APPLYING CONCEPT MAPS AND HYPERMEDIA TO FILM ANALYSIS

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Abstract. This article describes an open concept map-based hypermedia system for film analysis and film teaching (direction, narration…). It uses concept maps as navigational and conceptual structure for non-linear access and flexible interaction on multimedia materials for film analysis or study. Cmaps and Hypermedia fit very well the objectives of this project they allow for the exploration of new ways of analyzing films, as well as an active film watching and new ways of film appreciation, which might be seen as the equivalent for films of an individual, customized class in a museum to appreciate masterworks paintings from the past. The methodological model and the demonstration and evaluation prototype being built are described in the paper. The impressive set of semiprofessional facilities commonly available today (concept map software, films in DVD, hypermedia tools, free or affordable DVD software on PC, etc) makes it possible a new way of appreciating the film masterpieces as they drew and defined the language of motion pictures near perfection.

Category/Categoría: Full Paper/Artículo Completo

1 Introduction

Concept maps have not been used, to our understanding, as a tool for audiovisual products analysis. We see concept maps very well suited to provide both structured and flexible access to hypermedia documents as well as to build interactive applications like the described in this article. Concept maps are recognized as very effective for knowledge organization and communication tools.

Our target was to build an open system based on Cmap Tools with full access capabilities for film analysis and criticism. It is a concept map based hypermedia system that allows the non linear access to contents and the interactive film analysis. We think such a tool is applicable by film critics, film teachers, film aficionados for sharing knowledge and cultural contributions in active ways. We think it might open a new way for film criticism and film discussion via Web.

It is surprising as well the fairly low usage of hypermedia facilities for film related activities such as criticism, analysis and teaching. The predominant approach seems to be the same as for literature or art: textual analysis with offline access to the criticized work. It is alarming the lack of connection (links) between film material and "hypertext" material. In other words, the analysis and teaching of films does not fully exploit the widely available capabilities of hypermedia. When looking to hypermedia applications to film teaching and analysis, our search did get few results: there are lots of hypermedia applications for teaching in general, but not for film analysis or teaching.

Hypermedia typical non linear access is well suited to the analysis of films. While current film criticism works separately from the criticized product, hypermedia allows the analysis to be read at the same time that the object of analysis. Our objective was to create with hypermedia something similar in part to the spanish TV program "¡Qué grande es el cine!", that is like a cine forum session where different film experts first introduce a film and at the end comment it, their comments being illustrated sometimes with the cited sequences.

Many considerations support the adequacy of concept maps for films:

- Films are sequential systems when watched, and the spatial representation provided by the concepts maps can show clearly the film structure in detail. However some more specific time diagrams may help for an improved film analysis and description as concept maps are not specifically adapted to show detailed time relations in a condensed form.
- Structure signifies by itself. This a well known advantage of concept maps.
- The message is multimedia itself. One of the great advantages of hypermedia for films is that the content to be “taught” is neither science or literature, but multimedia itself (film). The content is conveyed by itself, accompanied with all kind of helps for understanding.

This paper is organized as follows: in the introduction we have stated our objective and initial approach. In section two the previous work is briefly described regarding concept maps and hypermedia usage for film teaching or audiovisual document analysis. In section three the model for implementation is described. The prototype is explained in section four, including some conceptual maps examples and a brief discussion of the chosen tools to implement it. The paper finishes with a summary and consideration on future work on the evolution of the tool.

2 Related work

As usual when discussing hypermedia, precedent works normally are in multimedia form. Precedent projects as "Griffith in context", oriented to the ideological and formal analysis of Griffith's film *Birth of a nation* are based on a CD-ROM that contains the supporting material (clips extracted from the film selectable with a menu) and the film is visioned in the teaching room. This schema has an excellent teaching value but suffers from the disadvantages of the multimedia approaches: rigidity and a closed approach. The "multimedia lesson" is completely self-contained and not updated until a new CD-ROM edition is produced.

Abundant bibliography exists on hypermedia narration (Moreno, 2002) and application to teaching. The main rules of hypermedia narration are fully applicable to the project, although there is not "interactive narration" inside, at least not necessarily, although this interactiveness might be desirable for novice users (novice to film analysis and to the tool).

One of the closest approach is the DVD that David Monaco has produced as a hypermedia product, *How to read a film.* It condenses several books' contents, many video and audio clips and some interactive exercises. The pdf format is applied efficiently beyond limits of current usage, although the text content predominates. As it is well known, extensive textual content does not fit to be read on the screen. The product is commercialised as a DVD-ROM. The inhibition of the printing capability for protection purposes forces the reading of text on the screen, limiting its usability.

