

HCI Article Summaries

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\$Date: 2000/04/25 02:56:23 \$

\$Revision: 0.9 \$ (\$State: Final \$); available online at
<http://www.cpsy.sbg.ac.at/~rblasch/study/cs665/articles/>



Table of Contents

Low vs. High Fidelity Prototyping Debate [1].....	2
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Twenty-Two Tips for a Happier, Healthier Prototype [2]	3
New Wave Prototyping: Use and Abuse of Vacuous Prototypes [3]	4
A Heuristic Evaluation of a World Wide Web Prototype [4]	6
Cognitive Processing of Hyperdocuments: When Does Nonlinearity Help? [5].....	7
The Effect of Hypertext and Processes of Reading and Writing [6].....	8
Cognitive Overheads and Prostheses: Some Issues in Evaluating Hypertexts [7].	9
The “Homeopathic Fallacy” in Learning from Hypertext [8].....	10
Enhancing the Usability of Text Through Computer Delivery and Formative Evaluation: The SuperBook Project [9]	12
The Relative Effectiveness of Hypertext and Text [10].....	13
Myths, Misconceptions, and an Alternative Perspective on Information Usage and the Electronic Medium [11]	15
Readers’ models of text structures: the case of academic articles [12].....	16
Organizational Obstacles to Interface Design and Development: Two Participant-Observer Studies [13]	18
Hypertext or Book: Which is Better for Answering Questions? [14].....	19
Multimedia and Hypertext, Chapter 10: Hypertext Usability. [15].....	21
References	23

Low vs. High Fidelity Prototyping Debate [1]

Summary

The authors discuss the importance of low and high fidelity prototypes. The “fidelity” refers to the appearance, not the business logic. It seems that low fidelity prototypes are good enough for 80% of the user interfaces. Tips for the correct choice of prototype are provided at the end.

Low fidelity prototypes are inexpensive and can be build fast, but they fail to show navigation and flow, overlook design problems and leave low level design decisions to programmers. But high fidelity prototypes are expensive and consume lots of resources.

Best Things

Table to summarize advantages and disadvantages. Tips for choosing the right prototype fidelity.

Improvements

Give Examples of existing prototypes (at least for high fidelity).

Question to Authors

What percentage of the project resources should be reserved for prototyping to be most efficient?

Article Questions

1. Is it always best to create a high fidelity prototype? If not always, when is it?
2. What is the main disadvantage of a high fidelity prototype?

My Opinion

The article is clear and well written. Understanding the difference between high fidelity prototype and final product may be difficult without more detail or examples.

Twenty-Two Tips for a Happier, Healthier Prototype [2]

Summary

Twenty-Two, quite obvious tips for prototyping, like “Use the best tools.” Not much meat in this article.

Best Things

None.

Improvements

About everything. Some Examples or references to studies would be good to backup statements. Statements that are not related to prototyping, like “The customer is king” should be removed.

Question to Authors

Why did you write this article?

Article Questions

1. Do the authors prefer idealistic over realistic prototypes? Explain.
2. Explain “Use the best tools.”

My Opinion

“Twenty-Two Tips How to Keep Your Job” seems to be a better title. Besides, there are not even references.

New Wave Prototyping: Use and Abuse of Vacuous Prototypes [3]

Summary

Creating Prototypes get easier with the evolvement of visual programming environments. But instead of showing that the product is really implementable they are only an empty hull, proofing nothing. This is because one can now create a nice user interface without implementing, or even knowing how to implement, the code behind the user interface.

Best Things

Customers often think just because the user interface is ready and good looking there is no or only little effort left for the code behind the scenes that can't be seen. The author extends this misunderstanding to designers and developers, that something is not working only because the prototype is.

Since the author is directly attacking the statements of Rudd, Stern and Isensee it is very fair to include their response in the article.

Improvements

The joke goes that “a program should be hard to use, because it was hard to write it.” It seems like that Berghel want to extend this to “the user interface should be hard to write, because the business logic is.” Since good user interfaces take up large portions of the code one should be happy that there are generators that can help. Also, good interface designers are not always good coders and may not always be able to express their good ideas in old-fashioned programming environments.

