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Usability in Interaction Design?

by

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Abstract

This paper starts off by posing the question what possible problems could arise when the Interaction Design discipline adapt usability. This is followed by a discussion concerning the influence HCI has had on usability and the methods that are used to study usability. Some of the differences between Interaction Design and HCI are outlined. It is learned that usability has much to offer when it comes to evaluation, but could prove problematic when it comes to design; especially in the early stages of a design process. It is concluded that usability most certainly provides an important tool to interaction designers, but that there is much to be learned about how its use could affect the design process.

Introduction

The world of computers is an ever changing world, and it seems to be endless ways of possible use. Great effort has been made in the past forty years to bring about a better understanding of computers, and how the interaction with them should be designed in order to make the most of them. This is the field of Human-Computer Interaction (HCI) and Interaction Design.

Some years ago I was working at the Department of Informatics at Umeå University. After having worked there for a year or so, I got the chance to participate in a project at Umeå Institute of Design. During my time at the Department of Informatics I had studied and learned a lot about HCI, and then when I got to work at Umeå Institute of Design I familiarized myself with Interaction Design. By doing so, I came to realize that there are so many different ways of working with computer use and so many different ways of thinking about the phenomena. It was inevitable that I would begin to think about how the different schools related to each other. The seed to what would become this paper was sown.

I believe that the difference that I noticed in my daily work at these institutions, was a difference caused by a fundamental difference between HCI and the design discipline. HCI has its cradle in the works of computer engineers and behavioral science. The first contributions to HCI were actually that of computer engineers, tinkering with the computer interfaces. This background came to have a great impact on later HCI research. Interaction Design on the other hand, is a rather new discipline that draws heavily from different design practices. Many of the fundamentals of theses disciplines have been defined through a dialog between architects and industrial designers.

Besides various design practices, Interaction Design has also been influenced by HCI. Usability, being one of the major contributions of HCI, happens to be one of these influences.

Since the design discipline in many ways differs so fundamentally from that of HCI, I wanted to know more about what happened when usability, a product of HCI, was adopted by Interaction Design. The purpose of this paper is therefore to study the implications of this on a theoretical level. I am especially curious about whether there are features colored by HCI, inherent in the usability concept, which could conflict with the design heritage that Interaction Designers has.

To better understand what characterizes usability, the paper starts of with outlining how HCI came about, how the field has developed over the course of years and how this have influenced usability. This is followed by a discussion of what constitutes Interaction Design and then there is a discussion concerning general differences between HCI and Interaction Design. The paper is concluded with a discussion about usability in Interaction Design. All this is done through a literature study where the thoughts and ideas of several persons, well-known for their expertise in related areas, are presented.

The history of HCI in short

What now follows is a short presentation of the history of HCI. It is brought to light how central the study of use is to the research field. This also brings some insights to which epistemologies it is, that have had an influence in the conceptualization of usability.

The first generation of computers was primarily intended to help people performing time consuming and tedious calculations. Because of the computer's inherent ability to manage abstract phenomenon and due to the development of computer networks, their use went far beyond what was first intended and even conceivable. The first computers were designed by engineers and operated by engineers. They were not really designed to be used by a single user and the interfaces were definitely not designed with the novice user in mind. Those who wanted to make use of the computers either had to talk to the engineers or simply learn how to operate the computers themselves. The later alternative was obviously not that easy. The idea about sophisticated information managing artifacts, simple enough to be operated by a single individual, had however already been conceived and this actually quite much earlier on. Starting out from the technological achievement of his time the visionary Bush (1945) speculated on the future use of technology. He envisioned a future where information managing machines could be housed in ordinary desks and he also presented the technology from a user-centered point of view.

When the use of computer's became more widespread the interest of studying human computer use increased. HCI as a research field began to emerge, but it is hard to say exactly when HCI was born. What can be said is that it was about the same time as the first computers were connected in networks, that the publications in this area increased noticeably (Nickerson & Landauer, 1997). HCI, or CHI as it is also commonly referred to, caught the

interest of computer engineers, psychologists as well as anthropologists. Likewise the publications originated from may different sources. This is also one of the reasons why it is so hard to pinpoint the exact time when HCI took form as a discipline of its own (Rozanski & Haake, 2003).

Cockton (2004) argues that economical aspects contributed to the formation of HCI. In those early days of computer use, the computers were so expensive that the cost for each second of processing time was immense. There were some experiments conducted by people working with ergonomics, but it was generally the computer engineers who designed the user interfaces (UI). Since they lacked the necessary knowledge and experience, their designs usually left much to be desired.

