

INTRODUCTION

What is Interaction Design? Why is this discipline so little known and understood when it has become, little awareness notwithstanding, so critical and strategic in today's contemporary and globalized society. —

Interaction Design is, in a short and inevitably simplistic sentence, the discipline that studies, designs, and implements the increasingly complex interaction between people and digital reality. In recent decades these interactions have achieved a dimension, complexity and impact on masses of people which was previously unthinkable and is still little understood. —

Mankind has interacted throughout history with other men, with tools and later machines, with nature and the planet. Architecture has mediated and designed this interaction with buildings and cities; sociology has studied, but seldom designed, the interaction of individuals and groups with society; industrial design has mediated and designed the relationship between man and objects, tools and machines. —

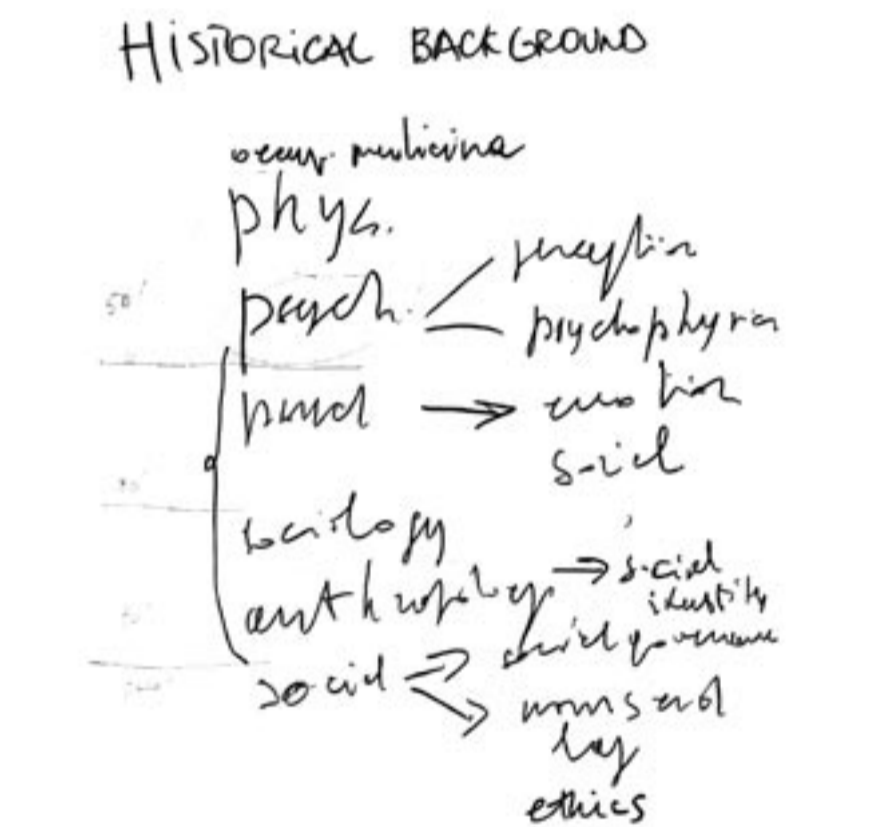
Probably one of the many turning points was the emergence of fighter jets, where speed of maneuvering required that a single pilot manage, in instants, a huge amount of inputs and information from a large array of instruments and communication tools. In a fighter, a single pilot has to fly a plane and complete a mission at the same time, the objective being to liberate him from as much flying as possible, to free his mind and time to also complete the mission. —

Any mistake means almost certain death, providing a powerful incentive to get the thing done right, as well as justifying the cost of plane and investment in training. —