Berghel seems to say that “vacuous” prototyping is something bad and should be avoided. But a prototype is good if it serves it's purpose, and if the purpose is to show how the user interface looks like than it is good. But the developers should keep in mind that this prototype is just for showing the user interface and for nothing else. It is just like as if you start arguing about the user interface of a prototype that's single purpose is to show the data transfer performance, and nothing else.

Question to Author

How would you design a user interface when a full blown prototype is not feasible?

Article Questions

1. Why and when are vacuous protoypes dangerous?

2. What is the difference between visual programming environments and visual programming languages?

My Opinion

The article is easily understandable. But Berghel seems to make the same mistake as the author he attacks [1]. He seems to be a developer that fears that someone else, knowledgeable in user interface design but not coding, will take over this part of his job, or put him into troubles by creating something that is hard to implement.

If the final product is build upon the prototype, taking over the code of good interface designers but not coders is a pain, but the final product may be worth it.

A Heuristic Evaluation of a World Wide Web Prototype [4]

Summary

The Bureau of Labor Statistics (BLS) started very early (in 1994) developing a web interface. They took it slowly and started with a prototype, which was evaluated by them via a heuristic evaluation method, proposed by Jakob Nielsen. The method is cheap and includes UI experts and developers. In this case study the authors show details and results of their process.

Best Things

The paper is very well written and the steps of their evaluation can easily be followed. The results and their consequences, as well as their reasons, are explained.

Improvements

None.

Question to Authors

What is the status of the project now?

Article Questions

1. What method did they use to evaluate the prototype?
2. Both, UI experts and developers were involved in the evaluation. Why were the developers involved?

My Opinion

Very good example for prototyping in real life. It shows that prototyping pays off and evaluation is not only for experts.

Cognitive Processing of Hyperdocuments: When Does Nonlinearity Help? [5]

Summary

This review article combines the information of several studies concerning the advantages of hypertext over linear text. The main uses are general reading, learning and information retrieval. It turns out that there is "...no consistent evidence for the advantage of hypertext over linear presentation formats."

Best Things

Very good review. Lots of studies are included, but there is still enough information to show what's going on. Also, the text is well structured.

Improvements

There is quite some information in this article. Some overview or summary tables would have been useful.

Question to Author

Some suggestions for further studies are made. What is their status?

Article Questions

1. Is hypertext useful for information retrieval? Why?
2. What is cognitive monitoring? Why is it important?

My Opinion

Very good article. Must be read at least 3 times to get the most important points out of it.

The Effect of Hypertext and Processes of Reading and Writing [6]

Summary

Charney's review paper focuses on reading (understanding and comprehension) and writing hypertext. She presents the results of comparisons between hypertext and linear documents and tries to explain cognitive processes going on while reading. Main points are how users select paths through networks of text, how users decide if they comprehend something and when they stop reading. In conclusion, many people perform poor on this and that's the reason why hypertext has often no great advantage over linear text.

Best Things

Good presentation about problems of writing and reading hypertext. Useful advantages and disadvantages over linear text.

Improvements

None.

Question to Authors

Will the problems with reading and writing hypertext go away with further exposure to this medium?

Article Questions

1. Do all people have problems using hypertext? If not, who has not?
2. Do readers correctly decide if they comprehend something?

My Opinion

Good article that helps to understand better what cognitive processes are going on while reading and writing hypertext.

Cognitive Overheads and Prostheses: Some Issues in Evaluating Hypertexts [7]

Summary

Wright's review paper analyzes the relation between cognitive overhead and prostheses, ie the aids to perform a task. She states that, when evaluating hypertext, these aids need to be included. Also, some evaluation issues, like adequacy of text, acceptability, adaptability and skills, are discussed. Reducing cognitive overhead, like in navigation, seems to be an important issue for hypertext to be useful.

Best Things

Hypertext aids were identified as major issue and properly explained.