HCI emerged during the 60-70s, but the research first took real pace during the 80s (Carroll, 2002). Accordingly to Rozanski and Haake (2003) it was the development of Usenet groups and emails that made the first psychologists and sociologists start to think about the relationship between computers and their users. As the computers found their way to offices and peoples homes, psychologists began criticizing the methods that were used to establish knowledge about user use (Cockton, 2004).

Xerox PARC workstation Xerox Star, with its high-resolution screen, is often referred to in the HCI discourse as a technical innovation that highly contributed to easier use of computers. Apple's desktop metaphor then sparked the development of the modern graphical user interface (GUI). (Karat & Karat, 2003)

About the same time Apple came through with the desktop metaphor, the first reference to HCI a new discipline was made in a paper by Bill Curtis, entitled "The crucible of a new discipline" (Cockton, 2004). In the paper HCI was outlined as a multidisciplinary research field. The paper was published at the Gaithersburg "Human Factors in Computer System" conference in 1982 and Cockton believes this to be the start of what he defines as the psychologist's decennium. Carroll (2002) agrees, though not referring to Cockton, on this particular place and moment in time as the real emergence of HCI as a discipline. A reason for this, was that it was the work at this conference that lead to the formation of Association for Computing Machinery Special Interest Group on Computer-Human Interaction (ACM SIGCHI), which then held its first conference the following year (Karat & Karat, 2003).

Martin Maguire published a paper in 1982, where he argued that guidelines were most suitable when applied in the proper context, but it would take

another ten years before this subject would be touched on to a greater extent. In the 90s there was an increased awareness of the shortcomings of guidelines. Among other things it was argued that the context of use had a great influence on use, and that guidelines thus should be considered as being too general. While the 80s is referred to as the decennium of the psychologists, the 90s can be labeled as the decennium of context-centered research. As time passed the computer technology also evolved and information processing artifacts found new areas of application, which of course called for an even more elaborated understanding of use. Even if HCI became more pro-active it was pretty much still characterized as re-active. (Cockton, 2004)

Karat and Karat (2003) writes that those who have been working professionally with the use aspect of information technology (IT) have changed the name of their profession several times during the past twenty years. In the 80s they called them selves Human Factor specialists. Later on they changed name and began calling themselves usability engineers, only to once again re-title them selves now calling themselves user-centered design (UCD) specialists.

The Human Factor specialists considered the human being a factor in computer use and research were conducted in carefully designed laboratories. As the awareness of the significance of context increased, a change of name was needed to reflect the new understanding of use. When they later on changed their titles to UCD-specialists, this was to emphasize that the work they did was not just product assurance but product design and development. UCD is a quite new concept and has yet to fully mature. (Karat & Karat, 2003)

When studying the history of HCI it can be stated that the research field would never had existed if it was not for the technological advancement. I would not go so far as to say that the research is driven by the technology, but I do believe that the expansion of IT applications inevitably contributes to a greater understanding of the many facets of actual and potential use. Looking back, one also learns that HCI is a multidisciplinary research field, which has had an influence on both discourse and practice.

What HCI is

It is one thing to read up on the history of HCI and another thing to find a proper definition for HCI. As already described the research field is fairly new. Different disciplines have had different input at different times, so HCI

obviously does not lend itself easily to a definition. Nevertheless it is important to try to establish a delineated understanding of HCI, if one is to understand the general differences between HCI and Interaction Design.

Bill Curtis, who was among the first to propose HCI as a discipline, wrote in his article that HCI studies how people use computers, so that the computers can be designed to better suit the user's needs (Cockton, 2004). The following is an example of a more recent attempt to do the same:

> "*HCI is the study and practice of usability. It is about understanding and creating software and other technology that people will want to use, will be able to use, and will find effective when used.*" (Carroll, 2002, p. xxvii)

Even though Bill Curtis and Carroll seem to agree on what the research object is, they do have slightly different ideas of how to go about it. Bill Curtis paper predates Carroll's but even if it was not so, it would still not be so strange to find that they have slightly different opinions on the matter. Browsing through the HCI literature you are certain to find a bunch of different definitions. Cockton (2004) even goes so far as claiming all existing definitions as being inadequate.