As an example of the change that hypermedia produces in film criticism, the web page *Kissology*, that compares kisses in six Alfred Hitchcock films, shows how the film criticism changes when the criticized film is available at the same time than the text and the film sequence can be replayed and analysed by the reader.

3 Deconstruction as a method of analysis

Although the tool may be used with any film theory for analysis, we focus specifically, although not exclusively, on deconstructionism because our tool could heavily help to the advance in new types of film criticism inspired in deconstruction. The term *deconstruction*, was coined by Jacques Derrida in the late sixties. Deconstructionism was a reaction to the excessive imperative of the *logos* in structuralism and lacanian psychology theories for interpretation. The American Heritage Dictionnary defines deconstruction as "A philosophical movement and theory of literary criticism that questions traditional assumptions about certainty, identity, and truth; asserts that words can only refer to other words; and attempts to demonstrate how statements about any text subvert their own meanings: *"In deconstruction, the critic claims there is no meaning to be found in the actual text, but only in the various, often mutually irreconcilable, 'virtual texts' constructed by readers in their search for meaning*". Barbara Johnson clarifies the term: *"Deconstruction is not synonymous with "destruction", however. It is in fact much closer to the original meaning of the word 'analysis' itself, which etymologically means "to undo" -- a virtual synonym for "to de-construct."*.. *If anything is destroyed in a deconstructive reading, it is not the text, but the claim to unequivocal domination of one mode of signifying over another. A deconstructive reading is a reading which analyses the specificity of a text's critical difference from itself."* Derrida made apparent the process of critical decomposition and reconstruction, as a new way to analyze culture products. Ferrán Adriá (El Bulli restaurant), uses the term

deconstruction in the sense of *re-composition in a different way*, for example changing textures and keeping the flavours of the ingredients. The current term usage is fashionable and not concisely definable.

Our approach can similarly provide not only a tool for film analysis, but *different ways of appreciating films* versus the classic linear or sequential watching, provoking a similar effect in the watcher: getting a different and deeper comprehension a film.

The film is decomposed into its different elements (narration, metaphors, symbols, sequences, etc), using hypermedia for establishing links between different elements, allowing the learner to do the opposite operation: the "re-composition". This way back into the whole film takes effect in the mind of the learner: the learner reconstructs the film in a way he could not have thought of before. When applied to film teaching, this approach allows for a deeper analysis and understanding of film masterpieces. Some authors use the term deconstruction in the sense of exposing the internal structure of a communicative item or of a discourse. We must mention here the work of (Litwin, 2000), reflecting on how the effect of "recomposition" takes effect in the mind of the person learning using hypertext and hypermedia.

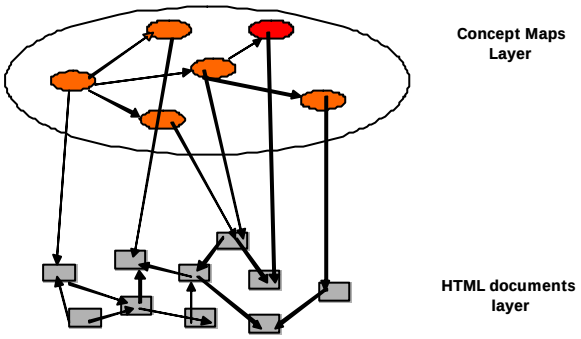

Fig.1 Film Tool two layered Model

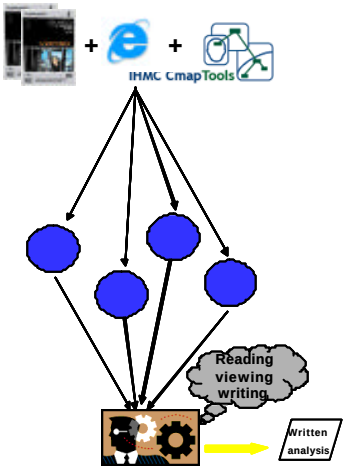

Fig.3 Deconstruction process with Film tool

4 Model`s description

4.1 Model Architecture

Our methodological framework for the film tool is based on J.J. García Rueda Doctorate Dissertation (García Rueda, 2002), where the two dimensions for the use of hypermedia systems in teaching environments are fully described: the Expositive Dimension and the Structural Dimension are analysed in depth. The Concept Maps are very well suited to express the Structural dimension. The Expositive Dimension is implemented through multimedia nodes. In our case, the system has a two layer architecture as shown in fig. 1. The upper layer is formed by concepts maps linked each other beginning with a concept map acting as a "home page" (see fig. 2) of the film tool. These concepts maps express in a general way the basic elements in films analysis. From these, it is possible to access information more specifically related to the film under analysis via hyperlinks. This specific information is implemented in nodes located in the lower layer, actually a hypermedia network layer. The node's contents normally include text, video clips, screenshots, text templates and even interactive tests.