Improvements

“Prostheses” was probably used as an eye-catcher, but the term seems a little bit inappropriate to me.

Question to Author

How well developed are the navigational aids for current hypertext system?

Article Questions

1. Why does hypertext introduce cognitive overhead?
2. What is meant by “prostheses” in this article?

My Opinion

Hypertext introduces additional cognitive overhead. Reducing this through aids is not only useful, but a major issue for hypertext.

The “Homeopathic Fallacy” in Learning from Hypertext [8]

Summary

McKendree, Reader and Hammon discuss three fallacies of hypertext: “Hypertext is like the brain,” “Hypertext is like the mind” and “Structural similarity leads to educational effectiveness.”

As the term “fallacy” suggests, the authors do not agree with these statements. They state that too little is known about the brain to allow such comparisons. And even if they would apply, there is no guarantee that this is the best media for learning.

The authors state that “hypertext is quite a good medium for searching, browsing and retrieving information,” but avoid such general statement for learning.

Instead, they provide simple recommendations: “Think active” and “use what people already know about text.”

The former, think active, relies on the fact that learning is an active process; the latter, use what people know about text, on the fact that we already have learned to use linear text in its various forms effectively. This knowledge should be used in hypertexts.

Best Things

The article destroys the image that, with hypertext, we only need to copy the information directly into our brain, thus learning becoming a merely passive process. Learning is not simply an encoding process from linear text into hypertext.

“Hypertext breaks down the predictability found in linear text.” That’s true, we need new predictions for hypertext. Even for such simple things like the size of an article. For linear documents we have the number of pages, but what for hypertext?

Improvements

Some parts are a little bit hard to read. Not because of the content, but in the way they are presented.

Some things are only explained superficially, like “hypertext is quite a good medium for ... retrieving information.”

Question to Authors

How did the readers react to this paper?

Article Questions

1. What are the three fallacies stated in this article?

2. Can we simply copy information from hypertext into our mind?

My Opinion

I think, this and similar articles were very necessary during the hypertext hype. Hypertext is not the cure for everything.

Enhancing the Usability of Text Through Computer Delivery and Formative Evaluation: The SuperBook Project [9]

Summary

This article consists of three main parts, all related to the SuperBook project. The first part explains some cognitive issues that are relevant for the SuperBook project, like information retrieval, illustration presentation (pop-up or inline?). These were used as design guides.

The second part is about the SuperBook project and its evaluation. They talk about flaws, like too low program performance, and their solutions, e.g. the reimplementations in C.

The third and last part consists of a study of the CORE (Chemistry On Line Retrieval Experiment) project, where print, an article retrieval system (Pixlook) and SuperBook were compared.

In short, the product was quite effective. The problems in the early versions showed that producing an effective reader is a difficult task, and that constant evaluation is necessary in order to succeed.

Best Things

Not only the product was described, but also some aspects why they decided for certain features.

Not only the evaluation of the final version was shown, but also how it progressed. This clearly showed the advantage of evaluation.

Improvements

Although they talked about certain aspects of the design, the description is in no way comprehensive. For example, the choice of the programming language proved to be a mistake. But why they decided for the language in the first place is not mentioned.

No project efforts and costs were mentioned, but these would be very useful for getting a feeling for these types of projects. They were probably left out because the benefits of the products were not quantifiable.

Question to Authors

What's the status of the SuperBook project? Why have I never heard about it?

Article Questions

1. The SuperBook project was carefully designed. Was it effective from the very beginning? What do you conclude from your answer?
2. Name a program you know that closely resembles the SuperBook. What do they have in common, where do they differ?

My Opinion

I am not very happy to work on articles of this length/time ratio for class.

The Relative Effectiveness of Hypertext and Text [10]

Summary

This study has two main objectives: The comparison of hypertext and printed text, as the title suggests, and the comparison of manual and computer generated indices.

The comparison of hypertext and printed text leads to the result that both are equally good for “reading to learn,” but hypertext has an advantage over printed text in “reading to do”, especially when the search tasks are complex.