Even if Cockton would be wrong about this, it is a fact that there are several coexisting definitions. It is not uncommon to find usability intermixed in these definitions, or as with Carroll (2002) even revolve around it. This is however not always the case. Cockton (2004), partly inspired by Bill Curtis, defines HCI as a design practice. Keeping in mind the multidisciplinary characteristic this is kind of provocative, because Cockton actually implies that a study which does not intend to produce a better design is not HCI research. Consequently psychologists, or sociologists, could study Human-Computer Interaction without necessarily performing HCI research.

It is quite clear that Cockton (2004) is strongly against usability as a governing principle in HCI. He argues that the notion is bound to a methodology that has led HCI into a dead end and that the research should revolve around values. This is an opinion that seems to go along quite well with Karat and Karat (2003). In this article HCI is presented as a research field that is shifting its approach from an outdated tool perspective towards that of a purpose oriented. This means that instead of focusing on the use of the system, the understanding should emanate from the purpose of the system.

HCI is such a complex discipline that I do not dare to suggest a definition of my own. This would not really serve the purpose of this paper either. Instead I would like to conclude with a short summary of what can be learned from scouting through different definitions. It is clearly a difficult thing to produce an absolute definition of HCI, and a unifying theory that all contributing disciplines could agree on is lacking. I suspect that this might be one of the reasons that the notion, usability, has become such a central theme in HCI. It is even so central to HCI that some researchers in the field deem it necessary to voice their concern, that usability actually has become a limiting factor. Whatever their criticism may be, it is however safe to say that usability most definitely is a product of HCI and colored by the contributing discipline's epistemologies.

What Interaction Design is

Bill Moggeridge claims that he, in collaboration with Bill Verplank, was the first to speak of Interaction Design in the early 80s. Alan Cooper, the creator of the revolutionizing GUI to Visual Basic, disagree and consider himself to be the one who first talked about Interaction Design in the early 80s. Whoever was the first, neither of them actually went into any further detail about what really constituted Interaction Design. (Marcus, 2002)

In the book *Interaction Design: Beyond Human Computer Interaction*, Preece, Rogers, and Sharp (2002) present Interaction Design as a discipline that draws heavily from academic disciplines and design practices. Among academic disciplines one finds: ergonomics, psychology, informatics, engineering, computer science and social science. Design practices that have contributed are: graphic design, artist-design, industrial design and the film industry. In their book one finds that the authors consider the main purpose of Interaction Design as:

> "*…designing interactive products to support people in their everyday and working lives.*" (Preece et al., 2002, p. 6)

It could be argued that this is confusingly similar to both Carroll's (2002) and Cockton's (2004) notion of HCI. In my opinion Preece et al. (2002) do not manage to establish what differentiates the two. Fortunately there are several other sources that can enrich one's understanding of Interaction Design.

Shedroff (1999) argues story-telling is at that at the heart of Interaction Design. Technological advances apart, the fundamentals of story-telling are still the same. He also argues that Interaction Design constitutes a part of what could be called Information Interaction Design. The other components are Information Design and Sensorial Design. Information Design is in itself a recognized discipline that, in short, is about converting data to meaningful information. It has its roots in publishing and graphic design. Shedroff points out that:

> "*Information Design does not replace graphic design and other visual disciplines, but is the structure through which these capabilities are expressed.*" (Shedroff, 1999, p. 2)

Sensorial Design is:

> "*…a term used to include the presentation of an experience in all senses. For example, Visual Design only covers visual expression and presentation of the visual sense… …Likewise, all of the other human senses (touch, smell, taste, etc.) are elements of an experience that can be designed.*" (Shedroff, 2005, p. 1)

Winograd (1997) also argues that Interaction Design must be seen as its own discipline. According to him the computers have created a new medium that is both active and virtual. Since no other discipline takes this into account, he sees the need for Interaction Design. If the computers created something that could only be interpreted visually or if they created something embodied, either traditional visual design or architecture would suffice. It is worth noticing that this recognition of Interaction Design is very similar to that of Shedroff's (1999).

If one compares Winograd's (1997) and Shedroff's (1999) understanding of Interaction Design to that of Preece et al. (2002), one may notice that there is a difference. Whereas Shedroff sees Interaction Design as a component of Information Interaction Design, Preece et al. do not even mention Information Design or Sensory Design.

