

Lucia Dossin - Thesis

Abstract

In the context of User Interface Design, there is currently a trend to rename the components of human-computer interaction: the User, the Computer and the Interface. In this new terminology, the term 'Users' should be replaced by 'people', 'Computers' should be referred to as 'devices' and 'Interfaces' should disappear altogether.

What are the motivations and consequences of such a shift in the terminology in regards to the visibility of technology? (And why does that matter?)

Introduction

I intend to use 3 statements as an introduction to the problem:

“

One of the horrible words we use is users. I am on a crusade to get rid of the word 'users'. I would prefer to call them 'people.' ([Don Norman, 2008 – UXWeek](#))

We believe technology is at its very best when it's invisible. When you're conscious only of what you're doing, not the device you're doing it with. And iPad is the perfect expression of that idea. It's just this magical pane of glass that can become anything you want it to be. ([iPad Trailer, 2012](#))

The best interface is no interface. ([Golden Krishna, 2013 – SXSW](#))

The changes in the vocabulary are proposed in the name of efficiency and better adequation of technology (namely, computer technology) to human qualities. These changes reflect not so much the verification of a fact (users are people, in this case) as it reflects a design choice (or guideline?) (designers, marketing gurus and ICT companies want Users to be defined as people, devices to be perceived as magical and interfaces to stop existing). Any design choice is guided by a combination of ~~material reality~~ practical matters (available technology, budget, deadlines) and an objective (build a house, print a book, design a website, create a product, etc) according to guidelines (house owners' personal demands, educational principles, marketing briefing, users' familiarity with similar products, etc).

My interpretation of these statements is that they contribute to the dissemination and acceptance of the idea of invisible technology as absolutely positive, natural and desirable. Whether or not invisible technology (also referred to as ubiquitous computing) can be avoided is another question. My point is that the change in vocabulary around human-computer interaction, as suggested in the statements above, reinforced by a material

translation of those statements into actual devices and infrastructure, contributes to an asymmetric scenario where the User loses power. Causal connections are lost, logical thinking gives room to magic. Ignorance is celebrated, as it translates into focus and efficiency. Decision-making process is transferred from the User to the Designer.

Chapter One - What is a Computer?

This chapter will contain descriptions of each element in the interaction and will confront those definitions to the statements terms. By doing this, I intend to prepare the reader for my arguments in the next chapter.

In order to discuss the terminology around Human-Computer Interaction in the context of User Interface Design and the ongoing trend to 'upgrade' those terms, it seems wise to first define the terms which are being discussed: User, Computer and Interface. The setting in use for this research is: Users are the human beings which are interacting with the Computers (giving input, sending commands, retrieving output from the computer through an Interface). Static, dictionary-like definitions of the terms are certainly possible, but these usually do not explicit the historical layers that involve the terms and its meanings - which as I will show is essentially important in this research. Within the interaction between humans and computers, each term of this interaction (User, Computer, Interface) is a component of a relationship. Both the components and the relationship have changed over time. Not only do they change over time, but also the meanings they aggregate through time are the result not only of technological development, but the application of this technological development to a convenient feature, based on a conceptual model. (search for references on this)

In this chapter, I will point out important moments regarding the development of the relationship between humans and computers. In those moments, it is possible to verify this interdependency between technological possibilities and their applications through features, based on a conceptual model. I argue that technological advance does not produce anything by itself. It needs us, humans, to translate it into social artifacts according to the models we define. By stating that, I refuse the idea of 'natural' that is brought by the statements being scrutinized.

Computer, User and Interface and their definitions through time

The principle of the modern computer was described in 1937 by Alan Turing (On Computable Numbers, London Mathematical Society) but the use of tools for aiding computing and calculation dates way back. [This episode](#) - involving Radhanath Sickdha being promoted to 'chief computer' due to his good work in discovering the highest mountain in the world, in 1852, after 4 years of computing mathematical data - shows that even people could be called computers when performing the task of computing and calculating. This is a good example of change of meaning over time and the importance of the historical context regarding these definitions. (link retrieved at Hodges, Andrew - Alan Turing Internet Scrapbook, <http://www.turing.org.uk/scrapbook/computer.html> - accessed Feb 18, 2015) In the modern configuration, inaugurated by Turing, computer is a machine,

not a person.

