

Usability

an Interview with Jakob Nielsen



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Gerry Gaffney:

This is Gerry Gaffney with the User Experience Podcast. My guest today published the seminal book, “Usability Engineering” way back in 1993. He has written and edited several subsequent books on usability and web usability.

He has a Ph.D. in Human-Computer Interaction from the Technical University of Denmark in Copenhagen. His name is virtually synonymous with web usability, and his “Alertbox” newsletter has been required reading for many years for anyone with an interest in the field. Together with Donald Norman, he founded the Nielsen Norman Group.

Jakob Nielsen, welcome to the User Experience Podcast.

Jakob Nielsen:

Thank you, it’s great to be on the show.

Gerry:

I think it would be fair to say that most people associate you with *web* usability. Is that something you’ve cultivated, or is it simply a function of where the action is these days?

Jakob:

I think it’s a function of where the action is. I started in usability in 1983, and back then

it was actually for the Macintosh. In the really early days we did projects in various forms of very early graphical workstations and mainframes and such. And then a lot of it was Macintosh based and Hypercard since 1987.

My first book on hypertext was written mainly based on Hypercard design, and only the second edition started talking about the web as one of the hypertext systems that it covered.

But certainly for the last, maybe 14 years or so, since the web really started to take off in 1994, the big percentage of these projects have been web projects, and that’s what gets most attention as well. I think that’s why people think of that as being the big thing. But web usability is just one part of usability, and many of the guidelines are actually the same for any type of design – whether you are designing an elevator control panel or a software application or a website.

Actually I sometimes get clients who call up and say “we notice you do a lot of web projects but we’re doing a software application; is that something you know about as well?”. And I kind of feel like asking these guys “what do you think we did back in the 80s?” [Laughter.]

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One of the people in my company is Bruce Tognazzini who wrote Apple's first human interface guidelines for the Apple II. Not even the Mac guidelines, but back in the Apple II days. So of course we do software apps, we do a lot of other things too but, yeah, web sites, that's where the most of the action is.

Gerry:

We seem to be wedded to a very old-fashioned metaphor of the desktop when we use most applications and web pages – is there any sign that we're getting ready to move away from that and do you see any directions in that regard?

Jakob:

Well, I think if you look at the internet as a whole there's been some movement away from the desktop kind of GUI or WIMP metaphor because a lot of the interface to that is really a natural language; I say pseudo natural language interface that people do in search engines. Actually I did a project about 15 years ago together with Don Gentner that was called the anti-Macintosh. In the anti-Mac project we tried to just reverse each of the Macintosh human interface guidelines and say "what if we did the opposite of the way to do a good graphical user interface?". And the opposite of the Macintosh is an interface that's very much based on language, based on descriptions, based on rich representations of objects, whereas the Mac is based on very simple representations in the form of icons, and based on you point and click to the thing you want instead of asking for the thing you want. And so this anti-Mac in many ways describes the kind of the search engine style of using the web, but of course as soon as you get onto a web page or web site then we are back into more you point and click on the thing you want, so only in a certain way.

If you look at Vista, some of it has a little bit of a richer representation. For example the way it deals with photographs is a lot based on visual representation of the objects, not just icons; which are attributes that you can search by – when the photo was taken, some kind of quality rating, which is rarely actually applied, but it's in the operating system.

So there's some movement away from that very simple Mac style design that we got back in 1984 – a long time ago by now. So it is time to move on. But I have to say, these are small signs that only have individual corners of the bigger user experience base that are being changed, and the core interaction style is definitely still the same point-and-click. And that's because it works very well actually, it's much simpler to understand than the richer interaction style.

Gerry:

We should just mention, you used the acronym WIMP there. For listeners who may not be familiar with it, that's Windows Icons Mice and Pull down menus I think?

Jakob:

Yeah, Windows, Icons, Menus and the Pointer. The pointer is usually a mouse, but it could also be a touch screen or a joystick or something else, but yeah, Windows, Icons, Menus and Pointing. That sort of defines the interaction style.