In a review of Preece et al. (2002), Löwgren (2002) writes that he is quite skeptical towards the kind of Interaction Design that is described in the book. Löwgren argues that the full scope of Interaction Design is not covered, which thus minimizes the potential of the discipline. The main flaw, according to

Löwgren, is that the book is based on traditional HCI and does not take the design inheritance seriously enough. Thus it seems to me as though Löwgren's recognition of Interaction Design has more in common with that of Shedroff (1999) than Preece et al..

As with HCI it is hard to find an absolute definition of Interaction Design that everyone agrees on. It is however quite clear that while the discipline has a foothold in academic disciplines the design disciplines have had a major impact on the field as well. Since HCI is not the only influence, there are naturally key differences between the two.

HCI and Interaction Design differences

In his critique of Preece et al. (2002) Löwgren (2002) argues that HCI is based in behavioral science and engineering, and focuses on goals, tasks and usability. Since the book is steeped in HCI, at least more so than in design, the title *Interaction Design: Beyond Human Computer Interaction* is not appropriate; it simply does not go beyond. In Löwgren's opinion Interaction Design is a design discipline and deeply rooted in the traditional practice of the designer. Even though Preece et al. introduce the field just as so, Löwgren argues that the book in general communicates something else.

Löwgren's (2002) view of HCI as based in behavioral science and engineering, matches well with that which have been written earlier in this paper. The first contributions to HCI were made by the computer engineers themselves and during the 80s it was the psychologists who dominated the field. Design on the other hand is a discipline that is fundamentally different from, for an example, the behavioral scientists.

Design is interdisciplinary and architects as well as industrial designers and engineers are a part of it. The topic began to draw interest in the beginning of the 60s and became established during the following twenty years; a time span dividable into three generations. In the beginning the designer was thought of as an objective expert and design was characterized as an iterative problem based process. This view of the design process changed when the designer came to be regarded more as a deliverer then an expert. Now user participation was considered a very important aspect of the development. The final generation was about the designer's competence, and the difference between the designer as an engineer and the designer as a designer was emphasized. (Löwgren, 1995a)

Winograd (1997) describes the difference between design and engineering as a difference in perspective. Even if the object of design is the same, the designer works in a way that is essentially different from that of an engineer. Whereas the engineers prefer measurable and quantifiable aspects of the object, the designer takes the human needs, desires and values into consideration. The designer stands, as Winograd writes:

> "*…with one foot in technology and one foot in the domain of human concerns, and these two worlds are not easily commensurable*". (Winograd, 1997, p. 157)

With all this in mind the critique Löwgren (2002) has towards Preece et al. (2002) becomes more evident. A book about Interaction Design should extensively address the design work practice and not be allowed to draw too much of the behavioral and engineering practices that HCI is anchored in.

However, to say that HCI has nothing to do with design is to simply things. Fällman (2003) claims that HCI has emerged as a design oriented discipline and points to methods in HCI that preserve user involvement, and in other ways as well, bear characteristics best understood from the design perspective point of view. So, when Löwgren (1995a) emphasizes the importance of separating Interaction Design from HCI, Fällman teaches us that HCI in many aspects is design oriented. At the first glance this might seem contradicting, but studying this more carefully shows that this is not the case. Fällman claims HCI to be design oriented and Löwgren states that Interaction Design is a design discipline. There is a distinct difference even though it is not perfectly crystal clear, at least to me, exactly where HCI ends and Interaction Design begins.

From all this we learn that while HCI certainly has contributed to Interaction Design. It is absolutely not the only source, and some does not even consider it a main source. This implies that it must not be that all concepts and methods in HCI necessarily are compatible with Interaction Design. One such concept is usability. Since usability is at the very heart of HCI I believe this to be worth taking a closer look at.

What usability is

The first steps towards user friendly interfaces were taken by computer engineers who put together guidelines. Common-sense was the main resource when solving the problems they encountered. (Cockton, 2004)

The first paper about usability, in the HCI discourse, was written by Roberts and Moran (Wiberg, 2003). They divided the concept into several dimensions and their work came to echo throughout history until present day. The dimensions of usability are usually defined as: efficiency, learnability, error rate, memorability and satisfaction. Efficiency is defined as to how long it takes for a user to complete a specific task. The degree of learnability tells us how long time it takes to learn how to use the system. Error rate is a measure of how often the user does something that generates and error when performing his or her tasks. Memorability is a measure of how easy it is to pick up the use of an artifact, after not using it for a period of time. Finally, satisfaction is the aspect of usability that takes into account the feelings the user has towards the artifact. (Wiberg, 2003)

As mentioned earlier, the 80s was the era of psychologists. Accordingly to Wiberg (2003) it was especially the experimental psychologists with their longtime tradition of studying human behavior, who developed the methods used to study usability. As time passed, the usability concept gained recognition and established itself at the heart of HCI.

