

Jakob Nielsen - The Guru of Web Page Usability

By Morten Middelfart

Doctoral Candidate at Rushmore University

Target Audience

The target audience of this paper is anyone interested in the design of web pages or software in general. The paper primarily deals with the user side of websites, from a fairly marketing oriented perspective, thus is of benefit to readers without a highly technical knowledge.

Purpose of this Paper

The purpose of this paper is to provide the reader with the highlights of Jakob Nielsen's work as described in his book "Designing Web Usability: The Practice of Simplicity" in conjunction with getting a professional assessment of the validity and potential weaknesses of it.

Executive Summary

This paper concludes that Jakob Nielsen's book "Designing Web Usability: The Practice of Simplicity" is a must read for anyone working with design of either websites or software in general. The book allows the reader to conduct a thorough end-to-end usability checkup of a website, as well as allowing the reader to avoid the most common pitfalls. The book lacks the ability to balance the issue of actual content on a website against usability, and additionally, it lacks sources for a number of the figures and predictions in academic terms.

Having reviewed the book, my suggestion is that it would be desirable to uncover the area of context balanced against usability in future research projects. This would make up for the gap identified in this book, and would potentially allow new terrain to be gained in both the fields of content and usability.

Table of Contents

Table of Contents	2
Introduction.....	3
Jakob Nielsen – The Guru of Web Page Usability.....	4
Designing Web Usability: The Practice of Simplicity	5
Criticism	10
Conclusion.....	12
Sources	14

Introduction

I have chosen to review a book by Jakob Nielsen since a lot of his work has been of great interest for me. My first acquaintance with him was when working on my project “A vision for Business Intelligence systems in the decade to come” where Jakob Nielsen’s “Nielsen’s Law of Bandwidth” (Nielsen, 1998: Alertbox for April 5th) was used in comparison with “Moore’s Law” (Moore, 1965: Electronics, Vol. 38, #8) to establish that computing processing power grows faster than bandwidth.

This first encounter with Jakob Nielsen made me realize how many times he is quoted and referred to in a number of contexts with one common denominator: Usability.

I have always had a preference for “designing for appeal” in the software projects that I am involved in; I strongly believe software design that makes people want to touch it and play with it, is the vehicle for making users want to learn and use a software product. In this mindset usability plays an important role, although not the only role, and therefore I have chosen to look deeper into the motivation of a user during both literature and field research. This article is the first along those lines.

Jakob Nielsen’s book from 2000: Designing Web Usability: The Practice of Simplicity, is a practical book that will allow a designer of websites to learn the art of designing usable websites for the majority, thus avoid the pitfalls such as optimizing websites for a few users with high bandwidth, high resolution monitors, fast computers and a lot of software preinstalled.¹

Jakob Nielsen’s book has been an inspiration for me when designing my personal website as well as in designing software in general; the art of simplicity is, in my opinion, crucial in all design where human interaction with computers is needed.

¹ Classifying the book according to kind and subject matter is recommended as good practice. (Adler & Van Doren, 1972: p163)

Jakob Nielsen – The Guru of Web Page Usability

Jakob Nielsen was named: “The Guru of Web Page Usability” by New York Times in 1998 (New York Times, 1998: July 13), a title well deserved having a PhD and five books published in the subject in addition to a large number of interviews. But it also tells something about his commitment and approach to the subject; designing is not a matter of taste or aesthetics -it's a matter of science.

Jakob Nielsen's appears to be committed to finding the keys to successful design through a heuristic approach; what differentiates science from art is that it allows empirical questions to be answered by real data from real users and thereby replace doubt with fact (Nielsen, 2000: p12).²

His search for excellence in design through a scientific approach has earned him the status as a guru; however this is really not put to use until the acquired information is relayed to people to take advantage of it. On this side, Jakob Nielsen is also a forerunner. In addition to his many publications and interviews, he also hosts his personal website where more than 200,000 visitors read his bi-monthly column on how to make web pages more usable. In addition his website in itself is a statement and a credit towards website usability; through a radical design that uses no graphics at all, Jakob Nielsen demonstrates how websites can be optimized for ease of use.

