Knowledge Work & Dark Side of IT

29.9.2016

Sanna Tiilikainen
Outline

• What is knowledge work
• What is Dark Side of IT
• Examples of the Dark Side of IT in knowledge work
  + how to overcome these with design
Learning objectives: “New tools for thinking about the old things”

• Special characteristics of knowledge work
• Role of ICT in knowledge work
• Paradoxes of ICT use in knowledge work
• Dark and Bright Sides of IT
• Why and how to mitigate the Dark Side of IT with design
Why learn about knowledge work and Dark Side of IT?

Today, almost all of us are knowledge workers

- Me, you and your customers

Most of us can be affected by the Dark Side of IT

- Unless, of course, you are aware of the problem & have the tools to overcome it

Some benefits of mitigating the Dark Side of IT with design:

- New business opportunities
- Ethical, sustainable ICT use & design solutions
- Increased customer satisfaction
Overview: Knowledge work
What is “knowledge work”?!  

Definition:

“Producing **new** knowledge from existing knowledge, either individually or in (distributed) teams, with the help of ICT”

→ routine tasks are not knowledge work, but everything else is

**Knowledge workers, examples:**

Analysts, data scientists, specialists, coders, planners, managers

Source: Davis (2002)
Why is knowledge work special?
A brief overview of work history
Office work, 1850’s – 1950’s:
Hierarchical, supervised, fixed tasks “scientific management”

Source: Davis (2002)
Transformation of work: 1950’s-2016’s

1950’s Onwards:
Computers + Information Systems

1990’s Onwards:
Internet + Social Media

Source: Davis (2002)
Work + ICT =

- Possibility to work in several teams and locations, combining knowledge from different sources
- Birth of "knowledge work"

Source: Davis (2002); Drucker (1973)
Knowledge work, today:
Flexible, distributed, self-organized, teamwork

Source: Davis (2002); Drucker (1973)
What does a knowledge worker do? Many types of tasks:

- **Job specific tasks**
  - Examples: Analyses, instructions, reports, programs, action plans, decisions

- **Knowledge building and maintenance tasks**
  - Example: build a network of colleagues to discuss new technologies

- **Work management tasks**
  - Example: schedule tasks and meetings to avoid overlaps

Source: Davis (2002)
What are the work requirements for a knowledge worker?

- Having an existing knowledge base “expertise” & constantly updating it
- Capable of individual work & Teamwork
- Capable of concentrating in one task & working in several places and parallel projects
- Self-organized way of working & organizing collaboration
- Advanced use of ICT

Source: Davis (2002)
Knowledge work & ICT = Happy end?

ICT enables knowledge work = “The Bright Side of IT”

Anything else we should care about?

Source: D’Arcy et al., (2014)
Knowledge work requirements revisited: note the two sides

**Work requirement:**
- Having an existing knowledge base "expertise" & constantly updating it
- Capable of individual work & Teamwork
- Capable of concentrating in one task & working in several places and parallel projects
- Self-organized way of working & organizing collaboration
- Advanced use of ICT

**What does this mean in practice:**
- Your knowledge decays fast ➔ pressure to update knowledge
- You have to manage yourself & your networks (simultaneously)
- You have to be in many places at once
- You have to constantly figure your work practices out (by yourself)
- ICT enables (or causes) this!

Source: Davis (2002)
Knowledge work &
The other half of the story:
Dark Side of IT
What is Dark Side of IT?

Fact: Today, we use ICT for everything we do (almost)
But ICT are often not designed with “everything” in mind
→ unintended uses can happen, with unintended consequences

”The Dark Side of IT”

= The unintended, negative consequences of ICT use

Source: D’Arcy et al., (2014)
What is the Dark Side of IT made of?

“Wicked Problems”

= Complex, social interdependencies in ICT design and use

➔ ”Solving one problem creates another problem”

Sources: Davis (2002); D'Arcy et al., (2014); Schoder et al., (2014)
The “Dark Side of IT” arises from the requirements of knowledge work, "enabled" by ICT.

Work requirement: Advanced use of ICT

What does this mean in practice: ICT enables knowledge work & the Dark Side!

