

# Lucia Dossin - Thesis

## Chapter One

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.

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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: computer, user and interface. The setting in use for this research is: Users are the human beings which are operating the Computers (giving input, sending commands, retrieving output to/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 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.

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. Even people could be called computers, when performing the task of computing and calculating. [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 - is a good example of change of meaning over time and the importance of the time frame 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.

Computer was once described as a machine which was as big as a medium-sized apartment, which used punched cards as data input and output, in which the manipulation of switches and cables would work as programs, which would aim at solving military problems. This is the definition of a computer in the late 40's. It contains not only the description of the machine, but also of how it was operated, by whom and for whom: 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.

Technological research, experiments and developments kept changing the numbers 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. But before we go on, there are still a few details regarding the rise of the GUI that are worth mentioning.

Alan Kay, responsible for this new approach towards Human-Computer Interaction - the GUI - explains in 'User Interface: A Personal View' (2001, W.W. Norton) 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 the 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).'

Going back to our timeline, the 'evolution' of the personal computer did not cease at the original advent of GUI's. After the Graphical User Interface was revamped, in the 90's, through the use of overlapping windows, about 20 years later touch screens were available at market price and would be used in devices so small they would fit one's pocket.

In 2007, Apple brought the iPhone to the market, consolidating a new set of definitions for the triangle Computer - User - Interface. Apple's approach regarding the computer was based on Steve Jobs' definition of it, since Apple II was being designed: '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) But this approach does not refer only to hardware. Apple's position regarding the

use of software is also one of centralized control. The prohibition of pornographic content and the need to have Apple's Store approval for an App installation are clear examples. In this setting, the User to which the computer was designed is regarded as not intelligent, passive and unable.

-> Aymeric's Sandbox Culture reference

-> confront the statements