On his website there is usability in different shapes and for different users in society, and as such his mission appears to make the web a better place for everyone from child (Nielsen, 2002: Alertbox for April 14th) to senior citizen (Nielsen, 2000: p298), throughout the world. Jakob Nielsen has been on this mission since the early 1980s when he completed his Ph.D. in user interfaces at the Technical University of Denmark. According to a recent interview with ComputerWorld in Denmark on 11th March 2002, he believes that his “guru-status” is a result of taking the usability standpoint early, and continually arguing that web success came from usability. Sticking with his argument from the academic to the commercial world over the past 20 years has brought him fame.

The fact that Jakob Nielsen appears to be an evangelist on one hand and a man that practices what he preaches, and on the other makes his work appear both interesting and adds to the credibility of it.

² It is good practice to come to terms with the author by interpreting his key words. (Adler & Van Doren, 1972: p163)

Designing Web Usability: The Practice of Simplicity

Jakob Nielsen's sixth book on the subject of usability takes the reader through the world of web site design from one end to the other; this includes all the steps from page, content and site architecture design. In addition to this vertical design approach, he adds the horizontal dimensions of geographic localization and accessibility for users with disabilities³. This journey ends in concluding that a successful website is able to provide a HOME RUN (Nielsen, 2000: p380, p382):

High-quality content
Often updated
Minimal download time
Ease of use

Relevant to users needs
Unique to the online medium
Net-centric corporate culture

A HOME RUN is, in other words, a holistic test that a website has to pass in order to meet the requirements defined by research of users' needs, when visiting websites. Jakob Nielsen's huge experience in the field allows him to refer back to studies carried out in the area of usability since the 1980s and up until today.

In general, Jakob Nielsen allows the reader of his book to design usable websites based on the empirical findings of his studies⁴. This vertical and horizontal 9-chapter journey through web design can be divided into the following six major parts: ⁵

Page Design
Content Design
Site design
Accessibilities for Users with Disabilities
International Use
Future Predictions

These parts will be described in detail in the following sections.

³ The review should state what the whole book is about with the utmost brevity. (Adler & Van Doren, 1972: p163)

⁴ Define the problem or problems the author has tried to solve. (Adler & Van Doren, 1972: p163)

⁵ The review should enumerate the major parts in their order and relation. (Adler & Van Doren, 1972: p163)

Page Design

In this section Jakob Nielsen describes how web pages need to be designed in order for users to be able to read fast and easily. This includes making sure that the pages will load fast by using no more graphics than absolutely necessary (Nielsen, 2000: p46). It also includes making sure that all users are able to view the pages in terms of web browser compatibility; this can be achieved by making sure that web browsers and all plug-ins that are up to two years old will be able to view the pages (Nielsen, 2000: p97).

Jakob Nielsen raises the reader's awareness of the physical facts of the users access profile, by showing statistics about monitor resolution (Nielsen, 2000: p28) and internet connections (Nielsen, 2000: p49), as well as the penetration time for new browser versions (Nielsen, 2000: p34). The conclusion is that the reality of user hardware and software configuration is most likely different from that of the web page developer and, by exemplifying the facts, Jakob Nielsen advises caution to make sure that all users are able to work with the web pages and achieve a valuable result.

The arguments for ensuring that all users have a good experience when visiting the website are obvious, and the factual information serves as a powerful tool in this process. However, one word of caution should be voiced about the information. This book is already more than a year old, and the statistics are even older dating back to 1998 and 1999, this means that a reader should not take the information directly at face value. In recognizing this, Jakob Nielsen uses his website as a valuable supplementing asset; here he uses newer information to update the information from the book. One example of this is his categorical statement "Frames: Just Say No" (Nielsen, 2000: p85), the use of frames mistake #1 on of his "Top Ten Mistakes in Web Design" (Nielsen, 1996: Alertbox for May 1996). However in a revised 1999 update he is downgrading the "Just Say No" to "Medium Risk - Be Cautious" (Nielsen, 1999: Alertbox for May), furthermore he is advertising an update in summer 2002.