Every new technology goes through a three stage process of adoption. The first people to use the technology are enthusiasts; they don't mind complexity, actually enjoying the challenge and the entry barriers that it poses to others. In the second stage the technology has matured to the level where it can be proved to create value in the work environment, and is adopted by professionals. In this situation, people accept that it is difficult to learn how to use the technology, as they are instructed to do so by their organizations; they take a certain pride in the acquisition of skill, differentiating them as experts. In the third stage, the technology becomes inexpensive enough to offer value to consumers, who are willing to spend their own money to acquire it; in this stage the technologies must be understandable and easy to use, in order to satisfy the needs and desires of the consumer. —

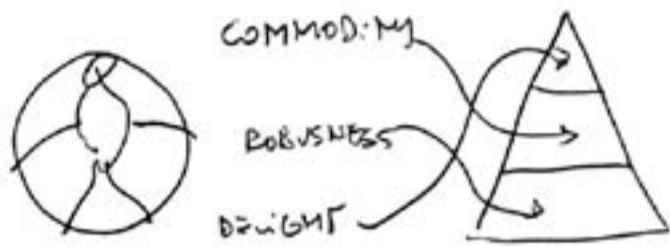
While the methodology of Interaction Design applies to enthusiasts and professionals, it becomes something absolutely special and unique when it touches mass market products and services; there it acquires an amazing dimension in terms of a "force multiplying effect" and its impact on society becomes cataclysmic for the good or for the bad. —

The nature of Interaction Design is to facilitate access of the masses to information, communication and services and to create simple solutions to very complex problems; its mission is to achieve this "progress" by bringing quality to the interaction, and by working on complex and mysterious issues such as "high tech-high touch," or bringing back materialization to an increasingly dematerialized reality. —



It is difficult to define when and how this discipline was actually born. There have been studies on keyboards done by IBM before World War II; it definitely started with early analog electronics, but exploded with the appearance of the transistor and digital electronics. —

During the last two decades, many contemporary digital technologies have reached the mass market in just a few years, notably personal computers, the World Wide Web, wireless communication and networks. This has opened a world of opportunities in the global mass market; technology is used, today, at a fraction of its potential, due to the ever-widening gap between technological capabilities and human ability to use them. Digital technology is today a parallel reality to the real physical one. These are totally new phenomena, and nothing like this has ever happened before in the history of humanity. Interaction Design, a discipline without ancestors, and without history, is struggling to deal with this incredibly complex environment; struggling also to accumulate knowledge, develop educational and professional methods, languages and tools.



In the last twenty years we have seen typewriters replaced by personal computers, which require a Graphical User Interface (GUI). Now we are challenged by a wireless, always on, and often broadband, World Wide Web of digital voice and data communication. This requires new types of interfaces, both physical as well as intellectual. In the terms used in cognitive science, we have moved from psychology and sociology, to anthropology and ethics. We have been used to operating in a world of physics and psychophysics, dealing with simple isolated machines through psychology and sociology. Now we find that anthropology and ethics are needed to deal with mass phenomena that happen when communication becomes instantaneous, worldwide, multimedia and mobile at the same time; when consumers become also producers of content; and when, finally, all the boundaries of a traditional, albeit advanced industrial society, are broken by a new digital reality, which is both virtual and extremely real.

The future promises to be even more complex, with the emergence, over the existing Internet platform, of virtual networks that connect objects as well as people. Through a combination of Global Positioning (GPS), time awareness and Radio Frequency Identification (RFID), the system knows about the nature and location of objects in

real time, and being intelligent, can establish connections. The Internet is being populated by increasingly intelligent agents, which travel and embed themselves in other computers to perform tasks; there are intelligent switchers and routers that create multiple connections, not always planned.

Rules and regulations are needed, but are lagging way behind in implementation, as everything is happening so fast. The prescribed borders of politics and legislation have been left largely behind, as innovation is occurring in a free, enthusiastic and definitely anarchic way.

Society has harnessed and managed many technological revolutions in the past, one of the most potentially dangerous ones being nuclear energy, whose dangers have been, in the past 60 years, reasonably under control; that was a capital intensive, scientifically obscure matter reserved for the elites.