In the late 40's, Computer is a machine as big as a medium-sized apartment, which uses punched cards as data input and output, in which the manipulation of switches and cables works as programs, which aim at solving military problems (more specifically, fire-control systems and missile trajectory calculations). A machine like this could not be produced on a large scale - due to its cost, its size and its need for specialized work to operate it, it was designed and built for government use. (consider Annet's comment, add other uses of computer at this time)

-> add small timeline graphics here?

Technological research, experiments and developments kept changing the numbers (size, speed, price) which were used when describing a computer. With the changes in these numbers, changes in the User and in the interaction Interface came along. The possibility of making a smaller machine for a smaller price put computers inside companies. In the early 50's, IBM was the company behind the first mass-produced computer: the IBM650 - also known as the Magnetic Drum Machine. Its Manual contains not only descriptive information, but also a quite detailed explanation on how to program for the machine. Contrary to its predecessors, which were aimed mostly at large government agencies, the Magnetic Drum Machine was designed to be affordable and easy to use. It was cheap (and discounts for universities were possible), small (would fit in one room) and user-friendly (programmed in decimal rather than in binary). (Art Miller <http://www.mta.ca/~amiller/ibm650/ibm650.htm>, Columbia University <http://www.columbia.edu/cu/computinghistory/650.html>, accessed Feb 18, 2015)

Color displays and Graphical User Interfaces (GUI) were the next big features made possible by technological development and incorporated into computers. These features, available at the 'right' market price since around the early 80's, brought with themselves the possibility of selling computers to 'ordinary' people. This is the moment when the computer began to look like the computer as we define it today: the personal computer, operated by an User who is an ordinary person, through a graphical Interface.

Even though very little has changed in the realm of GUI's after the mid 90's, when the GUI was revamped through the possibility of overlapping windows (except for some minor make up, such as making icons glossier and providing animated transition effects), the 'evolution' of the personal computer did not cease at the original advent of GUI's. Touch screens were already available in PDA's the late 90's, but the next milestone would only be set around two decades after that. Not a purely technological question, thus.

In 2007, Apple brought the iPhone to the market, consolidating a new set of definitions for the triangle User - Computer - Interface. Apple's approach regarding the computer was based on Steve Jobs' definition of it: 'the personal computer should be like an appliance. With the Apple II and then, more notably, the Macintosh in 1984, Apple pioneered the practice of creating machines that users were not supposed to open and fiddle with their inwards.' (Isaacson, Walter, *The Innovators*, 2014, p. 252/253) This approach does not refer only to hardware: Apple's position regarding the use of software in the iPhone is also one of centralized control. The prohibition of pornographic content and the need to have Apple's

Store approval for installing Apps (short for Application, a program) are clear examples.

The iPhone was followed by the iPad, in 2010. In the iPad, the same conceptual model was implemented: the appliance computer **proto-ubicom/internet of things stuff**. This is true specially when it comes to 'mobile devices' - smartphones and tablets.

Desktop/laptop computers are still relatively accessible to the User. This approach is not exclusive to Apple though. Apple pioneered, others followed. ~~Android and Windows Phone also have for their mobile devices their equivalent to the Apple Store, the central control for Apps explain what Apps are authorization and installation.~~ There is here already a clear shift in the suggestion of the 'role' of the User: from User to Consumer, from installing programs to shopping apps. In his paper 'Sandbox Culture' (date, publisher), Aymeric Mansoux describes how this shift actually goes beyond a mere terminology question. By running in an Android system a few UNIX commands that inform what your username is, which directory is your home and which groups you, as an User, belongs to, he shows that the User is no longer an User, but an App (p. 18). He calls this environment a Sandbox and explains why the term jailbreaking, when referring to the act of overriding Apple's caged system, is actually very appropriate. ~~(In Android, there are differences in the way these restrictions are handled and the reconquest of the lost privileges is called rooting.)~~

->Discuss the importance of the interface in this context, mention Apple's motto 'it just works' and relate that to a system in which less intervention from the user means minimizing eventual errors/failures. The importance of the GUI going through changes in this process and the role of user friendliness in communicating with the User and assuring the trade-off is worth.