Content Design

In this section, Jakob Nielsen draws the picture of the web user as an impatient and goal-driven person asking: "what's in it for me?", thus content matters more than nice pictures and fancy presentation (Nielsen, 2000: p160).

The "R" from the "HOME RUN" described earlier [**H**igh-quality content, **O**ften updated, **M**inimal download time, **E**ase of use, **R**elevant to users needs, **U**nique to the online medium, **N**et-centric corporate culture], plays an important role in this section. The relevant content is in plain language, straight to the point and free from irrelevant information and graphics. If graphics are to be used, they should be used in context and in a way that does not prevent fast download times (Nielsen, 2000:

p134). Additionally, fancy charts and 3D effects should only be applied whenever they serve a purpose, the latter is basically only when displaying objects that are 3D in the real world (Nielsen, 2000: p159).

Site design

Since the internet provides us with the ability to move around in virtual space using teleportation, a website should utilize this functionality to allow a user to move faster and deeper into the information than they would normally do in books, papers and physical spaces. In other words “Deep linking is good linking” (Nielsen, 2000: p179).

A potential pitfall of the virtual versus the real world, is the use of metaphors where physical world images are used to create a higher user understanding of the website functionality; an example of such a metaphor could be the “shopping cart” of commercial websites. The pitfall would be to limit the virtual functionality to make the cart work too realistically (Nielsen, 2000: p180), e.g. by not allowing the shopper to move an infinite number of products into the cart at the same time or not allowing the shopper to teleportate between the aisles.

In general, good website design is about allowing the user to work with the web smarter than he or she would in the real world and, at the same time, allow the user to be aware of the new possibilities of this space, in the form of easy and understandable navigation schemes and other functionality that might be available.

Jakob Nielsen adds to website design when mentioning the minor differences between an external internet website and an internal intranet site. Essentially the same techniques described in the book apply to both; however the intranet will typically have more documents available to the user than the internet site, and since the intranet users are within the more standardized environment of the company, more advanced browser functionality can be used on intranet sites.

Accessibilities for Users with Disabilities

“Any time you use any format other than plain text and standard HTML, you risk depriving users with disabilities from being able to use your site” (Nielsen, 2000: p155). Jakob Nielsen strikes a bold blow for users with disabilities in his book; this is particularly important since this is probably an area that most web designers are completely unfamiliar with; and yet, as Jakob Nielsen states (Nielsen, 2000: p298): “It’s definitely worth remembering what awaits us [in terms of age related disabilities] as we get older. Let’s design a world that will be good for us.”

Jakob Nielsen follows up this suggestion and gives a number of examples of how to improve websites visual disabilities: make text fonts scalable to allow resizing of fonts and write headings in text, rather than in graphics, as well as provide graphics

with alternative texts to allow reading programs for blind people (Nielsen, 2000: p302). Additionally, he suggests that transcripts should be available for all spoken audio and video clips in order to support people with auditory disabilities (Nielsen, 2000: p308).

The ability to cater users with disabilities is a very important point that many websites do not consider is made in this section by Jakob Nielsen.

International Use

In this part, Jakob Nielsen demonstrates two different strategies of how a website can serve the global audience, namely internationalization and localization (Nielsen, 2000: p315).

The difference between the two is that internationalization allows all users to be able to understand the website in terms of metaphors and a simple, yet common language, e.g. English, Spanish or Chinese. Localization on the other hand, takes the site one step closer to the individual by changing the language and content in accordance with the users of the targeted nationalities. The most obvious difference internally between these types of approaches, is the cost associated with the cheaper internationalization compared to the more expensive localization, whereas the users will most likely gain more use of a fully localized website. In other words this part of the book is highly relevant when determining the strategy for serving users of the global community; it will be a tradeoff between internal resources and external effectiveness of the website.