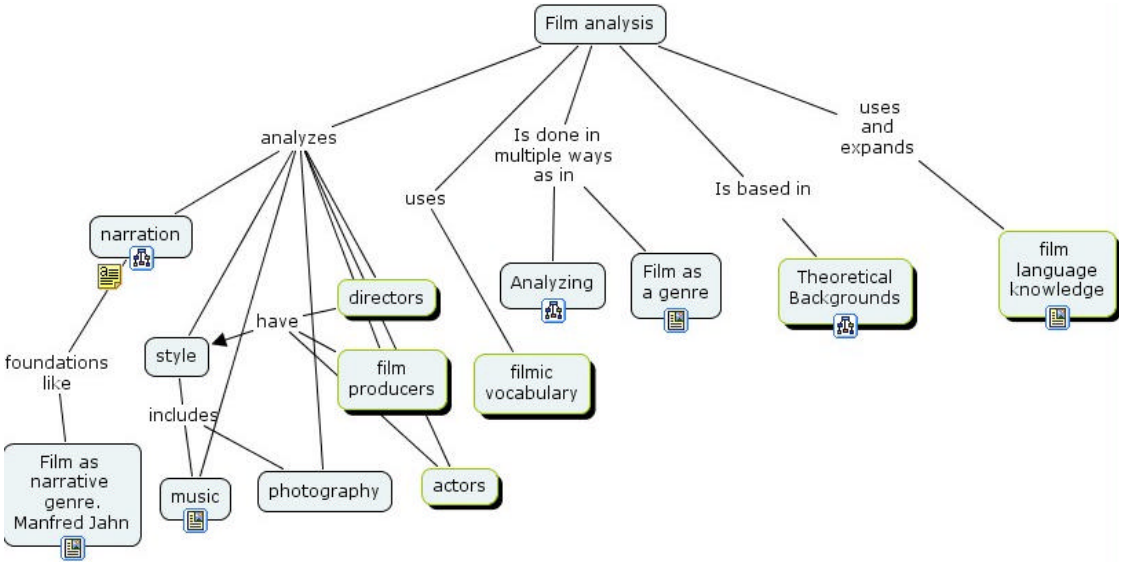

Fig. 2 Initial Cmap example

4.2 General Design Guidelines

4.2.1 Generalized indexes

Concept maps have been seen as generalized indexes. As the Contents section is the map of a book, a concept map serves very well as an enriched map to hypermedia content. We use this approach. Indexing information is getting increasing importance now that more and more informative resources are available via the Web and that every person's role as an information processor increases day after day.

Mapping is also essential due to the great improvement in speed and quality of communication that it provides.

4.2.2 Design of hypermedia

Hypermedia "narration" has its own rules as it is well-known in the literature, but not so much in cinema. It is essential to know the language of hypermedia (how to narrate with hypermedia), and not just the hypermedia software, although much more importance is usually given to the last.

In our project, "narration" is not exactly applicable in the same way as when telling a hypermedia story. However, basic language rules must be taken into account for an efficient usage of hypermedia. The tool must be simple, distractive events should be kept to a minimum, many complementary events shall be optional to the user willing to study some aspect in detail, without confusing the basic use and the navigational clarity of the tool. Regarding interactivity, the tool will have a higher interactivity than multimedia off line products as it uses on-line connections to Web pages and random access to the films contents. The TMUM (Williams, 2003) taxonomy for hypermedia helps in classifying the hypermedia usage and function.

4.2.3 Openness and connectedness

Citing C. Tomás: "Network connectivity plus hypermedia makes possible new types of cultural products that are consumed in a non linear way, oriented to integration of knowledge, that departs from the centralized authorship, developing participative communication processes". The Web and information technologies change the way information is structured and obtained. It also makes it possible for the user to generate and connect cultural significances. In our project, we find that an example of this kind of product

may be constructed around a concept map like “my view of the film Vertigo” which would correspond to a film critic view of the film enriched with the relevant material and extracts from many sources related to the author.