In iPad's trailer, Apple's states that technology is magical and should remain invisible. That's of course advertising language. But as Lazzarato points out in his 'Struggle, Media Event' (http://www.republicart.net/disc/representations/lazzarato01_en.pdf accessed March 16, 2015), 'language, signs, and images do not represent something, but rather contribute to making it happen. Images, languages and signs are constitutive of reality and not of its representation.' (p. 2)

Technology is not invisible, but locked and inaccessible. The device is not magical, but a machine with limitations and control of many kinds to assure a low margin of 'failure' or the need for intervention by the User. The User is far from being 'people'. The User is an App.

If in the appliance computer model the very user-friendly Interface helps distracting the User from the fact that (s)he has less power over the device, in a situation of ubiquitous computing and 'no-interfaces', this power imbalance is even bigger (proportionally, user-friendliness is extensively more present as well). **->Mention the 'non-existing' interface in ubiq. contexts and show how that is equivalent to removing from the User the possibility to make choices/decisions.**

Describe car-computers, fridge-computers, whatever-computers. Golden Krishna example, car/key.

Chapter Two

In this chapter I intend to expose what could be, in my perspective, the motivations and consequences of the shift in terminology regarding the visibility of technology.

One important aspect of the attempt to 'upgrade' the terminology lies on a supposedly 'naturalness': contemporary computers are expected to function according through 'natural' gestures performed by the user. collect some references/proof The idea of a 'natural' outcome suggests the existence of one possible solution, the only possible result. This is, of course, opposed to the fundamentals of design process. elaborate

Alan Kay, responsible for this new approach towards Human-Computer Interaction - sees the GUI as a valuable educational resource. In 'User Interface: A Personal View' (2001, W.W. Norton), he explains that his understanding of the computer as a medium rather than as a tool meant that Users should be able to read *and* write it. "The ability to 'read' a medium means you can access materials and tools created by others. The ability to 'write' in a medium means you can generate materials and tools for others. You must have both to be literate." (p. 125) His proposal for DynaBook (<http://www.mprove.de/diplom/gui/Kay72a.pdf>, accessed Feb 28, 2015), the portable computer in the size of a book, designed 'for children of all ages', puts the educational value of computers at a central spot and regards its user as 'an active agent, a creator and explorer, [...] far more capable intellectually than is generally supposed'. (p. 4) It is a document that shows the User being regarded as intelligent, active and capable. Therefore, the Graphical User Interface is seen as a way to enhance knowledge - not simply a shortcut to a task. Even though it should facilitate tasks by simplification, it should also allow complexity.

In an interview to Time Magazine (<http://techland.time.com/2013/04/02/an-interview-with-computing-pioneer-alan-kay/>, accessed Feb 28, 2015), Kay acknowledges that in a consumer society, there is the desire to have no learning curves. 'This tends to result in very dumbed-down products that are easy to get started on, but are generally worthless and/or debilitating. We can contrast this with technologies that do have learning curves, but pay off well and allow users to become experts (for example, musical instruments, writing, bicycles, etc. and to a lesser extent automobiles).'

Confronting Kay's ideas to Steve Job's positions regarding a computer, it becomes clear that in the appliance computer, the User to which the computer was designed is regarded as not intelligent, passive and unable. The User should be given limits within exploring the machine, the User is not welcome.

compare/confront also interface design x magic / several passages in Lori Emerson's 'Reading Writing Interfaces' with 'Tog On Software Design' statements regarding the same topic (lots of material to write about)

From a commercial perspective, the idea of invisible technology and magical panes of glass is extremely profitable. It simultaneously removes the conflicts from the consumer's sight and creates dependency on keeping the experience smooth. Consumers should leave technological matters to the experts (in this case, giant ICT companies, ultimately).

Chapter Three

Chapter three will discuss the relevance of the theme: why I consider that technology should not be always invisible. Why is it important that the User remains able to realize and understand that/when (s)he is interacting with a computer and that there's nothing magical about it?

I regard this configuration as problematic, and not only in the realm of personal computers. It is already problematic in this realm write more and better about this - it's terribly written, but it can escalate elaborate/use better words. Once this relationship with technology is accepted, it can easily be invoked and justified in other situations other than using an iPad or an iPhone. Causal connections are lost, logical thinking gives room to belief, hope, faith, magic. Decision-making process is transferred from the User to the Designer, from the Citizen to the System Administrator. - rephrase all this... repeating introduction

Conclusion

(Maybe) I should mention that there is no need for despair, mention the role of art in the process of bringing these invisible infrastructure to sight. :D

Bibliography