Source: Davis (2002)
The Two sides of ICT in knowledge work

Bright side of IT:
- Better communication, coordination, collaboration and knowledge exchange, access to knowledge and people
- Working anywhere, anytime with anyone
- Increasing accuracy of results and social contacts, cultural exchange

Dark Side IT:
- Always on –culture
- Information overload, technostress, multitasking, ICT interruptions
- Technology addictions and misuse, privacy risks
- Mistakes, social offence, isolation, cultural clashes

Sources: Davis (2002); D’Arcy et al., (2014)
What is going on here?

Bright side:
Increasing work-life balance, well being and performance

Dark Side:
Decreasing work-life balance, well being and performance

“CONNECTIVITY PARADOX”

The ill effects of ICT use negate its benefits
Is there anything we can do?
Let’s look at some of the problems and potential solutions

Sources: Davis (2002); D’Arcy et al., (2014); (Leonardi, Treem, & Jackson, 2010)
The Dark Side of IT

Examples:
- Social offence and cultural clashes
- Information overload, technostress
- Multitasking, ICT interruptions
- Technology addictions
- ICT misuse, security risks
- The list is getting longer every day

D’Arcy et al., (2014);
An example: the Bright and Dark Sides of IT
Wikipedia collaboration

Bright Side of IT:

Wikipedia platform enables voluntary collaboration ➔ accumulation of knowledge into the “Perfect encyclopedia” ➔ Augmentation of human collaborative capabilities

Source: www.wikipedia.org; Jemielniak (2014)
Wikipedia collaboration

The Dark Side of IT:

Wikipedia collaboration can lead to arguments, bullying, social offence

Source: Jemielniak (2014)
https://en.wikipedia.org/wiki/Chatbot

Photo credits: Cc by-sa 2.0 found animals foundation
Wikipedia collaboration

ICT design idea:
“Can the arguments be solved with a chatbot? (a.i. conversation algorithm)"

➡️ Any potential “wicked problems” here?

Source: Jemieliak (2014)
https://en.wikipedia.org/wiki/Chatbot

Photo credits: Camillo Parro Palacio
Cc by-SA

Aalto University
School of Business
Potential danger: social offence, cultural clashes

Meet Tay, the unlucky Microsoft chatbot


Tay went from cheery friend to racist social offender in 24 hours ➔ discontinued

But the damage was already done..
Information overload, technostress

**Information overload** = feeling overwhelmed, not being able to function normally because of too much information

**Technostress** = anxiety because feeling unable to cope with ICT

➔ **43%** of users find the use of smartphones stressful

D’Arcy et al., (2014); cc: by-sa 2.0 Michael Coghlan
Multitasking, ICT interruptions

**Multitasking** = doing several things simultaneously or in close succession

- Distraction, mistakes, decreasing quality of work

**ICT interruptions** = unanticipated demands of ICT while doing other things

- ICT interruptions take up 28% of work time
- Resuming a task takes 20 min
- Significant productivity losses

D’Arcy et al., (2014); Photo credits: Vivid image Cc by 2.0
Technology addictions

60% “must” check their phone every hour
54% check it at night, if wake up
30% check it at meals
24% while driving..

Hedonic ICT are particularly addictive (games and social media)

Mitigation example:
• Company policies “no mails after 5 pm”

D’Arcy et al., (2014);
ICT misuse, security risks

**Misuse** = Unauthorized use of ICT
- Example: gaming while in a meeting

**Security risks** = Leaking sensitive information
- Example: leaking private details or company confidentiality issues

50-75% of security risks stem from misuse

D’Arcy et al., (2014); Photo credits: Eneas de Troya
Cc by 2.0
The lessons learned: how to mitigate the Dark Side of IT?

As an ICT designer:
• Do your research, think about the both sides, design safety mechanisms, just in case

As a manager:
• Ask the right questions: “How have you accounted for the unplanned use & Dark Side of IT?”

Photo credits: Camillo Parro Palacio
Cc by-SA
Recap: ICT have transformed work and created the Bright and Dark Sides of IT

Now, the future of ICT is on us!
The takeaway: Acknowledge the two sides of IT & design accordingly

➔ Design for the Bright Side of IT; keep an eye on the Dark Side of IT

Learn more:
“the Bright ICT initiative”
Source: Lee (2015)
Thank you!
Questions?
Comments?
Reference:
If you want to know more, you can start from here


Find photo licences from Creative Commons: https://creativecommons.org