

# Hypermedia- History

• What is hypermedia? Media which utilises various combinations of text graphics, sound, video and programming elements in a computer mediated environment. It includes things such as interfaces for accessing the internet-eg WWW; and multimedia products such as CD Roms, museum interactives etc.

• How has hypermedia come about? Hypermedia's geneology comes from several areas, it involves a convergence of technologies and applications. Hypermedia has grown out of a wide range of parrallel developments in fields such as computer science, telecommunications, art, radio and sound, print production, film and television. Between 1945 and 1985 a number of people (such as Vannevar Bush, Ted Nelson, Douglas Englebart) speculated upon the possibility of developing a singular medium that combined all other media.

Major stepping stones in Hypermedia development include:

1. Introduction of telegraph and telephone networks in 19thC
2. Development of cinema in 19thC, Digital cameras, film editing technology- 1980's and 1990's
3. Television in 1930's, Video recorder & home camera technology in the 1970's, Digital video 1990's.
4. Digital computer development in the 1940' and 1950's.
5. Emergence of PC's in the 70's and 80's
6. Computer animation in the 1980's
7. Digital & compact disc sound technology in the 1970's and 1980's.
8. Digital print technology-DTP- in the 1980's
9. "Intuitive" Computer programming languages for non programmers eg Englebart- "Augment" 1968, Apple Hypercard- 1987
10. Database management software- 1980's

Telegraph: The development of the electronic telegraph in the 1830's - wherenetworks of telegraph wires carried simple binary signals of dots and dashes- was probably the beginning of "cyberspace". By the 1870's the telegraph spanned the Atlantic. The inventoin of the telephone allowed live voice transmission. Now it is through optical fibre telephone wires that PayTV can be delivered "down the line" as hypesters like to say.

Film: Film was the first audio visual medium that could convey meaning and narrative to an audience many thousands of times larger than a traditional theatrical audience, (other than the book -a purely print medium). The whole notion of the creation of an imaginary space in which events take place- what is inside and outside the frame- was extended by the film form. It is worth remembering that we work within a "frame" , we create a "space" on the computer as well.

Television: After WW2, television overtook film as the preferred entertainment medium in the US and UK. Television integrated radio, film, theatre, novel, magazine, advertisement and newspaper in a multiple media phantasmagoria. Television also involves some degree of non-linearity and interactivity- switching channels- unlike film- linear format of viewing. Home

video cameras and recorders of the 1970's offered further "interactivity" or control- means of production more available, more control over what you watch, when you watch...

Computers:- The theoretical & conceptual framework for information processing had been developed by the mid 1950's ( eg Claude Shannon -Theory of Information, Norbert Weiner -cybernetics, Grace Hopper-programming). There was a huge progress in micro-electronics after WW2, from development of the transistor processor (1948) to integrated circuit (1959) to microprocessor computer chip (1971). The first PC's appeared in the 1970's, the first Apple in 1977. Hard to believe but the first Apple Mac appeared as recently as 1984.

### Conceptual innovators/history:-

Vannevar Bush:-Vannevar Bush was a US scientist who is generally credited with the conceptual genesis of Hypermedia. He published an article in "Atlantic Review" in 1945 titled "As We May Think" which outlined his vision of a "memory extension" system he called the "memex". The Memex was a system of associative indexing- the ability to link information in ways that were meaningful to the user. With the Memex, Bush envisaged a system where a user could input and store text, drawings and notes, to display such files simultaneously, and to link related files together via a simple code. Additionally, the Memex would allow a method of exchanging information with other Memex users and would employ character recognition and voice recognition technology. Bush defined the system in terms of the photo-mechanical technologies which were available at the time- ie even before computer transistor technologies.

Bush was the first person to realise the potential of storing items of information with built in associative links to other data. He never actually built the Memex, but the concept of it was a driving force in the development of hypermedia.

Footnote- Bush also worked for the US military and developed the bombs that napalmed Tokyo- to his continuing horror.

Douglas Englebart: Englebart was one of the people inspired by Bush's conception. His background was as an army radar technician ( military again). In the early 1960's, Englebart, conducting research at a lab in the Stanford Institute conceived the idea of a computer based system for augmenting the human intellect- Augment. Englebart, from his radar experience, knew that information could be displayed on a computer screen. He saw a connection between a TV like screen, an information processor, and a medium for representing symbols to a person. In half an hour he conceived of a system where computers would draw symbols on a screen you could steer through different information spaces and look at text and graphics in different ways. Englebart is credited with the concepts of the mouse, windows interface, electronic mail and teleconferencing.

Ted Nelson: Ted Nelson coined the term "hypermedia" in the early 1970's to describe an as yet undeveloped but soon to appear media form which utilised the computer to store, retrieve and display information in the forms of text, graphics, animation and sound. "Hypertext" also his term, was text that

branched and allowed choices by the reader; where textual material could be interlinked, providing a system which would break down trad subject classifications and allow non computer literate users to follow their own linwes of enquiry over a whole fields or fields of knowledge. Also coined many of the terms now associated with virtual reality incl "super virtualities". Ref "Computer Lib / Dream Machines" 1987 (first published 1970's. Nelson is working on a hypertext program- Xanadu- which allows "true", two way interaction for the user- user can both read and write into Xanadu media.

Hypermedia in it's various forms also pays homage to Flight simulation technology- first developed 1951 which is the basis of the computer game and virtual reality. US Cold war Military defence system- the Internet was first developed as a means of communicating between different military bases in the event of a nuclear war- if one base were knocked out, the others could still communicate and operate.

## Non-linearity & Interactivity

•What's different about Hypermedia? The main difference between Hypermedia and other media that we interact with such as print, sound, television, film are the notions of non-linearity and interactivity. With hypermedia, information is often arranged in a way that allows non-sequential access by the user.

Instead of entering a cinema and watching a movie from beginning to end, we can open up a Hypermedia product and, to a greater or lesser degree, explore it in a non-sequential manner. The degree of non-linearity is determined by the designer or programmer of the product, in the same way that the degree of interactivity is determined by the programmer. However, there is a perceived advantage that users can "cut their own trail" through data that is organised in a hypermedia format. The notion of non-linearity opens up some important questions regarding the development of a piece of hypermedia; of how meaning can be conveyed in a non- sequential manner; of how users can find meaning, how they can "read" a non sequential medium. Such questions are still very open.

Interactivity is the other notion surrounding Hypermedia, the idea of allowing a higher degree of user control than traditional media. Depending on the application and the amount of interactivity which is programmed into the product, hypermedia does allow for varying degrees of interaction with the medium eg- creating personal associative links with other pieces of data via Hypertextual links; controlling events eg movement of objects on the screen, two way interaction eg via user contributing text, or video segments. The "interactivity" of hypermedia products is meant to make users more engaged with the project than traditional "non interactive" media.

But how "interactive" is interactive media? Aren't users still constrained by the what pathways the creator has built into the program? And how meaningful is "interactivity". Is engagement more important than interactivity? Are traditional media really non interactive??

In designing your own projects you should think about how much control/ interactivity you want to be giving the user, and how much of an immersive/ engaging experience you want to create. Are these two concepts incompatible?