As food for thought in this context, Jakob Nielsen expects the distribution of users by region in 2010 to be (Nielsen, 2000: p314):

North America:	200 million
Europe:	200 million
Asia:	500 million
Rest of the world:	100 million

Total:	1 billion

Future Predictions

Having been through the best practices of web design, it is interesting to hear Jakob Nielsen's opinion on the direction of changes that the web will encounter in the next decade.

As already stated above, according to Jakob Nielsen, the number of web users by 2010 will be around 1 billion. Furthermore, the web, as we know it, will blend from

the browser into the operating system of the computer, thus it will cease to be a different category from other programs (Nielsen, 2000: p362). Technology, such as television and telephony will blend with the web technology as we know it today, as the bandwidth will increase, doubling every two years, through a standard of personal T1 lines as the norm in 2003 and beyond (Nielsen, 2000: p364).

Jakob Nielsen is very careful not to predict, when he states (Nielsen, 2000: p376): "The only prediction that is guaranteed to be true is that the only constant is change"

In General

Reading this book leaves no doubt that Jakob Nielsen is a man of innovation and a visionary pioneer of the web. The book itself is different from many other books in terms of layout, coloring, column width and fonts; and it goes to show his commitment to making things more usable when it comes to getting the message across.

In his future predictions he summarizes that the only constant on the web is change (Nielsen, 2000: p376), thus it makes perfect sense to have a virtual dimension in parallel to the book and it makes the information live longer. This dimension will extend the life of the information provided in the book even though on a subject best characterized as change.

The book is a good and very useful practical guide for anyone designing a website; the book allows the designer to do an end-to-end usability checkup on the website, and it will help the designer to avoid the common pitfalls that could potentially prevent the website from meeting the large amount of users on the web. Furthermore, many of the considerations of usability about websites, apply to other aspects of computer interface design, but in order to get the most out of this information the reader must be able to abstractly relay the recommendations to other technologies.

Criticism

Having reviewed the book from an objective standpoint, a critical approach can also be taken on the information provided⁶. The areas in which there appear to be some uncovered sections are in the space between usability and content as well as a lack of detailed source information.⁷

The book does work a lot with the physics of usability as described earlier, yet it leaves a space between usability and good content. In Jakob Nielsen's goal of making a "HOME RUN" (Nielsen, 2000: p380, p382), three (H, O and R) letters solemnly rely on content rather than the wrapping i.e. usability. In other words, it would have been desirable to know more about the users weighting of usability against content; do users prioritize usability as 50% and content as 50% or does a 20/80- or 80/20-rule apply? Just counting the letters only the M and E of the "HOME RUN" relate to the usability directly; so is this an indication of 40% usability against a 60% content priority to create a successful website?

The book does not answer these prioritizing questions, and this is a weakness since a designer of websites will not be able to focus their efforts and prioritize resources when building new websites that are desired to meet a "HOME RUN" –how many people should be testing for usability as opposed to providing content in an optimal scenario?

Logically Jakob Nielsen's intent with the book has not been to provide all the keys to the temple of web wisdom; however it would have improved the book to simply rate the interfaces with other disciplines, such as content, in order for readers to seek other sources and for designers to get a hint at prioritizing.

Another area that can be criticized is the lack of sources for some of the statistics that Jakob Nielsen presents throughout the study e.g. the number of internet users in 2005 and 2010 (Nielsen, 2000: p348). Undoubtedly there is some underlying research behind the statistics, but a few references would not have hurt, and it would make the book more useful in academic contexts since the reader would be able to dig into more detailed research in different fields, thus being able to use previous field research as a platform for new research. Jakob Nielsen appears to be so well founded in both theory and empirical research, he has done an impressive share, so one can only expect that sources are available behind the scenes.

Prioritizing these sources higher could benefit a number of future research projects, and it would make the book a good piece of reference from an academic standpoint.

