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Being Human

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Context: About the book

The book (report) originates from a 2007 HCI meeting organized by Microsoft, the topic of which was finding a new agenda for HCI which would “place human values at its core” [1]. Going much deeper than previously, HCI was to not only consider how to optimize the interaction of humans and technology, but also what role technology may play in human-to-human interactions. The book is a review of ideas proposed at the meeting to facilitate that goal.

The book is split up into four parts, of which we will focus on the first one only:

1. A review of the past 20 years (that is 1987-2007)
2. Key questions for the next 15 years (that is 2007-2022)
3. A proposed agenda as laid out above
4. Recommendations

We will summarize the first three chapters (the first chapter in higher detail - **I have managed to misread the assignment and summarized the entire report before realizing only one chapter was asked for.** I left the summaries of the other chapters in) and give a recent technology exemplifying it.

1. Our changing world

As computers have and continue to become cheaper, we can differentiate between four eras of computing by relating the number of computers to the number of

users.

| Era | Name | #Computers | #Users |
|-------|---------------|------------|--------|
| 1960s | Mainframe era | 1 | many |
| 1980s | PC era | 1 | 1 |
| 2000s | Mobility era | few | 1 |
| 2020s | Ubiquity era | many | 1 |

This has a multitude of effects on our lives.

1.1 Usage of computers explodes

This brings into the spotlight the question of maintaining health while interacting with computers via relatively unergonomic but traditional devices such as the keyboard and mouse while hunched over a desk, the results of which may include back pain, carpal tunnel, vision issues, headaches, RSI, ...

A potential solution to these issues may be found in gesture control or other input devices such as a tablet with a stylus. The latter also solves other problems related to the mouse such as enabling drawing or signing your name. Other potential remedies given by the authors are touchscreens and speech control.

1.2 Minification of computers

This has enabled and increased the presence of mobile computing devices. Previously utopian wearables and handheld mobile devices become a reality, but are fundamentally limited due to their size (“genie-in-a-bottle” experience). The authors raise the question of whether improvement in these areas is possible through improved interfaces.

1.3 Robitics and AI

Cost reductions and the advancing field of AI enable personal assistants and housekeeping robots. This however also raises the question of the loss of human individual agenda: will people blindly follow what their assistants tell them to do? And how will the data required by the AIs be collected?

1.4 Impacts on education and family life

Sinking costs also allow computers to be used in schools, even in developing countries and economically less powerful regions. Educational videos and even interactive learning material may be used in the classrooms. Usage of such interactive material is likely to rise when new generations of teachers, themselves raised in the ubiquitous computing era, take over classrooms.

Another effect are very specific-purpose devices which may, for example, allow families to keep in touch better even across large distances. The authors give the

example of an “interactive fridge magnet” for the family home where members of the family can leave messages for each other, or other technologies which may allow parents to better keep track of where their kids are, reducing worry and stress. Digital media is also mentioned as a possibility for the elderly to entertain themselves.

1.5 Societal impact

As examples, the authors name the interaction between the government and the people. Storm warnings and general updates are increasingly given out via digital media. Digitization reduces costs and has itself become cheap enough that even in economically weak nations the vast majority of the people has access to mobile phones.

1.6 Conclusion

Further results of these trends may impact education, human interaction over long distance, children’s entertainment, adult entertainment and the utilization of technology to spread (mis-)information.

In conclusion, becoming cheaper enables computing to be embedded into every aspect of our lives, even to such a degree that it may become mandatory.

2. Transformations in Interaction

Ubiquitous computing means ubiquitous interfaces, hyper-connectivity and “the end of the ephemeral”^{1 2} (saving all information). This implies:

- Interfaces need to deviate very far from the classic desktop to fit their purpose, but also stay intuitive
- Technology makes skills like calculating in one’s head obsolete which might be worth worrying about
- Potentially huge societal changes through hyper-connectivity
- The existence of “digital crowds” and questions about their behavior behind the mask of anonymity
- Digital footprints: The potential for mass surveillance and never having to delete or forget anything
- Existence and facilitation of creative uses of technology, e.g. for musicians

Not all of these points can be addressed solely via HCI. An elaboration for those that can is given in the following chapter.

3. Looking Forward

The authors proceed to consider how HCI might help positively shape the massive impact that ubiquitous computing will have on society as laid out previously.

¹“Human values in the face of change”, p.342

²trying this inline footnote thing

For example, hiding or showing certain information in interfaces may prevent or enable stalking behavior.

An extension to the established Analyze - Design - Implement - Evaluate cycle is proposed: the “Understand” phase, positioned before the Analyze phase, meant to consider the broader impact of the technology and steer the design to the best possible impact.

In order to better understand said impact, collaboration with other fields of study that are “equipped to address societal, moral and ethical concerns” is advised by the authors. These concerns may furthermore have to be reevaluated from a modern perspective which also considers recent technological transformations of society.

In conclusion, the role of HCI should move from designing efficient and effective information processing systems to designing human-value-centered systems. The authors give three case studies as examples of how this might be done.

4. An example

To exemplify the changing world laid out in Chapter 1 of the report, I think the most obvious (and best) choice would be the smartphone. Putting anything from eMail, Wikipedia, maps and video conferences to cat videos and online dating in your pocket, instant internet access afforded to us by smartphones is one of the single biggest changes ever made to society by any technology so far, impacting people’s professional and private lives alike and making Apple history’s first *trillion dollar company*. It is an insane achievement on par with the car, Penicillin and sliced bread. And it only took a decade to revolutionize everything, basically nothing relative to humanity’s multi-million year history, showing just how quickly our world can change.

Here’s some math. $4^7 * 69 = 420, \sum_{i=0}^{420} i$

References

- [1]: “About this report”, p.10
- [3]: “The Way Forward”, p.55