

Recent developments in human factors

John Carroll - Well the one that I wanted to mention is positive design and this, this idea is actually very related in both the people who developed it and it's reasoning to what Gary was talking about as appreciative inquiry. Basically positive design is contrasted with deficit driven design and off course we're often driven to design or, driven in design by trying to mitigate the deficit of some situation, you know, limited memory, or our ability to conceptualize a difficult problem or whatever, but, um, but the positives play a smaller role and in the positive design school of thinking, design should be contrived to leverage the strengths of organizations and of individuals and not just mitigate the deficits. So one example from an area that I'm interested in which is computer mediated communication is that there are many discussions about deficits when people communicate over electronic channels. They flame, they misbehave, they lose track of the conversation thread and there are a number of studies and papers on the theme of how distance matters and distance can not be bridged really as an obstacle to collaboration, but actually you can take this point and turn it exactly on it's head, there are things you can do through mediated interactions you can never do face to face. You can make better collaborations, better brain storming, better meetings and better projects and really that should be given as much emphasis in designers thinking. I applaud these guys in the positive design school for emphasizing this.

Gary Klein – So the one that I wanted to talk about is the opposite of the earlier comment about pattern managing and repertoires of patterns that being important for expertise and its Bill Duggan's work especially his book *Strategic Intuition* where he talks about an opposite approach to expertise which is finding new connections. Rather than simply matching patterns which is, it gets you only so far, what we see in many cases of expertise is the ability to see connections between existing patterns and new events and put them together in novel ways. And so that's sort of an antidote to being entrained by ones pattern repertoire and I guess if there was going to be a, another recent development and it sort of bridges Jack's comments and mine would be Martin Seligman's work on positive psychology. He is the former president of APA, clinical psychologist, spent his whole career working in the area of learned helplessness, and trying to help people overcome depression and then late in his career he realized if we do all that, if we remove the misery that these patients are in, try to reduce or eliminate their neuroses, what we've done is we've take them from a negative stage up to zero, where they don't have neuroses, not above that point, I mean the field of clinical psychology hadn't studied what happens above that point and then he took it on his own to study that, and form this field of positive psychology and I think that's relating to your comments about positive design and some decline as well.

Nancy Cooke – This follows on my comment about Gibson's work in ecological psychology, I think one of the problems that you run into when you start looking at the complexity of the environment and the active observers that you have no good tools to analyze the data, to even make the observations and although this isn't a recent development I've been working with dynamical modeling, dynamical systems modeling and those kinds of approaches I think mesh very well with ecological psychology and they can be used to help find structure in rather complex data and so I think that's a interesting recent development that provides some tools.

Christopher Wickens – Just a couple of things, making a plug for a technical group here I think the development of computational models in our field is an extremely important development and we all know the reasons for models you can make predictions, hopefully valid predictions before very complex systems are built. The models must be complex, they must be able to account for relatively complex behavior of people in real tasks and not simply abstract laboratory tasks, that may be a start, but it's certainly not a finish. I think the other important recent development is, well I'll highlight the 1998 American Institute of Medicine support the ninety eight thousand deaths because that's an issue that led people to start looking at sort of common limitations in system design, system design that posed a mismatch on human capabilities in a very different domain and its got tremendously important domain as we know but it also starts highlighting these common limitations across aviation, across medicine and you know I think of another current example of a lot of the work on the complexity of flight deck automation systems and pilots don't understand it. Doesn't that match well with the complexity of financial algorithms that led investors to make decisions that people did not understand and that is a substantial contribution I think to the meltdown we've had recently. The automation was so complex people couldn't understand what it was doing. So this idea of seeking commonalities across domains I think is one of the things that's important and, an important development.

Christopher Nemeth – Thanks Chris. Any other comments from members of the audience in terms of recent developments, yes sir

Audience Member 1 – yes, I have a comment, a comment and a question. Let me begin with the comment in fact building on what Dr. Klein said. If you look at the military they have recently published two field manuals, one on maneuver warfare and one on counterinsurgency called COIN and interestingly enough, these embody both the proactive and the reactive approaches, you had mentioned something about planning so that's a good development. The second part, being inspired by Dr. Klein's work I have started studying something know as naturalistic performance. If you look at machine critical domains such as fire fighters, police officers, and the military folks, little or no attention is paid to the role of emotion. A lot of emphasis is based on (inaud) stress, workload and such but emotion is one of the most naturalistic things which ensues when there is threat to life and limb and demands your feeling what happens, he got better, a couple of his great publications to begin with has almost set the foundations for our sciences to flourish on that and also going back to William James, he very eloquently said that emotion in itself is a physiological reaction and he said, I'll just tell a couple of things, we fear because we tremble, we are angry because we strike, we are sad because we cry so the subject and manifestation of emotion is actually a physiological response and that's how (inaud) system of the brain perceives that physiological response and gives rise to that emotion. So it is so fundamental, but anyway to make, to summarize I have coined a term high velocity human factors which brings in all these theories and developed a framework to study how humans perform during the peak and critical moments of a mission when there is, when stakes are high and where there is immense emotional stress and I have published a couple of papers in the last few conferences but I thought this was an interesting recent development for our profession and research, thank you

C – okay, thank you. Anyone else? Recent developments, any, yes, please

Audience Member 2 – not so much a development but, I guess a follow up to what this gentleman said, I do agree that emotion's very important (inaud) its something that perhaps maybe we should be looking to develop because it does allow physical limitations of attention based on what biases (inaud) might give us, or how it affects our memories that certain patterns might be recognized based on what (inaud) and that is all connected content so its kind of a very good way to factor in and connect all the important concepts (inaud)

C – so, do I understand it correctly that you said further research into the role of research and decision making is what you're in favor of?

Audience Member 2 – yea

Christopher Nemeth – thank you,