Gerry:

I guess on, a similar vein, the humble QWERTY keyboard has had incredible longevity. We still seem to be very much wedded to that device.

Jakob:

Oh completely. And the keyboard is really a very great way of entering text. Of course we could move to voice dictation but for a lot of applications, just know typing it in is

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actually faster and better and more accurate. Certainly with the current quality of voice recognition. Maybe in 10 years it will be different.

Gerry:

Isn't voice recognition one of those things that's always been 10 years away?

Jakob:

So, you're right. I think there's actually real progress in voice interfaces as opposed to natural language which has almost no progress, and artificial intelligence in general, almost no progress. You know you hear so much about... people say "well we'll apply a cognitive learning style to interaction" and that never goes anywhere. I think voice recognition is a simplified problem and I think much more likely to be something that can be done sooner, and today it's certainly something that will be done in cases where there's a real reason for it, like people who have a disability for example, or people who are in some kind of environment where it's hard to get to a keyboard. So for example maybe when you're driving or when you're on your mobile phone or something like that. But I think that in general it's certainly not there yet. I think there is progress in voice, I think there's more progress in voice than in natural language in general.

Gerry:

Have you yourself done any work in that area? There's been a few interesting books on voice user interface design for example, and voice recognition.

Jakob:

I don't recall any right now but I know there are several people working on it; both working on the research and working on it as product, so it's definitely an active field. It's just not something that I personally really work on that much.

I tend to be very... I have a real big screen bias, I really love big screens and visual representations. I think for most problems that really is the best way, because it's a very rich channel. When you can look at things, your eyes dart over the screen so fast. We do eye tracking studies and one of the most surprising things in eye tracking is how fast the blue ball moves, the blue ball being the representation of where the user is looking at any given time. Man, it moves fast... that's a fast fast input channel. Whereas voice is much more linear, harder to scan, just harder to deal with in any given way.

Gerry:

I think those eye tracking graphs, when you look at them... a lot of people are really surprised at how little attention areas that are not specifically of interest to users actually get.

Jakob:

That's true. People's eyes move really fast but they move over a relatively limited area, which is the area of interest. I've always said that web users are very selfish... they don't care about you, they just want to get the information they want, and so they really tend to focus their attention on a very small amount of information. They scan the text, they only read the first half of your headlines; I mean even one line of text, that's too much, so the first half of the text is more important than the second half of the text, because the first half is where more people will look.

Gerry:

The advent of Ajax and rich internet applications I think has been very exciting for many people, but you know it seems in many ways a retrograde step for people who have working in application UI for a long time. You know, we've got a lack of consistency, it's difficult to learn new paradigms, [there's] a lack of accessibility

in many cases. Do you agree with that interpretation and, if so, how can individual designers work towards addressing this particular problem?

Jakob:

I think you're right that a lot of problems have been opened up by the rich internet applications. But if you think of this in a more conceptual way there's obviously nothing new because really all they're saying is we can make a graphical user interface for an application, and we've been able to do that since 1984 on the Mac, and actually another 10 years before then on powerful workstations like Sun Microsystems and so forth. So we have many many years of experience in making applications with a rich graphical interface, and the only thing that's new is that you can do it over the internet, which is really a very small difference from a conceptual perspective. We've had the ability to make consistent graphical user interfaces – you know the Mac always had a much more consistent interface style than Windows had. This is one of the things that Microsoft has been driving a lot in recent years. But if you think back to the 90's, people used many more applications on Macs than they did on Windows, because on the Macs we could go from one app to another app and we they would work in the same style and you knew how to use them. And also accessibility, there have been accessibility hooks built into both Macs and Windows for ages and it's possible to build really great applications for both platforms, and they are perfectly accessible.

So the main problem is that now we've moved to the web and doing the same thing but just in a different technology, so the user experience ought to be the same. It ought to be consistent, they ought to take advantage of accessibility hooks that are built into things like Flash and other technologies, but they tend not to do so.