The second comparison, manual vs. computer generated indices, favors the computer generated indices for reference material. The computer generated indices, like a full text index, are less effective than manually generated indices when used with narrative text. This is because the automatic generation creates too many unwanted links, thus making it harder to find the desired information.

Best Things

Topic very relevant. Automation is what our business is all about.

Detailed description of the study.

Improvements

The expression “random links” should be explained.

Answer the question, why a one hour practice session with hypertext vs. a lifetime experience with printed text still leads to useful results.

Less statistical data should be used in the main text. If it is necessary, separate them in boxes.

Question to Authors

What is “random link” generation?

Article Questions

1. What different kinds of reading were studied? What were the results?
2. When does the study suggest that computer generated indices are useful?

My Opinion

After reading all the other articles this one does not come to surprising results. This seems to be “yet another use hypertext for searching” article. A big question of mine still remains unexplained: Why can we expect that people can use hypertext effectively after a one hour training session, and expect it to be more effective than printed, linear text, with which we have a lifetime of experience with?

Myths, Misconceptions, and an Alternative Perspective on Information Usage and the Electronic Medium [11]

Summary

The chapter is divided into 2 main parts. In the first part, the author talks about four myths related to the hypertext hype. These are: “Associative linking of information is natural in that it mimics the workings of the human mind,” “paper is a linear and therefore a constraining medium,” “rapid access to a large manipulable mass of information will lead to better use and learning” and “future technologies will solve all current problems.”

In the second part, the author introduces “a framework of reader-document interaction” called TIMS (Tasks, Information model, Manipulation facilities and Standard reading). The author states that this model should be used for describing the learning process.

Best Things

No article is useless; it can always serve as a bad example.

The author doesn't cite only himself.

Improvements

Don't offend other authors and then "proof" that you are right with a citation to your own work.

What about conciseness instead of filling pages with simple facts?

Question to Author

Was the quest to eliminate the misconceptions successful?

Article Questions

1. When is paper nonlinear?
2. Is the computer a good model for the human brain? Why or why not?

My Opinion

I don't like this article. He often cites himself when he is trying to defend his statements. Also, he should have spent some more time on his TIMS if it is really that useful, instead of filling pages with his opinion.

Readers' models of text structures: the case of academic articles [12]

Summary

This article proposes that the superstructure of text is important for the comprehension. A superstructure is, basically, the way a text is written, like a newspaper or an academic article. This theorem has been tested in two experiments.

In experiment one, the author asked twelve subjects to put together parts of an academic article that have been cut out and mixed up. These cut outs were text paragraphs, tables and figures. One test was run with and a second without the headings. After putting the text together a comprehension test was done.

In experiment two, the author asked eight subjects to assign text paragraphs to four different sections: Intro, method, result and discussion (IMRD). One test was run on paper and a second one on a computer screen.

The results showed that the subjects were quite good in finding the right sections because they knew the superstructure for academic articles, even without really reading the text. This “where am I” knowledge seems important for comprehension and must be preserved when creating hypertext.

Best Things

The article showed that the predictability of text is an important factor for comprehension.

Suggestions for further experiments.

Improvements

More than 12 subjects for further experiments.

Explain why the inclusion/exclusion of the headings didn't make any difference.

Question to Author

What's the purpose of experiment two on a computer? It was the same text, the only navigation item a button to turn the pages.

Article Questions

1. Is it easier to put an article together when the heading is included?
2. What was the goal of the experiments?

My Opinion

Nice theory, but his experiments were rather small. His suggestions reminded me of SuperBook and Acrobat Reader.

Organizational Obstacles to Interface Design and Development: Two Participant-Observer Studies [13]

Summary

Many people who are involved in the creation of interfaces seem to know the following design principles, or at least consider them as obvious.

- Early focus on users

- Early — and continual — user testing

- Iterative design

- Integrated design

But is the theory applied in reality? This paper tries to analyze the influence of the organizational structure to interface design by studying two organizations.