4.3 Design requirements

The design process of the tool prototype started with the capture of requirements. These included the types of users foreseen profiles definition, usability, flexibility and portability, conceptual design, detailed design with selection of tools, node identification, navigational structures, functions and contents. We also considered as a must the iterative evaluation of the prototype by professional film people and film students. From this experience, built on the prototype, recommendations for the final tool design will be derived. We also mention here the main requirements for the system to be designed:

- Compact. Minimum special HW requirements for maximum portability. Standard PC platform.
- Windows and Linux compatibility whenever possible.
- Free tools whenever possible for maximum diffusion, usage and collaboration.
- Flexibility and range of applications: to be used by a student as film analysis practice and by a film analyst cooperating with others, for simple analysis and for specialized ones, as a multimedia information organization and multimedia content access tool.

5 Prototype description

We discuss in this section the specificities of our prototype. In our approach to the prototype we considered that it should provide the user with conceptual and instrumental navigation aids for film analysis. The objectives of the prototype are: easy exploration of design, and evaluation and feedback from experts. Attractiveness and sophisticated effects are secondary in this prototype, although undoubtedly interesting for the final product, in order to promote its use among film students and film enthusiasts.

5.1 Tool selection

5.1.1 Concept Map tool selection

There exist different concept map platforms available. When selecting a mapping tool for our project we evaluated specifically Free Mind and Cmap Tools. Other mapping software products are MindMapper, Inspiration, Mindmanager and Kmap. Between the two basic approaches to mapping software, Mind Mapping and Conceptual Mapping, we had no initial bias for any of them. Practicing with both approaches in different applications we found that concept maps were fairly more suitable for our project than mind mapping due to its communicative precision which resides in the inherent statement structure of concept maps.

FreeMind is a Java based free mapping application that generates mind maps (crawl shape). It is fast when creating nodes and flexible in chaining maps and linking to documents in other formats. It also uses icons, colors and customization (clouds and the like) to attract the attention and differentiate among the essential characteristics of mind maps. It is a powerful and flexible information organizer, simple to use. As any mind mapping tool, it is less precise in knowledge organization and expression than concept maps.

We found Cmap Tools 3.3 very fast and flexible for constructing conceptual maps. A close relative of Cmaps are Topic Maps, that Cmaps currently offers compatibility with. For our application we needed flexibility of use and not precision in topic indexing, so Topic Maps were not considered, although connection to them in the relevant areas (film analysis, film language, etc) might seem useful for specific information gathering. Cmaps are easily edited and exported to html format.

