## The "10 Plagues of the Information Age"

**A list by Ben Shneiderman…**

## The "dark side" of software and UIs?

Shneiderman puts forth that "It would be naïve to assume that widespread use of user interfaces brings only benefits. There are legitimate reasons to worry that increased dissemination of information and communications technologies might lead to personal, organizational, political, or social oppressions. People who fear computers, robots, and other technologies have good reason for their concerns. The frustration of users who can't accomplish their tasks and the disruptions caused by network failures that shut down airline and other systems are legitimate causes of concern. Furthermore, unwanted e-mail (spam), malicious viruses, pornography, and other annoyances must be addressed so that users can benefit from advanced technologies."

## A mandate for software designers?

He further says that “user interface designers have an opportunity and a responsibility to be alert to the dangers and to make thoughtful decisions about reducing them.”

He goes on to discuss some ways to categorize dangers related to the use of information technology and the ways we use them to communicate.



## 1. Anxiety

Many people avoid computers or mobile devices or use them with great anxiety; they experience computer shock, web worry, or network neurosis. Their anxieties include fear of breaking the machine, worry over losing control, trepidation about appearing foolish or incompetent ("computers make you feel so dumb"), or more general concern about facing something new. These anxieties are real, should be acknowledged rather than dismissed, and can often be overcome with positive experiences. Can we build improved user interfaces that will reduce the heightened level of anxiety experienced by many users?

## 2. Alienation

As people spend more time using computers and mobile devices, they may become less connected to other people. Computer users as a group are more introverted than others, and increased time with technology may increase their isolation. The dedicated game player who rarely communicates with another person is an extreme case, but what happens to the emotional relationships of a person who spends eight hours per day dealing with e-mail instead of chatting with colleagues or family members? Can we build user interfaces that encourage more constructive human social interaction?



## 3. Information-poor minority

Although some utopian visionaries believe that information and communications technologies will eliminate the distinctions between rich and poor or will right social injustices, often these tools are just another way in which the disadvantaged are disadvantaged. People who have weak computer skills may have a new reason for not succeeding in school or not getting a job. The well-documented differences in access by rich versus poor communities or nations can be overcome if we recognize them and make commitments to bridging the gap by offering appropriate access, training, support, and services. Can we build user interfaces that empower low-skilled workers to perform at the level of experts? Can we provide training and education for every member of society?

## 4. Impotence of the individual

Large organizations can become impersonal because the cost of handling special cases is great. Individuals who are frustrated in trying to receive personal treatment and attention may vent their anger at the organization, the personnel they encounter, or the technology that limits rather than enables. People who have tried to find out the current status of their social security accounts or have banks explain accounting discrepancies are aware of the problems, especially if they have language or hearing deficits, or other physical or cognitive handicaps. How can we design so that individuals will feel more empowered and self-actualized?



## 5. Bewildering complexity and speed

The tax, welfare, and insurance regulations developed by computer-based bureaucracies are so complex and fast-changing that it is extremely difficult for individuals to make informed choices. Even knowledgeable technology users are often overwhelmed by the torrent of new software packages, mobile devices, and web services, each with hundreds of features and options. Simplicity is a simple, but too often ignored, principle. Stern adherence to basic principles of design may be the only path to a safer, more sane, simpler, and slower world where human concerns predominate.

## 6. Organizational fragility

As organizations come to depend on more complex technology, they can become fragile. When networks breakdown, security lapses, or virus attacks occur, they can propagate rapidly and halt the work of many people. With computer-based airline services, communications, or electricity grids, failures can mean rapid and widespread shutdowns of service. Since networks have many entry points, a small number of people can disrupt a large organization. Can developers anticipate the dangers and produce robust, fault tolerant designs?



## 7. Invasion of privacy

The widely reported threat of invasion of privacy is worrisome because the concentration of information and the existence of powerful retrieval systems make it possible to violate the privacy of many people easily and rapidly. Of course, well-designed computer systems have the potential of becoming more secure than paper systems if managers are dedicated to privacy protection. Airline, telephone, bank, medical, legal, and employment records can reveal much about an individual if confidentiality is compromised. Can managers seek policies and systems that reduce privacy threats from cyber-criminals, governments, or companies?

## 8. Unemployment and displacement

As automation spreads, productivity and overall employment may increase, but some jobs may become less valued or even eliminated. Retraining can help some employees, but others will have difficulty changing lifetime patterns of work. Especially in recessionary times, displacement may happen to low-paid clerks or highly paid machine operators whose work is outsourced overseas or automated. Can employers develop labor policies that ensure retraining and guarantee jobs?



## 9. Lack of professional responsibility

Faceless organizations may respond impersonally to, and deny responsibility for, problems. The complexity of technology and organizations provides ample opportunities for employees to pass the blame on to others or to the computer: "Sorry, the computer won't let us give you a mortgage." Will designers and users of electronic medical systems, driverless cars, or defense-related user interfaces be able to escape responsibility for decisions? Will user interfaces become more trusted than a person's word or a professional's judgment? Complex and confusing user interfaces enable users and designers to blame the machine, but with improved designs, users and designers will give and accept credit and responsibility where they are due.

## 10. Deteriorating image of people

With the development of intelligent interfaces, smart machines, and expert systems, it seems that the machines have indeed taken over human abilities. These misleading phrases not only generate anxiety about computers and robots, but also may undermine the image that we have of people and their abilities. Some behavioral psychologists suggest that we are little more than machines; some artificial intelligence workers believe that the automation of many human abilities is within reach. The unbounded creativity of humans, the deep trust and empathic relationship among people, and the imagination of each child seem lost or undervalued. Can robotic scenarios for medical services, elder care, and warfare be tempered with an appreciation for the role of human compassion and judgment?