Digital networks are being used regularly by both the WWF and Al Qaeda, the good and the bad, as has always happened in history; what is interesting and merits more attention from the general public is that the digital revolution has a larger potential impact than any technological revolution of the past. Its nature is distributed everywhere, pervasive, in every aspect of day-to-day life, increasingly embedded and invisible. To deal with this requires intelligence, understanding and conscience, which are all things that we cannot expect to come from politics. It demands the human activity of looking ahead of social evolution, rather than living in the development level of the past millennium.



AN OVERVIEW

Interaction Design has gone through many steps in recent decades; a quick overview may help to understand where we are now, and where we may find ourselves faster than we expect.

It started in the stage of interface design by mediating the relationship between people and machines to information. It moved quickly to mediating between people and other people through machines. Now it is mediating between individuals, groups and society at large; from shopping to transportation, from medical progress to entertainment, everything is digital.

In terms of types of “knowledge,” Interaction Design went from symbolic knowledge, to iconic knowledge, to enactive knowledge.

Robotics connected to networks allow today for both tele-transportation and tele-manipulation; the next frontier is digital technology combined with biology, bioengineering and nanotechnologies.

The underlying issue is that there is an excess of available technology but a totally insufficient understanding of its potential, its use, or its effects on individuals and society.

The combination of dematerialization and invisible infrastructures means that nobody really cares to know or understand what goes on, as long as what they want happens, and they can access the services they need or desire.

The ecology of the digital world is based on the fact that the capacity of human nature to absorb and internalize current technological developments is a fraction of the available output itself; people are permanently and constantly late. The amount of resources spent in understanding and learning how to use the technologies is a fraction of those spent in developing them, and the speed at which this phenomenon occurs is constantly accelerating.

For historical reasons Interaction Design has developed in few academic circles, research centers and universities, generally in closed environments with limited contacts with industry and the real world, without much concern for sharing and discussing its effects in a broader context, using a cryptic specialist language and even while its impact on the real life of masses of people all over the world was growing exponentially. Now is the time to come out of the closet and expose this reality.

Design is the critical word; in a casual way the discipline of design, in its broadest sense, has emerged as the best equipped to deal with all the issues described above. Design methodology, with its understanding of the point of view of multiple stakeholders, and its capacity to tackle complex issues, and to productively meld different disciplines, is the best approach available to deal with such a complicated scenario.

THE ANTHROPOLOGICAL BACKGROUND

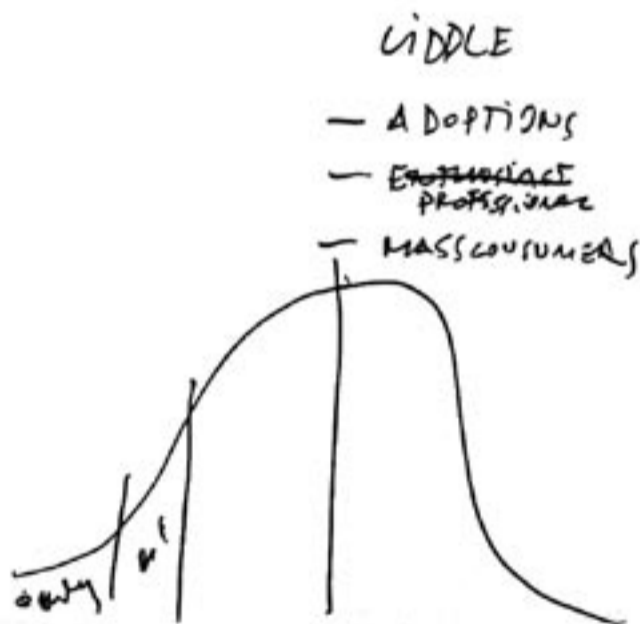
The digital revolution is entirely a global mass event. Many of the technologies are low cost and affordable for huge masses of people.