In the beginning usability studies foremost focused on the immediate use of interfaces, but during the 90s the importance of studying the context in which the use took place was recognized (Wiberg, 2003). So, one can clearly see how the development of usability matches that of HCI. Accordingly to Karat and Karat (2003) it could actually not be any other way. Since HCI is interdisciplinary usability is a key notion which everyone can agree on.

Karat and Karat (2003) elaborates on some problems associated with developing products with high usability and refers to the work of the Human Factors and Ergonomics Society. In the midst of the 80s they began investigating the possibility of creating a standardized development procedure that would guarantee usable systems, but they have still to come up with a standard that guarantees usable systems.

The principles of good design are outlined in ISO9241-10. In ISO92141-11 usability is defined and ISO13407 describes how to design for usability. Interestingly ISO9241-11 is more of a high-level guidance not usually associated with an ISO standard. The preciseness one would expect to find in an ISO standard is lacking. Instead one finds examples with the purpose of illustrating what good design is all about. Some of this fuzziness can be

attributed to the fact that even though the importance of the context is generally recognized, nobody really knows how to deal with it. (Karat & Karat, 2003)

Karat and Karat (2003) are not the only one to come down hard on the standards. Jokela, Iivari, Matero and Karukka (2003) argue that ISO13407 only give partial guidance of how to design for usability, and that the standard does not provide a good enough description of how to find user goals and measure usability. I argue that ISO13407 can be criticized at an even more fundamental level. Standardization of design is, as learned previously in this paper, utter nonsense from the design point of view.

Even though there are several coexisting definitions of usability, the related methods can be divided into just two groups. In the first group we find empirical usability methods and in the second group inspection methods. Think-aloud protocol, clinical experiments and interviewing techniques are examples of some of the methods found in the first group. These methods are hugely popular and for those who can afford it there even exists special equipment for supporting this kind of studies. Ericsson and Nokia are two companies who have invested in usability laboratories dedicated for this very purpose. The inspection methods generally rely on the experience of an expert. The expert first studies the object in question, and then share his or her opinion about it. Examples of inspection methods are: heuristic evaluation, cognitive walkthrough and theory-based review. (Wiberg, 2003)

A distinctive trait for most usability evaluation methods are that they require an artifact to be studied. Historically it has often been so that the methods have been used to ensure the quality of the end-product before it is packaged and delivered to the customer. This approach has been criticized and the importance of bringing usability testing to the early phases of the development process has been emphasized by many different sources. (Wiberg, 2003)

An important aspect of usability that has not been dealt with previously in this paper is that usability is not a quality of the artifact itself. Usability is a quality that is created during use (Cockton, 2004; Wiberg, 2003). If this statement is not to contradict the fundamental principle of inspection methods, the behavior of human use must be predictable. Obviously this is not always so. Jakob Nielsen, one of the most renowned advocates of heuristics, acknowledges this critic but claim that guidelines can save designers a great deal of time anyway and especially so when the study is conducted by experienced experts (Nielsen, 1994).

As already mentioned the context has become recognized as an important influence on use, and the methods used to study usability have changed accordingly. Even so, usability still seems to be a concept related to measurable and quantifiable factors. Karat and Karat (2003) claim that the satisfaction-dimension of usability has gained a lot of attention in later years, but accordingly to Wiberg (2003) satisfaction is still overlooked and is not dealt with in a satisfying way. As an example, Wiberg points at the shortcomings of traditional usability, when it comes to measurement of entertaining experiences and fun. At the same time she notes that extending usability with fun and entertainment also could draw negative critique. The reason being, that some could argue that a system still would be usable even if it was not fun and entertaining to use. Even so Wiberg strongly argues that fun and entertainment are important aspects of usability and that these qualities should be studied within the context of usability.

Holmlid (2002) has also studied the use aspect of interactive artifacts and argues that usability has certain other shortcomings as well. While he does not manage to produce a novel use quality model, he does point at areas of use which usability does not illuminate. Among other things he emphasizes the importance of understanding use of interaction artifacts in relation to what could be called the time-dimension. Another example is that usability does not reveal how a notification in a power plant should look and feel. Further on, context should not be thought of as something passive.