The authors identify many problems: Distributed responsibilities lead to inconsistent designs. Physical distance, formal communication and communication channels limit the very necessary communication between developers, users and interface designers.

It also seems like that management prefers a clean hierarchical structure with defined communication channels over a lean, efficient structure.

In conclusion, even if someone wants to apply the design principles, it would be very hard in the described structures.

Best Things

- Quotes from the involved people make the paper more vivid.

- Detailed analysis of the structure, their influence and flaws.

Improvements

Summary box to sum up the main findings.

As mentioned in the paper: Only two “old” organizations are observed for one month.

Question to Authors

Do you think the paper did make the organizations think about restructuring?

Article Questions

1. Why was the Marketing considered as of limited use for the developers/interface designers?
2. Why is indirect and formal communication sometimes ineffective?

My Opinion

I liked the article. Sometimes the design principles seem quite useless because they are so obvious. But knowing them is one thing, be able to and allowed to apply them another.

Hypertext or Book: Which is Better for Answering Questions? [14]

Summary

“Hypertext or Book” starts with a short review of previous studies, some showing that text, some that hypertext, is the superior medium. This helps to see where this study fits in.

Next, the main points of the study are given, namely: A wide variety of questions on a different sort of hypertext system was used, only non-linear information,

more “hyper” in text than previous studies and a moderate training session of 30 minutes.

What follows is the description of the test. An encyclopedia about Sherlock Holmes, available in both print and Hypercard 1.2.5, was used. There were 29 test subjects, all considered as novice users.

In conclusion, the hypertext system performed better for content questions, which are questions where the information is available in the text only, with no clues in the headings. The paper version was still better for non-text information, e.g. images. This is because there was no way to search those images.

Best Things

“Incidental learning” is very rare in hypertext, but more frequent in text.

Important question raised: How to draw the user’s attention to the appropriate tool at the appropriate times?

Improvements

In the 2nd sentence: “... have not found a consistent superiority for hypertext.” sounds a bit prejudice in favor of hypertext.

Incidental learning seems to be a point — but how much is it? Is the effect significant?

Question to Authors

How much more computer literate are novice users nowadays?

Article Questions

1. What kind of navigational aid was considered as new?
2. In what kind of question was hypertext superior?

My Opinion

I am getting kind of confused with the term “hypertext.” I thought of hypertext as linked chunks. But it seems like that the navigational aids are a core feature too.

Multimedia and Hypertext, Chapter 10: Hypertext Usability. [15]

Summary

This chapter reviews the aspects of hypertext usability. It starts with the term “System Acceptability,” reviews the usability parameters, applies them to hypertext and reviews some benchmark and non-benchmark researches.

System acceptability is the main concern and is broken down into the two parts Social Acceptability and Practical Acceptability. Social acceptability mainly deals with cultural constraints, so international usability is also an issue.

Practical acceptability includes the practical considerations, such as usability. Usability is broken down into the following points.

- Easy to learn

- Efficient to use

- Easy to remember

- Few errors

- Subjectively pleasing

The section about Benchmark Research reviews studies about interface issues, Hypertext vs. Scrolling Text Files, Hypertext vs. Paper, Users’ Subjective Judgments, Individual Differences and others.

What follows is a section about Non-Benchmark Research, such as Observing Users or Iterative Interface Refinement.

In conclusion, the main factors for usability are individual differences and the different tasks of the users. The qualitative observational studies provide additional insights and lead to improved hypertext user interfaces.

Best Things

Good selection of reviewed articles.

A critical, but not offensive, assessment of the reviewed papers.

Usability parameters mapped to hypertext context.

Improvements

Extend conclusions section.

Shorter discussion of “Iterative Interface Refinement.”

Question to Author

Do you think the World Wide Web as it is today is, in general, “usable?”

Article Questions

1. What are the usability parameters?
2. What are the two most important factors for usability stated by the author?

My Opinion

Very good article, I liked it. Many studies seem to worry about “Building the system for the users right.” A product may be usable for the users we think that use it, but is it usable for the actual users too? Are we “Building the right system for the users.”

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