The digital revolution empowers individuals, without requiring intensive capital or large industry, and can be developed everywhere that the Internet exists.

The digital revolution is a typical “post-industrial” event, based essentially on ideas and know-how.

Interaction design is not a classic discipline like physics or psychology; it is a modern discipline that evolves rapidly as technology and its relationship with society evolves; it has already been through various stages in the past ten years, and will spin off other disciplines over time.

Interaction design is not a scientific discipline. It is a humanistic one because it deals with people and culture, the slowest entities on the planet to accept changes. It is about understanding technology, actually seeing through



it with a “designer” eye, and applying its potential to large audiences through the design of viable interactions. It is also about understanding society and, to a degree, markets. -

Interaction design is the tool to increase the use of technologies from the current 10 or 20% of potential to an 80 or 90% level of potential. -

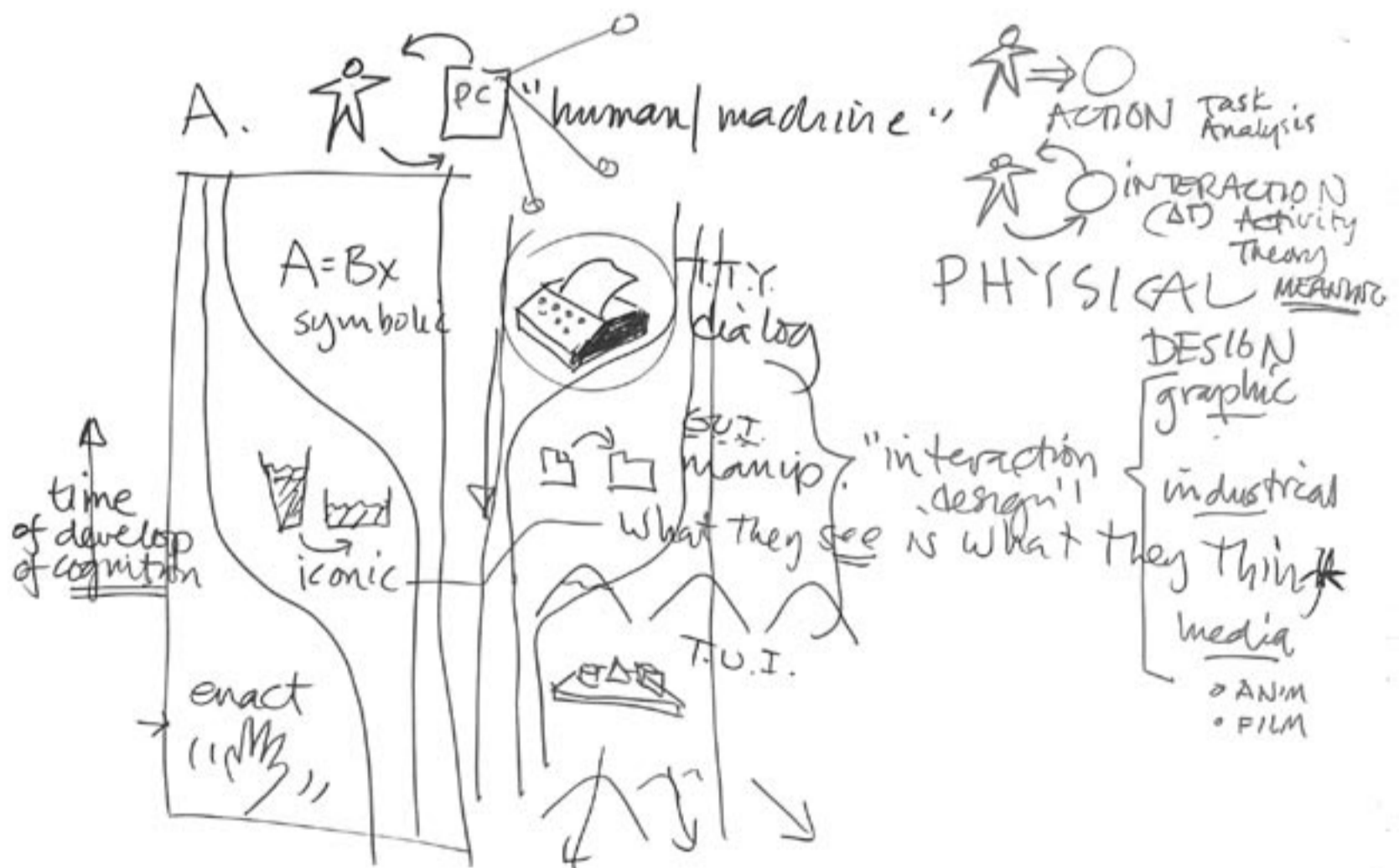
Interaction design bridges the gaps between various technologies in order to make the whole system more efficient and extensive, sometime making visible the need for small technological bridges. -