An important difference between usability and use quality is that while usability is focused on the artifact itself, use quality puts the behavior of the user in focus. An example that illustrates this difference is that users, who deliberately work in an inefficient way to cope with world load, would not be benefited by a usability study. Use quality studies, on the other hand, would provide this kind of information about user behavior to the designer. (Holmlid , 2002)

If Holmlid (2002) is right in his criticism of usability, then usability has certain weaknesses. If Wiberg (2003) is right in her criticism of usability, then usability must expand so that new dimensions of use are covered. If Karat and Karat (2003) are right, there seem to be some serious problems related to the standardization of production procedures of highly usable artifacts.

When studying different definitions of usability, one finds that the main idea is about ascertaining certain aspects of use and establishing their importance in describing a more or less usable artifact. Obliviously there is something to it but it is, as this paper shows, also clearly so that traditional

usability does not cope with all aspects of use. It can also be said that even if the methods reveal important information about the usability of a product, the methods are developed with the key notion of investigating the usability dimensions and provide measurable and quantifiable factors.

With all of this in mind, I would like to argue that usability studies alone do not guarantee the success of a system. While usability does investigate certain important aspects of use, it does not include all aspects that make the interactive artifact highly usable or not.

Instead of proposing a definition of my own or selecting one of the many existing definitions of usability, I have here presented the main features and some of the criticism that usability has received. By doing so I have illustrated what characterizes the concept and the associated methods.

Non-standardized usability

As described earlier usability has been a lot about optimization, a theme that goes back all the way to the early days of GUI design. However as touched on earlier there has been a slight change in recent years, a development which in this paper is voiced foremost by Wiberg (2003).

This new kind of usability is not so concerned about optimization, but rather focuses on the experience of use. Whereas traditional usability deals quite successfully with the use of the typical word processing program, it fails when it comes to accurately describing as for an example the gaming experience. The criteria for a good game are essentially different from that of the typical word processing program. To free up as much cognitive resources as possible, most users would probably want a word processing program with a transparent UI. Where as, tackling the potentially difficult user interface of a game could be an essential component of the gaming experience. A range of concepts which is not dealt with in the ISO standard for usability, have to be used in order to deal properly with the usability of this type of UI (Douglas & Hargadon, 2000).

Wiberg (2003) makes a point that this is not something that the mainstream usability has really picked up on. It is impossible for me to say whether the different types of usability will converge in the future or not. This discussion does however further highlight the soft spots in traditional usability.

Usability in Interaction Design

Since Interaction Design supposedly is all about designing products which are as usable as possible, interaction designers should consider usability worth taking a closer look at. Not unexpectedly, most the literature referred to in this paper supports this notion. But if interaction designers could benefit from using usability in their work, is it a trouble free adaptation?

To begin with I would like to argue that the many facets of usability make it hard to produce a consistent all-embracing understanding of usability. Especially when investigating how usability goes along with the principles of Interaction Design. In a way of handling this, the thoughts and ideas of authors with different opinions and perspectives on Interaction Design and traditional mainstream usability, will now be presented and discussed in regard to one another.

As noted previously, usability is the product of HCI. While HCI has several methods to offer when it comes to the measurement of usability, it has been found hard to develop standardized procedures which automatically lead to high usability (Karat & Karat, 2003). Then there is also the question regarding the proper timing for using usability. As an example, Wiberg (2003) discussed the problems involved with usability testing at the end of product development. While this might lead one to believe that usability testing should be carried out at early stages of product development, this could accordingly to Löwgren (1995a) be devastating to the innovative elements of the design process. Even though these two statements seemingly contradict each other, this do not necessarily have to mean that usability and Interaction Design does not mix. It does however seem to point to something that could be a problem. Let us take a closer look at what this could be.

As mentioned earlier Löwgren (2002) was hesitant, not to say critical, towards Preece et al. (2002) for emphasizing traditional HCI in a book about Interaction Design. Why this could be a problem has been discussed several times in this paper and studied from different perspectives. It has also been learned that Löwgren is not the only one who sees the necessity of separating HCI and Interaction Design. This implies that methods associated with usability are influenced by HCI to such an extent that it could prove problematic to use usability methods as an interaction designer. Alan Cooper, who has extensive experience from the corporate world, argues that while there is not anything wrong with using usability in itself, one can not replace an Interaction Designer with someone whose main expertise is in usability (Anderson, 2002). Coopers critique is thus a warning towards standardized

design production procedures. This is an opinion that matches well with that of Karat and Karat (2003).