And I think as a first discipline in developing applications for these new platforms there's more of a kind of a wild west mentality of "...anything goes, let's just go ahead and barge ahead" and do it without that discipline of development that says well there are various checkpoints you go through such as consistency with the platform, accessibility, globalisation, internationalisation... a lot of these things don't work, if you're using them in Arabic or in Chinese or something they're going to fall apart because again that hasn't been considered. So there are ways in which the development discipline is weaker on the newer platforms but it's certainly possible to do it. I think one conceptual difference is that there's no platform owner for the web. There is the Web Consortium but they're kind of weak when it comes to user experience, whereas for the Macintosh, Apple always had a very strong program for evangelising user interface. They had guidelines published, and they had people – actually my colleague in Nielsen Norman Group, Bruce Tognazzini, I said before that he started off doing the Apple II guidelines, but later in his career at Apple he was their human interface evangelist, and so Apple basically had this guy whose job was to travel around to software developers and bang them over the head if they deviated from the Mac, and make their applications work in the Mac style. And Microsoft have many people like that now who try to make applications for Windows follow the new Vista guidelines. Well the web, we don't have people, maybe me you know [laughs], but there's very few people saying for the web get back to basics, follow the guidelines, make it strict, make it the way people expect, follow the standards. For the web, mainly you can do as you please, and that hurts the users.

Gerry:

I guess it's also difficult for a lot of developers who find themselves working

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with Ajax and RIAs... they can't go to a book and say well this is what we need to do... I guess they may be looking for best practice in a variety of places.

Jakob:

Yeah, that's very true and there's a downside – you cannot just look at what else is out there because what else is out there is just somebody else's best guess and is not necessarily the right way or the best way of doing it. The only thing I will say is that if everybody else does things in a certain way you should probably do that as well, not even because it's the best but because that's what users expect – just because they expect it, that makes it the best.

Gerry:

I know you were always a champion of the web ecosphere thing, that, you know, anybody visiting your site has already been on so many thousands of other ones and you need to comply.

Jakob:

That's my that's kind of my main law of the internet user experience, that wow, when people come to your site they've already been to so many other sites. They spend most of their time on other websites and their expectations for how a website should work is formed based on the aggregate experience of these hundreds or even thousands of other sites. So if you work in the same way, people will know how to use your site and then they can focus on your content, on your product, on your offering, on your message. If you work in a different way, then they have to spend their brain power struggling with your site, which just takes away from the experience of understanding your content, your message. So I really think so strongly, let your content shine, believe in your product, promote what you're selling and don't try to deviate in the user interface.

Gerry:

We see two very different models out there at the moment. On the one hand we have, you know, everyone's got a powerful desktop computer running multiple instances of the same application like Microsoft Word or whatever; and on the other hand we have web-based access to things like Google Docs. Do you think these are inherently incompatible or do you have a take on where that whole thing is going?

Jakob:

Well, I think we'll probably get a third model eventually. The network applications are not really necessarily a new thing. I remember back when I was an intern at IBM back in the 1970's. This is a really long time ago and at the time IBM had – you know, that was a mainframe company – and you could sit at your mainframe terminal and pull up word processor files from any other mainframe all over the world at any other IBM, and you could edit the file and you could store it back again, and it could be printed at any printer at any IBM location as well. And so the notion of having a network application pull the information up from any screen, work with people in other offices and all, they had that at IBM more than 30 years ago, all working on network mainframes. So really it's the same thing we're doing today with the web based applications. The user interface has been shined up a bit because it's sort of a pseudo graphical user interface. It's not giving the full richness of your own personal computer but it has a lot of that. It's not quite that primitive mainframe interaction style anymore, so it's definitely better than what IBM had 30 years ago, but it's the same general idea. And I really think we need something different again. We should not have just the standalone individual personal computer, and we should not just have the everything works in

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the back end and your monitor is just like a weak little wimpy window into, or peephole into the backend that holds all the data.