Interaction design uses the methodologies of design, and the practice of combining different disciplines, to address a task, to hide technology, and to make it transparent, understandable and usable. -

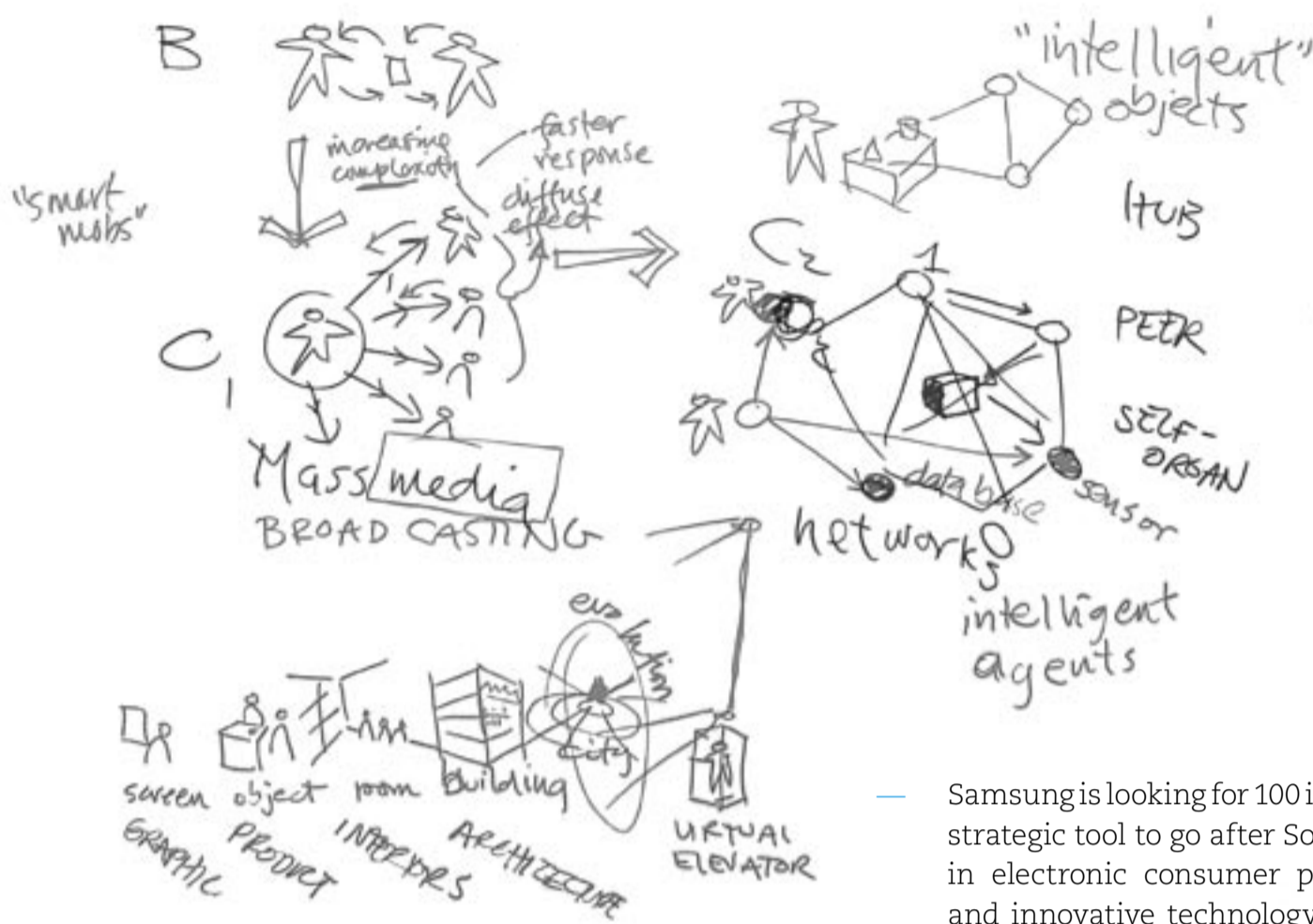
Interaction design is about bringing IT to the masses with better interactions, better access to the huge amount of information already available, and new ways to organize and visualize them. It can enhance better integration of disabled people in society; it can reduce the need for repetitive low-value activities, while opening new possibilities for educated people. It can make some of the unnecessary complications of modern life disappear by the use of transparent technologies, thereby reducing stress. -

