

Electronic Interactive Documents and Knowledge Enhancing: a Semiotic Approach

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Description (500 words)

Documents act as a medium to permanently record and communicate concepts, thoughts, procedures and data. Documentation techniques result from a long evolution: professional communities developed and shaped customized documentation styles, notations and annotation procedures to better express and record their specific knowledge on a permanent physical media. Electronic documents (*e-documents*) appear as new media, which evolve, and complement the traditional documents in recording, annotating and making available community knowledge. The Web strengthens the knowledge sharing and enhancing, supporting a two-way and interactive exchange of ideas through electronic documents¹.

In this work we present a computer semiotic approach^{2,3} which extends a model^{4,5} of the human-computer interaction process: this model considers human and computer as two subsystems of a unique syndetic system based on bidirectional communication. The human computer interaction process is presented as a communication process which presupposes:

1. a system of means of communication to transmit a finite set of events (symbols);
2. a phenomena world to which the events are related;
3. the communicating systems (interpreters or communicants), which assign a meaning to the transmitted events³.

The assignment of meaning to the transmitted events is described through the triangle of reference^{3,6}. In accordance with Harris⁷, written communication and oral communication should be described by conjunction of two different triangles sharing the reference-referent side (the relation), but having different system of symbols because they are configured as different processes. Digital communication adds a third triangle associated to a new symbol of different nature. It presents new relationships of signification: the exchanged symbols become labile for human perception in that their materialization in perceptible structures can change in the time depending on the computer interpretation of an internal persistent representation of the symbol (content) stored as a bit sequence in a machine.

Extending this model to a human-computer-human communication for creating and sharing knowledge, the computer is no more viewed as a simple medium, but it is also an interpreter of messages which can be materialized in different shapes according to the communication needs. The interpretation process of the humans is based on reasoning, the interpretation process of the machine is based on computation as programmed by a designer.

This triadic interaction changes the semantization process which permits to the interpreters to assign a common meaning to a symbol and to understand each other, because the perceptible structure of the digital symbol is not permanent. This fact could hinder the comprehension among the actors of the communication process or enhance the process realizing materializations more usable for the interpretation styles and models of the interpreters. Following a constructionist point of view⁸, the lability of the digital symbol can be exploited for sharing and enhancing knowledge: communication becomes really bidirectional in that the digital symbol (the e-document) has no

more a unique author and can be the result of a co-authoring work. The process to build knowledge become a distributed process involving all the actors of the communication. Some properties, such as the affordances and externalizations⁹, characterising the e-document will be highlighted.

References

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Presentation:

The work will be presented by a verbal presentation supported by powepoint slides possibly integrated with video.

It is possible to show a prototype to exemplify the concepts presented in the work. The prototype runs on a localhost configured on our portable computer.