore?

>> It costs too much to check in anything. [inaudible] Right? [laughter]

>> That's enough of change or you should become a frequent flier so it allows them to check luggage for free. Okay. So in conclusion, what I think I argued for, what I wanted to show you some of the research which we've [music] done, that cultural participation represent opportunities and challenges to provide all citizens -- and I think that's an important added group, does it means to become co-creators of new ideas, knowledge, and products in personally meaningful activities. Where they really care about because they want to make the difference, then they should have the tools, the knowledge, the opportunities to contribute something to make or change the world in the direction in which they would like to see the world moving. Thanks.

[Applause]

>> Okay. Questions? Comments? Challenges? Thank you.

>> Yeah. You have some really interesting slides. One is about the big step between not being aware and then becoming aware of the possibilities for participation. And I was wondering if you had like good papers or additional sources about these kinds of things?

>> Yeah. I mean, if you go to my home page, there are PDF files of the papers which I -- which I should say we have published and folks at Title U can usually infer depending on your interests that there is something maybe about richer ecologies of participation.

>> Okay. So most of the stuff that you presented here has been published somewhere?

>> Yeah. I mean at least many parts of it. Yeah. And obviously in somewhat more detail and better arguing, more documentation.

>> Great. Thanks.

>> Yeah.

>> Certainly, I'm in favor of participation because usually that means exercise and that's good for your health, but on the edge of this there were a number of pinnacle and economic issues which have as much influence as any cultural one. Rejoinder that we don't check our baggage not because we don't like the idea not because we don't want to be a consumer, it just has a financial value, we make the tradeoff. Like wise with technology, there's something I can't do or my younger colleagues may be able to do simply represents the change in technology in the software realm from DOS to UNIX. It's not that one is better than the other it just changed on us. How do you keep separate where there might actually be participation that we could simplify [inaudible] People could all design their own clothes if we had enough automatic cloth cutters and a sewing machine. And things which you can't build so well on your own like design a bridge.

>> Yeah. Well the example, which I gave you with the two movies, addresses this issue. I mean, I cannot produce movies of the quality of Warren Miller because I would need helicopters, I would need access to the best skiers in the world and so on, but I can do it at some meaningful level, personally meaningful level and, I mean the other part of the issue is yes, we wanted to create, you know, tools which make these activities doable without extensive training and this is what I think computer science has done all along.

>> I guess I'm not sure I agree with your example. Warren Miller set out to literally create entertainment and glorify his own name. You may have under glorified yourself with that piece of skiing but I don't -- nothing you said about it made it sound like it was meant to be entertainment for other people. It was a recording for your own memory.

>> Well, yeah, but I could create this at least, don't you agree? I mean -- and you can watch it if you like it.

>> [overlapping speakers] Meant to be entertainment for other people. [inaudible] One was something that was a keepsake and the other was something that was meant for other people to see. Literally to have -- this question came up yesterday. What's the author's interaction with the audience? Warren Miller has a very different interaction with his audience than you have with yours and I'm not sure that's a legitimate comparison. It's tougher -- it's hard to find examples where the technology is the only issue. You might say there are some flat examples like the open source software but the technology is so well [inaudible] people that you can have people who do it as industry and people who do it as participation.

>> You know, and if you understood that I wanted to present a view that technology is a critical issue then somehow I wasn't able to communicate our intentions very well. I mean, the technology is necessary but not sufficient. I mean, we have created technologies, which people then, you know, had to acquire to participate in it. And for me, this was not something what I mentioned in this talk but [music] the most fundamental example of this is that we invented Tweeting and Twiting and then for centuries most people could not participate because they dependent on Skypes who would read and write for them. And in

today's world many people are dependant on high tech Skypes so other people do something for them and I collected all these arguments where Alexander says well people should have some influence in designing their own houses and this is obviously we don't want to have people who have no expertise to build or teardown structure bearing walls but maybe how your room should be painted where you want to put your pictures up and so on. This should be more under [music] your control not under the designer's control.

>> Well my concern is there's actually a very limited sphere where you got that kind of choice.

>> I don't think so. I think it's open to -- you know, I see this happen all over the place. I mean, I be -- now all -- probably everyone in this room types up his or her own paper. In this way of the technological developments like laser printers and software developments. I mean when I first started to write papers, I mean what we had as consumers where a typewriter and you had to send it to a professional publishing company so I could, you know, enumerate an infinite set of examples.

>> And you can design your own shirt. You can actually get the fabric woven and design the cut and they will then ship it for you. So there's a whole sort of layers of things of ways that you can more and more do it yourself. All right. But I -- thank you again Gerhard. [inaudible] [applause]