Interaction design can rethink, after the .com crash, the huge potential of the net, which is still only marginally used. “Seamless” is a keyword that has been used for years, and is still relevant. Whether we are thinking of an agenda, an appointment, a train ticket, a credit card, accounting records, expense reports, archives of past trips, or statistics; everything should be compatible and connectable, and in the future it will be. -

There is a convergence of technological tools that are becoming more friendly and easy to use, while the new digital generations grow up with a greater than ever capacity to use them, yet the gap between potential and use is still immense. -



Sketch by Bill Verplank.



- Samsung is looking for 100 interaction designers, as the strategic tool to go after Sony for the world leadership in electronic consumer products. Industrial design and innovative technology are considered as givens. Interaction is the new frontier. —
- The last decade of advanced programs for the US Military assume a ubiquitously digital environment; this includes logistics for Iraq fully tracked with RFID, weapons-delivery entirely managed on a network, robotic weapons, knowledge and intelligence management. —
- NASA and the FAA are developing a new airspace management plan. The concept is to free any flying object, many of which anyway in the future will be drones, from the current constraints of air traffic control. This will be enabled by an active interactive network which will continuously supply, distribute, and manage information about weather, traffic separations, routing and so on, automatically providing the on-board data management necessary to assure safe flying. —

THE ECONOMIC BACKGROUND

The plunging cost of internet access and connectivity has commoditized the World Wide Web in less than eight years. The prices of hardware are also continuing to fall, as mass production reaches huge numbers; only the latest generation of devices maintain a higher cost, and this drives continuous innovation and always faster product cycles. The productivity increases are understood by almost everybody; IT and communication have gone to the top of the list of priority investments even for individuals. Interaction design has not yet, but it will. —

Interaction design is happening worldwide as we speak, as evidenced by the following examples: —

- In December 2003 Walmart met in with its hundred largest suppliers to start a process that will require them, starting in December 2005, to have RFID tagged any large shipment, from a container to a pallet of products. This will require from those companies an investment in the range of \$5m to \$10m each, for an aggregate of around \$750m. This is the first step in a plan to install RFID tags on every Walmart product, all the way to the consumer. —

This and many other smaller themes are examples of Interaction Design today; new ones are developed every single day, representing a huge change in the life of most individuals on the planet. This offers immense business opportunities, as broad in scope as the Industrial Revolution. —