From what have been learned earlier in this paper, I understand this problem as having to do with the identity of usability. Usability, being very much about measurement and quantitative data, could be thought of as an approach to design that is fundamentally different to that of Interaction Design. It is in the nature of usability methods to require an identification of measurable properties. If the properties are not known, there is nothing to be targeted. The problem that arises is ironically that the identification process could influence the design of the final product. If the methods are applied at the beginning of the design process, the qualities that are searched for could generate findings which pretty much define the very design solution and this without the designer even knowing about it. If you do not know what the design solution is, then how could you possibly define the qualities that make it usable (Löwgren, 1995a)?

I would like to argue that there is yet another aspect that is worth taking a closer look at. While the interaction designer's role is that of involvement, more than a few usability methods adhere to typical research ideals such as objectivity and non-involvement. This is something that probably has to do with the fact that many of the methods have been developed by HCI researchers and that Interaction Design has a foothold in design disciplines. It is however not so that this is true for all usability methods. Participatory design, for an example, recognizes the benefit of involving the user in the design process (Wiberg, 2003).

Something that could point to a direct state of opposition between usability and interaction design is found in comparison of Wiberg's (2003) arguments on why usability should be extended to include measurements of fun and entertainment, and Alan Cooper beliefs that the interaction designer should not be held responsible for the satisfaction dimension of the design (Lauster, 2002). I find this to be an interesting remark! As far as Alan Coopers beliefs goes, Shedroff (1999) curiously argues that Interaction Design has story-telling at its heart. Are they talking about the same Interaction Design? Is it not so that story-telling should offer at least some degree of satisfaction, if for no other reason just to keep one interested? Since I am not citing Alan Cooper directly I will not dwell on it any further, but he is a prominent interaction designer and I believe his statement was worth noticing.

What can be learned from all of this is that as with HCI, it seems as though there are several ways of defining the role of the interaction designer and this certainly adds to the complexity of the study.

As a concluding remark I want to emphasize that I have not found anything in the literature, which I have made reference to, which explicitly argues against the use of usability or of its possible use to interaction designers. On the contrary the literature tells us that usability is a most useful tool, when it comes to analyzing and working with certain properties of interactive artifacts.

Conclusion

This paper has, among other things, discussed what traditional usability is and the influence HCI has had on usability. While this study shows that it is difficult to find a definition of HCI that everyone agrees on, it can also be concluded that many of the existing definitions to a great extent revolve around usability. Even those who do not agree on the importance of usability at the present time, at least recognize that usability has played a most important historical role in defining the research field. Thus it can be concluded that HCI has had a major impact on usability. This also becomes apparent when one takes a closer look at the methods used to study and measure usability. There exists a whole range of methods that differ quite considerably from each other, and it is quite clear that they originate from different disciplines. However, they do have certain characteristics in common, one being that they generally are focused on evaluation of quantifiable factors. Usability is also often defined as having different measurable dimensions that tells us something about the quality of the artifact. Thus it could be argued that this type of methods lies closer to that of optimization, than innovation. As this paper learns, usability has in the hands of professionals also often been used accordingly and is quite often applied in the final phase of product development.

There is more to Interaction Design than optimization. Being a discipline that draws heavily from other design disciplines, as well as from HCI, it is a discipline that emphasizes unbiased design solutions. It is found that usability methods with engineering characteristics could be devastating to the design process, especially if applied in the early stages of the design process. Further on, due to its focus on quantifiable dimensions, traditional usability could miss out on qualities of use that is not about optimization but rather about soft

incalculable values. A new wave of usability research that focuses on this kind of use further highlights these issues. However while this new wave do bring about new concepts and ideas, mainstream usability research has yet to be colored by these efforts. Basically it is pretty much the same as it was several years ago.

Still, real world application of usability does show that usability contributes to better design and this paper does not find anyone arguing against the use of usability. It is very likely that usability could be a good thing to have in the set of tools that the interaction designer works with. The findings in this paper do however raise some important questions. In what ways will the usability methods influence the design process and what consequences would this have for the final product? Are all usability methods usable in Interaction Design or does some have to be excluded? Are there any modifications to usability that needs to be done, or are the dimensions of usability appropriate in the Interaction Design discourse?

This paper does not answer any of those questions, but ends up concluding that there certainly are reasons for looking into them more carefully.

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