Introduction

- D-Lisp environment was demonstrated by Warren Teitelman from XEROX PARC in Mid 70’s
- Conflict between different approaches to computer environment
  * Should be multitasking
  * Should avoid current process interruptions
- Too much competition for our attention
- Technology evolves and adds new dimensions to our attention

The article raises two main topics:
- What is it to read?
- How it changes over time?
- Human attention is a topic of increased researcher’s attention
- Plenty of information is good. Until what degree?
- Reading as attentional activity
- Read digital documents vs. read “in” digital libraries
Every one knows what attention is. William James in his Principles of Psychology. 1890: "It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others, and is a condition which has a real opposite in the confused, dazed, scatter-brained state which in French is called distraction, and Zerstreutheit in German." (91, pp. 403-404).

As Thorngate said:

"In a world where information is relatively scarce, and where problems for decision are few and simple, information is always a positive good. In a world where attention is a major scarce resource, information may be an expensive luxury, for it may mm our attention from what is important to what is unimportant. We cannot afford to attend to information simply because it is there." (pp. 248-249 in Thorngate)

Thorngate proposed six principles of "economics of attention":

- Two of them:
  - The principle of Fixed attentional assets – attention is finite and is closed for renewal
  - The principle of Singular attentional investments – attention can be concentrated on only one item at a time
- BAD NEWS! Our attentional capacity is limited!
- Solution: pay attention to what you are paying attention!
- Another principle: The principle of Exploratory Attentional Expenses – the search for a attentional target requires attention as well, (sometimes a lot of it!)
Documents, Libraries, and Attention

- Documents are “attentional devices”:
  - Require attention
  - Shape attention – put our imagination to work
- We look at the piece of paper and see the places described on it
- Information should be carefully organized!
- How?

Libraries, that are doing it for at least 125 years:
- Where documents are carefully identified and categorized
- Where documents can be found and read
- Shapers of attention
- “Match-makers” between documents that require attention, and readers that are willing to attend to them
- What will happen now when the definition of library changes?

Reading Practices: A Synchronic Perspective

- Our culture has two powerful “archetypal images” of reading:
- The process of learning to read:
  - Painful and slow process

Mature reading:
- Nearly complete absorption by the book when the outer world disappears
In both cases reading is a process demanding high levels of concentration and therefore claiming attention.

Library is still an ideal place! Is it? What about a verbalizing it baby?

Is library always the best place for reading?

We read not only books: magazines, newspapers, road signs, ingredients on a mayonnaise jar, etc.

We read in libraries, but also at home, work, street, stores, buses...

DON'T READ AND DRIVE!

Even if you are a student! :-)

Reading does not always claim our deep attention.

Varies according to genre:
- Love story, Horror book (whichever claims your attention the most)
- English dictionary or weather forecast (usually not that exciting)

Attention Depends on the reader's point of view on the material.

BIBLE!
- A sacred book
- A Historical material
- A homework in religious studies

English has quite a few words describing reading:
- Read
- Skim
- Scan
- Browse
- Review
- Reread
- Surf

We read not only written material: faces, situations, maps

However films or photographs are not read but watched

It implies that reading involves textual material (how can we explain photographs vs faces then?)
“It is perhaps too early in their development to know what we do with multimedia documents” D. Levy

Is it still early to say?

As Olson said:

“. . Medieval writers never thought of writing as a substitute for memory but rather as an aid to memory. Writing was thought of and used merely as a mnemonic device, a system of visible marks that could be used to check memory.” ([24], p. 61)

Technologies are changing
Genres are changing
One of the major change in reading through the human history is the shift from reading aloud to silent reading that was fighting its way to masses during the Middle Ages
Between the seventh and the ninth centuries silent reading was prohibited
In ancient Greece, though silent reading was already known at 6th century BCE
Silent reading helped:
  - To read faster
  - To read more
Reading was mostly rereading of an old material

Reading as spiritual exercise
Meditation
Prayer
Second half of eighteen century another new era for reading. Expansion of:
  - Book production
  - Lending libraries
  - Newspapers
Major questions about reading as about any task requiring attention:
- What?
- How?
- Where?
- Why?

What is the object of attention?
- “Attention is a selective and reductive process” James and Thorngate
- Only one document at a time can be attended, though attention can be switched among various targets
- Attention is always partial
- We can concentrate on only small part of the document each time

How is attention organized? What is the quality of attention?
- Depth
- Duration
- Continuity
- There are eight subcategories to this, but the extremes are:
  - Very deep - reading novels
  - Completely shallow – reading ingredients

What are the circumstances, the context, within which attention is practiced and held?
- Qualities of material either inhibit or encourage attention
- Isolation vs Socialization during the process
- In case of reading isolation is a dominant model
  - Andre Kertesz’s study with 60 photographs of reading people
- Appearance and structure of the document is also important for attention to it
  - Old “New Yorker” vs new “New Yorker”
Reading as Attentional Activity

- For what purposes or toward what end?
  - There are many reasons for reading:
    - Finding information
    - Leisure
    - Distraction from own problems
    - Problem solving
    - Impression on other people
    - Meditation

The Future of Reading and Attention

- Reading practices as reflection of future technologies and culture changes
- Technologies increase connectivity and allow to more easily find information
- BUT! Technologies are Source of fragmentation as well

Television is perceived as a drug by Mander and Postman because of rapid changing images that create a hypnotic state:

“Each technical event... is intended to keep your attention from waning as it might otherwise. The effect is to lure your attention forward like a mechanical rabbit teasing a greyhound. Each time you are about to relax your attention, another technical event keeps you attached. The luring forward never ceases for very long. If it did, you might become aware of the vacuousness (total absence of matter) of the content...” ([17], p. 303)

The Future of Reading and Attention

- Hypertext encourages fragmentation by links between parts
- “We search more for our attentional investments”. Are we? Did anything really change?
- Bursts of attention are used
- Amount of footnotes (links) is growing up in hypertext and is shrinking in paper books
- It still doesn’t mean that other forms of reading will disappear, but a new revolution in reading is going on and we might need to revise again the distribution of attention.
- Correct design of technology might really help
Today a traditional library serves three major purposes:
- Collection of materials
- An institution which provides access to materials
- An institution where materials could be read

The meaning of digital library depends on the eye of the beholder:
- Technical readers – simply a collection of reading materials
- Traditional readers – attempt to find analogies to traditional library i.e. kind of materials, their structure (paper, hypertext), place to read

Definition of digital library is not yet concrete since the term depends on the reader and is still evolving in our society

Seem to be oriented toward “hyper-extensive reading”

Evidence?
- Emphasis on hypertext promotes hyper-extensive reading
- The strongest selling point is powerful search tools
- Promotes extracting small pieces of information => fragmentation
- Current computer screens are harder to concentrate on for a long time that paper
  - Flicker and back illumination
  - Hard to reposition, even a laptop
  - Hum, buzz
  - Appearance very different to what we used to in books

Result: long documents are often being printed before reading

- Paper is still better for deep reading.
- Computer is usually located in places full of distraction:
  - Office
  - Home – usually everyone wants to use the computer

Another way to get at the orientation toward reading in digital libraries:
- Computer as a tool for:
  - Searching
  - Acquiring material
  - Reading

Questions to be explored:
- Importance of place
- Importance of efficient searching
- Willingness to attend

Attention is limited therefore should be managed carefully
- Reading patterns change as technology advances
- Digital Libraries influence reading patterns
- Better design might help them to be more popular amongst both technical and traditional readers

Digital libraries certainly worth our attention!