4 – digital convergence

Digital convergence is one of the central themes of the course. This theme is also related to, for example, the MPEG-4 standard that is treated later. Also, the notion of *information spaces* is introduced here, which is needed for a better understanding of the information retrieval issues that will be dealt with later.

You may prefer to start with a demo of blendo.

digital convergence

- 1.2 entertainment
- 1.2 digital convergence
- 2.1 information spaces
- 2.2 hypermedia
- 1.3 commercial impact

It is not likely that you can treat all the material that is listed here in one session. You'll have to make a choice. You may, for example, leave out hypermedia.

0.1 entertainment

In november 2000, a theme issue of the Scientific American appeared, featuring a number of articles discussing (digital) entertainment in the era of digital convergence. Let's start with a quote:

Scientific American (november 2000)

> *The barriers between TV, movies, music, videogames and the Internet are crumbling. Audiences are fetting new creative options. Here is what entertainment could become if the technological and legal hurdles can be cleared ...*

Moreover, it was observed that:

- digitizing everything audio and video will disrupt the entertainment industry's social order.
- the whole concept of holding a CD or movie in your hand will disappear once d-entertainment is widely available.

Underlying the importance of entertainment in the era of digital convergence is the premisse governing an entertainment economy, which may be stated as

there is no business without show business

Additionally, the authors of the introduction to the theme issue speculate that

democracy

> *Creation of content will be democratized. Low cost digital movie cameras and PC video editors allow anyone with an eye to record and edit a movie for just a few thousend euro ...*

However, given the aesthetic ignorance of the average individual making video movies, it seems doubtful that this will hold true for entertainment in general.

In that same issue of the Scientific American Gloria Davenport, a pioneer in the field of multimedia, presents list of applications characterizing the evolution of digital entertainment, [Entertainment]:

evolution of digital entertainment

- 1953: Winky Dink (CBS) – interactive television, drawing exercise
- 1972: Pong (Atari) – ping-pong on computer screen
- 1977: Adventure – text-based interactive fiction
- 1983: Dragon's Liar – laser-disc technology 3D game
- 1989: SimCity – interactive simulation game
- 1989: Back to the Future – the Ride
- 1993: Doom – 3D action game
- 1995: The Spot – interactive web-based soap opera (Webisodic)
- 1999: IMAX3D – back to Atlantis (Las Vegas)
- 2000: Big Brother – TV + around the clock Web watch + voting
- 2001: FE Sites – fun enhanced web sites

It is interesting to note that *Big Brother*, which was originally created by a Dutch team, has become a huge success in many countries. Although the integration with the web was limited, it may be seen as the start of a number of television programs with web-based interaction facilities.

digital experience

The list compiled by Gloria Davenport suggests, a convergence towards an 'ultimate digital experience', Now, what does *digital experience* mean?

In a special issue of the Communications of the ACM, about the next 1000 years of computing, Ramesh Jam makes the following observations:

> *The desire to share experiences will be the motivating factor in the development of exciting multimedia technology in the foreseeable future.*
>
> *Ramesh Jain, Digital Experience, CACM 44.3, pp.38-40*

Considering the variety of means we have at our disposal to communicate, as reflected in the list below, we may wonder whether our current technology really stands out as something special.

communication technology

- *oral* – communicate symbolic experiences
- *writing* – record symbolic experiences
- *paper* – portability
- *print* – mass distribution
- *telegraph* – remote narrow communication
- *telephone* – remote analog communication
- *radio* – analog broadcasting of sound
- *television* – analog A/V broadcasting
- *recording media* – analog recording
- *digital processing* – machine enhancement
- *internet* – multimedia communication

According to Ramesh Jam, internet-based multimedia communication differs from earlier communication technology in that it somehow frees the message from the medium. Reflecting on Marshall McLuhan phrase – *the medium is the message* – he observes that:

McLuhan (1976) – the medium is the message

> *..., the medium was the message when only one medium could be used to communicate messages.*
>
> *Now, the Internet allows the synthesis and rendering of information and experiences using whatever is the most appropriate media to convey the message*
>
> *(In other words) The message is just the message, and the medium is just the medium.*

Speculating on the future of multimedia communication and presentation technology, he states that:

presentation technology

- compelling experiences rely on carefully staged presentation
- in the coming years we'll see tremendous progress in presentation technology related to all our senses.
- enriched with (other) sensory information, virtual reality might approximate real reality ...

Clearly, from a technological perspective there seems to be no limit, except those imposed by our own phantasy.

research directions– *the face of cyberspace*

The notion of *cyberspace* was introduced in William Gibson's novel *Neuromancer*, that appeared in the early 1980's, signifying a vast amount of (digital) data that could be accessed only through a virtual reality interface that was controlled by

neuro-sensors. Accessing data in *cyberspace* was not altogether without danger, since data protection mechanisms (including firewalls, as we call them nowadays) were implemented using neuro-feedback. Although the vision expressed in *Neuromancer* is (in our days) still futuristic, we are confronted with a vast amount of information and we need powerful search engines and visualisation techniques not to get lost. So what is the reality of *cyberspace* today?

> *... cyberspace is a construct in terms of an electronic system.*
>
> Vivian Sobschack, 1996, quoted from [History], p. 321

On reflection, our (electronic) world of today might be more horrendous than the world depicted in *Neuromancer*. In effect,

cyberspace

> *television, video cassettes, video tape-recorder/players, video games, and personal computers all form an encompassing electronic system whose various forms interface to constitute an alternative and absolute world that uniquely incorporates the spectator/user in a spatially decentered, weakly temporalized and quasi-disembodied state.*

All these gadgets make us dizzy, stoned with information and fried by electromagnetic radiation. However, the reality of everyday computer use is (fortunately?) less exciting than the images in *Neuromancer* suggest. User interfaces are usually tiresome and not at all appealing. So except for the fanatic, the average user does easily get bored. Would this change when virtual reality techniques are applied pervasively? What is virtual reality?

virtual reality

> *virtual reality (is) when and where the computer disappears and you become the 'ghost in the machine' ...*

In other words, virtual reality is a technology that provokes immersion, sensuous immersion, supported by rich media and powerful 3D graphics. In our age of information, we may wonder how all that information should be presented. Rephrasing the question, we may ask what are the limits of the digital experience, or more importantly, what should be the norm: 3D virtual environments, plain text, or some form of XP?