I think we need a third model that understands that people have multiple computers. They have one or many main desktop computers, maybe one at home and one at the office, maybe a laptop they travel with; they have one or more mobile devices, maybe a few different ones... they have multiple anyway, that's the big point, more than one, and they should be able to use the power of each of these devices to its best facility. They shouldn't be restricted to this kind of web style interaction where something that really runs on the first computer at the other end of the network. And so for that to work, data has to propagate itself and be available on all these devices. And I think the data shouldn't be restricted to one place, whether that one place is on your hard drive under your desk, or that one place is on a server farm in Ohio, or wherever Google or Yahoo or whatever have their server farm, the data should be propagated and should be with you where you want it and you should have the richest possible interaction style for this device that you're currently at. And that's of course different for a hand held mobile versus a thirty inch monitor that you might have on your desktop versus a small or mid size monitor you may have on your laptop, so they should adapt to that. This is easy to say, of course it's harder to do. I think one of the big design problems now is how to produce good mobile services that are scaled back versions of the services that work for the desktop. I don't really believe in taking a web site and just kind of shrinking it down and zooming it up and down on a tiny little screen for mobile, I think we have to have a different mobile interface. So that's my vision, I guess, it's not something that's quite happening yet. The most prominent

example of somebody trying to work on this is a group which used to be an independent software product and was taken over by Microsoft a few years ago. The main guy behind it, the main designer, is Ray Ozzie who now took over Bill Gates' job as Chief Software Architect for Microsoft. I don't know about what Ray is thinking on this and I don't know what Microsoft's next product release in a few years, but I would hope that they will really take that Groove idea and make something much better on it. You know, you can take Microsoft Office applications and stick them into a web browser in some way and that will be a band aid; that will be better than not having it, but what I really want is something that takes a Groove-like approach and says it's really a network of different devices and let them kind of work together. It's not that we have a peephole into a back end machine, it's that we have all our different devices working together.

Gerry:

You talk about data propagating. Should usability be propagating itself outwards? People do talk about, for example, organisational usability, but do you think there's a place for usability beyond the user interface? Should it have anything to say in politics for example or in connection with you know big picture issues like climate change, or is that out of bounds?

Jakob:

Wow, that's a difficult question. In many ways I think no... if you think about various political issues such as, let's say, should taxes should go up and down. I don't think usability has anything to say about are high taxes good are low taxes good, or who should be elected prime minister or president, which person is best qualified to lead the country. I don't think usability can provide the answer to that.

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I think what it can do is that even if you have a certain political program, even if you have a certain level of taxes, then usability can make the taxpayers' money have the highest return of investment, be used the best. We know government agencies are usually huge failures when they have a project to computerise something or other, and I think this is often because they use a very waterfall-like development methodology which has really been discredited in the usability field. We know that requirements specifications are always wrong, and yet that's the way government computer contracts work, and so they always are behind schedule, and they're always over budget and they always develop interfaces that are horribly complicated to use and their web sites are miserable and it's very hard for citizens to do self-service online or find information on government websites. So in that kind of more pragmatic area of public policy, of making it work better, usability definitely has a huge role.

I also think that politicians should ask more usability kind of questions when they introduce new laws and new regulations. Let's say that they change something in the tax law that makes all the tax documents, all the tax forms more complicated, and they're already very complicated. So if every citizen around the country has to spend another half hour filling in their tax forms you can compute the millions of dollars lost to the national economy every year, because of that new rule, and I think if politicians think about the usability implications of their proposed changes, and say how much burden are we imposing on the public by making this change and can we make the change in a different way that achieves almost the same policy effect but doesn't bother people nearly as much because it's easier to deal with. That I think would be a huge advance.