⁶ It is good practice not to begin criticism until the outline and interpretation is completed. (Adler & Van Doren, 1972: p163)

⁷ In criticizing, one should show wherein the author's analysis or account is incomplete. (Adler & Van Doren, 1972: p163)

A little more caution in statements should be voiced in Jakob Nielsen's future scenarios (Nielsen, 2000: p350-352). Surely, Jakob Nielsen's intent seems to be a thought provoking teaser for the reader to "think the impossible"; however a little academic documentation would have been a good help to justify the reason for reaching these statements. In other literature about a generation of scenarios, approaches such as future forward and future backward, are described (Fahey & Randall, 1998, p20), but Jakob Nielsen does not refer to any such techniques, thus he lets the reader speculate if the statements are just pure figments of imagination.

One could argue that the volume of empirical findings that make up this entire book would provide very good parameters for a future forward approach, and it appears that Jakob Nielsen is already doing this when defining "Nielsen's Law of Bandwidth".

In recognition of the fact that the goal of this book is for the reader to learn about designing web usability today and not in the future, it of course seems fair that the balance between future predictions and usability in current technologies leans a lot towards the latter; however the absence of sources for many of the findings of Jakob Nielsen's own research leaves room for others to work deeper with these future issues.

Conclusion

This book will undoubtedly make anyone closer to a “HOME RUN” as defined by Jakob Nielsen. It will urge caution whenever a designer is approaching some of the design flaws that are possible, and it will probably be able to help inspire a number of people to make more usable websites that meet the requirements for both people with disabilities and with languages other than English.

On the other hand, the book does little to assess the strength of usability balanced against content. This lack of assessment could fundamentally undermine the entire relevance of the book’s subject.⁸

In my opinion the book is of course relevant and of high importance; I would argue that it is not only relevant reading for anyone designing websites, it is relevant for anyone designing software in any aspect, as many of the problems with usability transfer across web and operating systems. I would argue that any user of a computer is a person seeking a goal of interaction, much as Jakob Nielsen describes the web user.

In recognizing the book as a valuable asset in the design process of the technologies used today, I can also reflect on my criticism of the lack of sources for documentation of both existing empirical findings and future trends. Most designers would, in my opinion, benefit from reading the book at face value; and more value can be derived from combining the book with Jakob Nielsen’s website with updates, newsletters and alerts. This combination will help the book survive much longer than other literature about such an evolving technology.

However, if this book is to be used as an offset for further research, it is somewhat harder to ensure the academic credibility. I must acknowledge that a lot of the documentation that the book lacks can be found on Jakob Nielsen’s website, and I realize that some of the deeper analytical data are most likely the property of Jakob Nielsen’s company Norman Nielsen Group, thus can be obtained at a fee. However, it should also prompt a researcher to seek other sources for confirmation, as the credibility of sources with economical interests at stake might need additional verification since the information is not in the public domain.

The fact that the book is highly relevant in many aspects of digital design makes it so much more inspiring reading, but it also makes one feel stronger about the lack of assessment of boundaries as described earlier. If the interface with content and relevance for that matter is more defined, it would most likely give the book even more value as it would have a defined space in the whole. Based on my findings in this review so far, I have decided to conduct research into the field around web usability in an attempt to establish these boundaries.

⁸ It is good practice to determine which problems the author has and has not solved, and which of the latter he knew did not solve. (Adler & Van Doren, 1972: p163)

Hopefully a success in this field will uncover new knowledge on the subjects around usability and additionally help justify more efforts into conducting usability investments, when designing websites and usability research in general.

Morten Middelfart

Sources

Adler, Mortimer J & Van Doren, Charles, How to Read a Book, New York, NY, Simon & Schuster Inc, 1972.

Fahey, Liam, Randall, Robert M., Learning from the Future: Competitive Foresight Scenarios, New York, NY, John Wiley & Sons Inc, 1998.

Moore, George E., Electronics, Volume 38, Number 8, April 19th 1965

New York Times, Making Web Sites More 'Usable' Is Former Sun Engineer's Goal, July 13th 1998.

Nielsen, Jakob, Designing Web Usability: The Practice of Simplicity, Indianapolis, IN, New Riders Publishing, 2000.

Nielsen, Jakob, Personal Website: www.useit.com