

Bad Idea That Won't Go Away

Christopher Nemeth -...all right now, moving, moving right along, the bad idea that won't go away. Hm, and Emilie has some thoughts on that one

Emilie Roth – all right, okay, so I guess I'm going to make up on more or less the things that Peter Hancock talked about and the way I frame it is that some how human factors is a soft science and we're not really, we don't have anything serious to offer because we don't have ready answers to the questions that designers pose to us. So, so honestly, you know, I go on design teams and they're gonna sort of say you know how much workload will a person, a particular individual be able to handle or how many people will it take to do the job, or what's the error rate associated with this test, taken completely out of context, you know, what's the probability of an error of someone turning a valve, with no idea of when they would turn the valve, or...so, so they bring us questions out of context and ask us for solutions. Um, I have struggled with this, you know the fact that we need to go back and say to them, no, no we have to do studies, no, no, we have to understand the domain and you guys are more engineers than I am, but one of the things that I've tried to do is try to understand how engineers answer, deal with problems and um, one book I looked at is Henry Petroski's book *To Engineer is Human: The Role of Failure in Successful Design* and one of the things that he says is, if it's a previous design, you know if it's a run off you making another camera, you're making another Xerox machine, you're building in another bridge that looks just like the bridge before. Then you have rules of thumb you can be confident of, in giving ready answers, but if it's a first of a kind. If it's a new novel bridge design, then you have to do studies, you, um, you have to guess at the conditions under which it will be used and the probability therefore that it will, um, fail and in the end it's only experience that will tell you. Basically, that the bridge doesn't fail in fifty years. So I think we shouldn't apologize, we're always dealing with first of a kind problems and it's okay to say, you know this particular high risk element we're gonna need to study.

Christopher Nemeth – nice point, thank you. Well, not surprisingly, David Woods has some comments on this category. As a matter of fact he had quite a few comments and so I'll try to be true to them as well as to our schedule here. Ah, David's comments, erroneous concepts that won't go away, and ah, see what your reaction is to this and see if you have any comments for the audience participation portion of our session here

Tom Sheridan – I'm going to rebut most of what David says by the way. So go ahead, say what he says.

Christopher Nemeth – okay, the first bad idea that won't go away. Function allocation, the real issue is coordination. How to synchronize activities over multiple roles, wider scales, larger scopes. The error is part of the larger substitution method that continues to dominate western technological thinking. Too bad it's just wrong empirically and not useful for design. Overcoming human limits, another bad idea that won't go away, when I hear R & D justified by the need to overcome human limits I know the system, the result, not only won't help but are likely to make it more difficult for practitioners at the sharp end to get the job done. If you think our job is to overcome human limits you will end up making the people more limited, hobbling them and creating authority responsibility double bias. I have stated the alternative view as; in design we either hobble or support people's natural ability to express forms of expertise. Related is the

misuse of satisfysing the full weight of Simon's concept of bounded rationality is captured in the bounded rationality syllogism and I know you all know this one so I'm just going to repeat it for convenience, I don't but I'll repeat it here and he says bounded rationality syllogism is all information processors are finite, people, machines or combinations, all finite information processors in certain changing situations are fallible, therefore machine information processors and systems of people and of machines are fallible. The question then is not fallibility or finite resources but rather the development of strategies that cope with or even exploit the limits and to better handle, the fundamental trade offs of a finite, dynamic and uncertain world. Thoughts?

Tom Sheridan – ah, if I may, um, Dave, who is my friend, I think gets carried away some times with, with his words. He talks about function allocation in terms of substitution myth. Now, to my way of thinking the phrase substitution myth is a myth itself, um, if you, any kind of function allocation is not a question of just substituting a machine for a human or a human for a machine it's much more complicated than that. Ah, you have to think through the process, you have to think through what the human can't do that the machine does, what the machine does that they, what the human does that the machine can't do and, and so on and ah, so I think it's a, his way of thinking about function allocation is just a little too simplistic. Um, he makes the statement about, ah, implies that you can't overcome human limits, well, you know, I don't how you got here, if you drove by car it was certainly quicker than walking and if you flew by airplane, the airplanes wouldn't fly unless we overcame a lot of human limitations and seeing airplanes in the sky through the clouds using radar and things like this. Ah, most all manufactured goods these days, one way or another are controlled by robots that are far faster and far more accurate than people are at doing those jobs. So there's no question but what we're overcoming human limits all the time in technology, I mean, that's, in a sense the name of the game. Ah, if we didn't have tools, you know going back to primitive mankind that overcame the limits of using our own hands, ah, we wouldn't have any technology. So I guess my, my plea today is to be a little more careful with your words, um,