Now you talk about climate change, that's another thing, I think that's a more of a kind of scientific question of how to best deal with the environment, and again, usability has an indirect role. For example, certainly for any scientific problem there's a question of making the scientists better... you know, giving them better data visualisation tools, better tools for dealing with their databases. Scientific tools often have very poor usability because they have been developed for expert users without any usability input, and if they were made better then I think the climate science would probably advance at a faster pace.

Also, usability can have a role for very pragmatic things. One of the winners in our Internet Design Annual was the Royal Society for the Protection of Birds in the UK. They of course are an environmentally responsible organisation so they really try to promote car pooling or ride sharing, and so they had an application on their intranet to make it easier for people to find somebody else to drive with to work. The good usability of an application like that will maybe make more people car pool, because if it's easier to find somebody to ride with, more people will do so.

So that's the usability perspective – if you can make something easier, more people will do so. So if you have a desire for people to behave in a certain way, make it easier and more people will do it.

Gerry:

Indeed I always say to the clients, whenever I sit in a meeting and they say "we're going to make people do X" that it sort of raises a big red flag.

Jakob:

Oh exactly. And again the usability perspective is people are probably going to rebel if you just kind of force them to do it, but if you make it pleasant and easy, they

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are more likely to want to do it. Of course another aspect actually of the environment and usability is that I think the biggest threat to the environment right now is probably China and India, because those countries are getting richer which means that everybody will want to get a car and other you know nice things that we already have. And it's hard for us to say shouldn't get that... the problem is when a country becomes somewhat rich that's when they really pollute, but if they become very rich that's when they can start affording to have less polluting cars, or they can afford to just protect the environment in general because when a country becomes really rich then the people start saying "I don't want to have a dirty environment, I want to have a clean nice environment". Because that kind of attitude comes with being really rich, and so usability can help these countries become really rich faster because usability is of course all about making money. Usability can grow the national economy by an extra 1% per year approximately if everything's more focused on making better and more efficient interfaces; you waste less by doing things in a more efficient manner. And so if we can grow India and China – and other countries too of course – to the point where they're very rich in a small number of years, then we will have fewer years in which they will be extremely high pollutants. You know like we can tell them, don't build all these coal fired power plants, but we're from the outside... that's hard to take because they're going to say "well you guys are polluting like crazy so why should we be the ones to save". On the other hand once they become really rich then the local population is going to say "we don't want all this pollution, get rid of it". And so I think this is again a different kind of perspective but I think we can cut pollution a lot in these countries if we can make them really rich really fast. And that's certainly something where usability can help.

Gerry:

On an unrelated topic, the Nielsen Norman group runs the Usability Week, you've been doing that for sometime now, and it's generally very popular event in fact you'll be in my neck of the woods, in Melbourne, in July of this year [2008] I think. What makes those things popular? Is it about usability in general? Is there more awareness or why are they popular?

Jakob:

Well I think one thing is that because definitely usability is a growing field and people know that this a place where they can come and hear about it, and also we do actually go all over the world and I'm really looking forward to going to Melbourne because I always love being in Australia. The only problem is that it's an expensive trip and we can only afford to come every two years, but that makes it better when we do go. But another thing is that this conference is really based on the notion of making usability actionable. A lot of other conferences I think are based on more just sort of presenting interesting stuff and that makes it hard when you go back to your own company: "what am I going to do about it?". We on the other hand have very much... we designed this event based on the notion that the next day you should be able to go and start doing better usability back home on your own project no matter what state it's in. One example of how this attitude kind of impacts the design of this event is a lot of our topics are presented in full-day seminars, so we have designed the progression to how to treat this topic throughout the day, mixing different types of activities throughout the day with the goal of, at the end of the day you should be able to go back and do it. But at other conferences you go and you spend a day on a topic and you hear ten different people talk about "well back at my company we did X", "back at my other company we did

Y”, and that can be very interesting to hear these ten people present their own little stories, but then how are you going to put that together into an actionable program that you are going to deal with the next day back home?

So that different perspective I think is one of the things we try to do in Usability Week. We try to be, I guess usable, be centred around the participants’ need to be able to do the usability themselves right away, not just hear interesting stories, but rather get the tools to do stuff. For that same reason actually we also designed some three-day topics which is very rare, I don’t think I’ve seen any other conference actually really do this, but we have a three day thing called the “Three Day Camp on Usability and Practice” that takes people through the way to put together a usability program. And because it’s three days on this one topic I think that we present four days’ worth of material in three days because in the normal way of presenting it there’s a lot of repetition because you can’t know that what people already know, what they’ve already heard, but if we’ve had the same people come back for three days you can design a progression on this topic for three days, you can cram in more information. So I think that that kind of designing the event as a high communication event and as an event based on usability equals action, that is I think the main difference compared to many other events.

Gerry:

Jakob, many designers and developers want to do the right thing, but they’re up against budgetary deadlines and they’ve got all sorts of constraints around them, and often those constraints conflict with the need to consider usability. Do you have any general advice for people who find themselves, developers in particular I guess, who find themselves in that position?

Jakob:

Well I think when you have a gap like that, you can try to bridge it from either side and I think both sides are good ways of approaching it. So the one is, we can scale back usability and make it more actionable, make it faster and quicker, and the other way is to increase the budget and to increase awareness of usability and make more available. But that is the strategy for next time. [Laughter]

If on the current project a little bit of usability has a good impact, then maybe on the next project there will be a bigger budget, a little bit more usability, and the next project even more, and you can continue that over a few years. Then at the end you will actually have the budget to do more of the fully recommended user centred design life cycle. But on your current project, no. On your current project assume you just have to do a little bit and the most efficient you can. And so that means doing things like really cheap discounted usability methods like fast user testing with just like a handful of users, do paper prototyping, so just mock up screen designs on paper and test them with just a few people in a day or so. And that can save lots of development time because instead of programming or implementing something that’s drawn on a piece of paper and you’ll typically find from a user that your first idea was not the right one, and then you can save all the time on implementing the wrong thing that you would have to have changed later. So rather do it quickly on paper, find out what people need and then go and build that.

So those are things you can do that don’t even impact the schedule because they are so fast and cheap.

The other piece of advice I would say is do not re-invent the wheel. We talked about this before already in this podcast that if

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users are used to things working in a certain way, do it that way. Don't spend your time thinking up a new way of doing it because that's actually probably going to make for a worse user experience at a higher cost to you. So instead take the low cost approach and follow the established guidelines. Do things the expected way. There are really two main ways of assessing usability and improving, and the one is to do user testing with your own customers, and this is invaluable. Even if you only have time to test with only 5 people you learn so much, so that I always recommend. And the other way is to take advantage of everything that has already been learned by so many other people doing user research for ages on thousands of other web sites and thousands of other applications and based on that of course is how we develop our guidelines – based on the lessons from a very large number of other studies. And to take advantage of these guidelines already being written down, being available and encapsulating so much usability knowledge so you can check your design against the guidelines and mainly follow the guidelines.

The sad thing about guidelines is that it's not a firm 100% standard, there's always some areas where it's probably better to do something a little bit different. But mainly though, guidelines exist for a reason, guidelines are for normal events. And assume that your product is normal. Your design may have a few different set of special circumstances but in a lot of areas it's just the same as everything else. And that's a hard lesson for people because they always want to hear that they are 100% special. But honestly, a lot of what you do is not special, so focus your attention on the things where you are indeed special and just follow the general guidelines for everything else.

Gerry:

Well, I'm aware that we've run over time... Jakob Nielsen thank you very much for joining me today on the User Experience Podcast.

Jakob:

Thanks very much Gerry, it was a great talk.

A note on the transcripts

We make verbatim transcripts of the User Experience podcast. We then edit the transcripts to remove speech-specific elements that interfere with meaning in print (primarily space-fillers such as "you know...", "um...").

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