Christopher Nemeth – Emilie

Tom Sheridan – I'll end there

Emilie Roth – so, um, I guess I was gonna to defend Dave, ah, in a couple of ways, so you're obviously correct, but some of the issue is um, how it's framed, you know how the designer might think of it when you frame it in those terms, so when you think about automation, if you, if you're framing it as okay, I'm going to get the person to do this task and the computer to do that task. If that's how you're thinking the tasks are being divided then you don't think about the post conditions. You don't think about oh, if the automation's doing such and such then the person is going to have to do more monitoring, or if the automation is taking over this task, that wasn't the only task that the human was doing, so, um, I had a railroad operation example where they (inaud) as well, they automated some of the switching that became automated so that the person doing the switching could be in a dispatch center, but the person who had been doing the switching that was also doing some of the triage, was also taking some of the mental burdens away from the dispatcher, so when they automated the task, the physical task was gone but cognitive task still had to be supported so it was supported by the dispatcher. So I guess

I'm just trying to argue, it's not that you're wrong it's just that if you frame it in a way you can get people trapped.

Tom Sheridan – well when you put it in terms of framing the way you said it of course I agree with you but, I, I think you can't just make these sort of broad sweeping generalizations and get away with it. Um, the whole idea of levels of automation, ah, levels of automation between full automation and no automation which, I had something to do with ah, is exactly that point. I mean you know there are degrees of human involvement and degrees of automation in everything we do practically.

Peter Hancock - Bad ideas that won't go away. Alright, um, my bad idea is always human factors is common sense. Ah, we're getting into problems where we are accelerating more and more, you know the work faster and other things about time. Look I can give you the wrong answer now, I don't want to charge me too much, in fact I'll give you a wrong answer if you like, carried away six point one three. Next time somebody asks you and says we've got to have the answer by the end of the afternoon, tell them six point one three and tell them that you got it from a subject matter expert, alright? Charge them as much as you like, what do I care the circumstances. Of course you can give them the wrong answer and unfortunately people are asking for fast answers. The problem is the better answers cost money and they cost money also money in terms of resources and time and now we're not willing to pay for that and then we pay at some later point when the ramifications are there. Notice I said a better answer, I didn't say the answer. I don't think we reach the answer in dynamic environments but the problem is that human factors is common sense and three or four of our luminaries have written several times about it. It's not common sense and I don't even agree, I don't think completely we should (inaud) the ten percent that's not common sense. When I see some exhibits, some peoples behavior I begin to question what's common sense in the first place.

Christopher Nemeth - Thank you, anybody have an idea about a bad idea that won't go away who'd like to offer them for the panelists to consider. Yes ma'am. I'm sorry; you're name and organization please

Audience Member - it doesn't matter, it doesn't matter, okay, the bad idea that you back go away from your microphone people can still hear. The point is that many of the speakers are speaking very quickly and far away from microphones and you can't even hear it.

Christopher Nemeth – okay, thank you, sir

Audience Member – Let me be more specific, Tom give Emilie your microphone, take off your's

Tom Sheridan – I'm sorry

Emilie Roth – I'm sorry, I wasn't aware of that

Tom Sheridan – that was my oversight too.

Christopher Nemeth – yes,

Audience Member - (inaud) US Army research lab, my two are use of discounted usability techniques and usability checklists. You get a false impression that (inaud) human factors when they use those and really the best way, the only way to really find out the usability issues are to go to real work, real people working in real jobs, real tasks and the real context that they're going to do it in

Christopher Nemeth – great, so if I got it correctly then usability, I'm sorry, checklists and lists are a bad idea, but still hanging on and real study of the real world, the way real people do their real job needs to supplant them so that they go away and checklists don't bother us anymore

Audience Member - right and discounted usability techniques, also having just experts review user interfaces, you need real people doing the real work.

Christopher Nemeth – okay, so expert analysis is getting in the way of actually studying how real people do things in usability studies

Audience Member - right, because people think that's enough and it's not.

Christopher Nemeth – understood, thank you. Yes

Audience Member - (inaud) also with the Army Research lab, um the idea that modeling is supposed to totally replace experimentation as a person who does performance modeling, um, I just hate the fact that people think we're trying to replace interpretation, because that's totally not true, we want to support experimentations (inaud)

Christopher Nemeth - okay, so the, If I got it correctly, the notion that modeling is replacing the study of actual human behavior rather than ah, supporting it or ah, enhancing real world studies. Thanks, anybody else have a bad idea, or, want to mention a bad idea?

Audience Member - ah, Jim Spoolman, (inaud) it's the idea that human factors is at the end of the product development chain. Mechanical engineers, electrical engineers, and the software engineers all constrain the system, then the human factors people get a shot at it

Christopher Nemeth – and as a matter of fact the Pew and Mavor text, that was mentioned a little earlier that's also on the reading list speaks to that particular issue in terms of the integration of this sort of knowledge thought stream and through the entire development process. If I'm representing that correctly. Thank you, yes sir, Jim,

Audience Member - the idea that was (inaud) a work ethic, that work can not be made pleasant and (inaud) all we can do is relieve pain and that efficiency must trump pleasure and sometimes even well being

Christopher Nemeth – okay, thank you, great, well thank you for sharing those bad ideas.