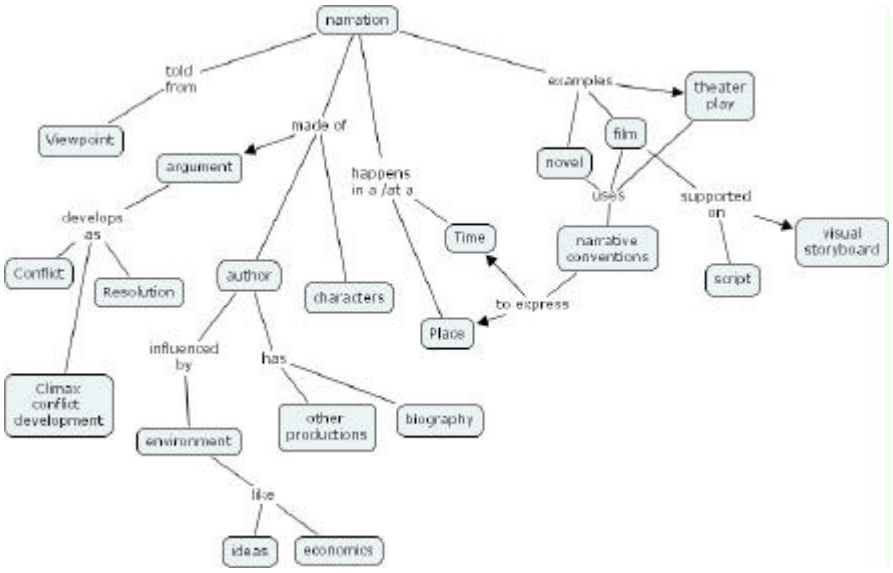

Fig. 4 . Example of Concept map for narration analysis

5.1.2 Playing clips

As said above, there are different alternatives for handling clips with film sequences for analysis. The DVD standard provides professional quality in home equipments.The most obvious consists of extracting clips off-line from the DVD and then linking them to hypermedia nodes for an easy playing from the tool. This has the drawback of the time required for clip extraction and the disk memory consumption, in this case compressed formats like DivX are recommended. We favour in general the use of software DVD players (such as VideoLan, Power DVD player) controlled by the user and by the tool. With software DVD players all the film is available, plus the extra material typically included in DVDs, that sometimes largely enriches the knowledge of the film making and participants. An intermediate option that software DVD player permits is to copy DVD files to disk and replay them from disk. In this way, scenes from different films may be available for replay and comparison. This is very interesting when analysing a director's style, for instance for a study of the use of travelling by Stanley Kubrick, travelling sequences from *Clockwork Orange*, *Barry Lyndon*, *The Shining* and *Paths of Glory*, may be played (even simultaneously) and compared. The same applies for the study of filmic genres styles evolution, as for example the treatment of revolver duels in western films by comparing duels scenes from classic and contemporary westerns.

5.2 Other supporting elements

For the prototype we have used theoretical background material from Manfred Jahn "Narratology" to study narration, David Monaco for film language theory and J. Cadavid among others for film analysis questionnaires and templates. However, the film analyst is free to use, include and link any relevant material suitable to the film in question or to the specific course's learning objectives, if the application is film teaching. So, under a similar or identical concept maps structure, different analysts can build totally different contents structures and "views" of the same film.

Terms and concepts used in film making are important for an efficient usage of our tool and for a good maps understanding. This is solved by providing links to Glossary and Thesaurus on films and on semiotics. Consistently with our approach, conceptual maps that show the main relationships between filmic concepts are also included. Access to multilingual film terms dictionary is also included for fast reference.

As part of the film product, the screenplay is considered a basic piece. Access to the screenplay on-line is currently feasible for many films. Links to it allow access for fast reference and or exercises. Access to storyboard is sometimes possible (i.e. parts of it are sometimes included in DVD), also, helping to

understand the film creation process of the author. Access to the extra materials of a DVD in video format is possible by selecting the corresponding title in the DVD player. The technical data about the film (actors, producer, music and so on) is more accessible if captured via screenshots that appear as links inside the hypermedia nodes.

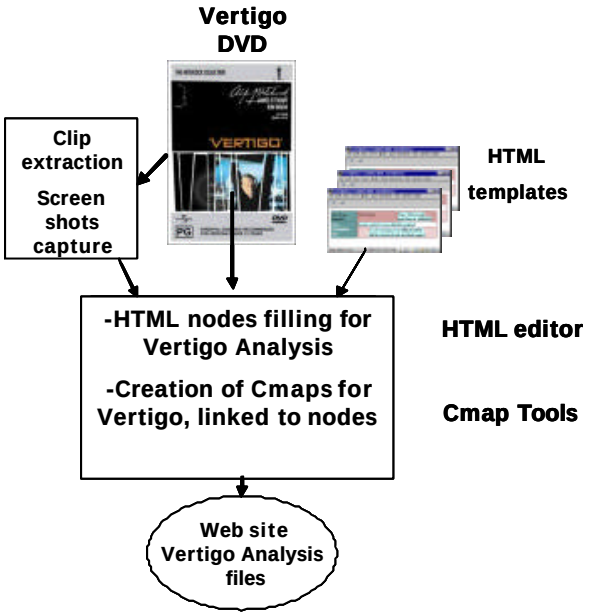

Fig.5 Film toolusage (analyst)

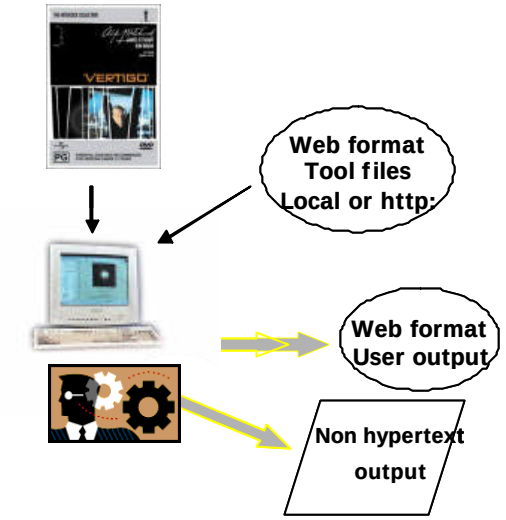

Fig. 6 Film tool usage (user)

5.3 Prototype operation

The usage of the tool prototype is shown in figures 5 and 6. Figure 5 shows the preparation of the analysis of film Vertigo that may include different types of annotations like video annotation. Figure 6 shows the "user" usage. We summarily comment on our experience with the prototype for Vertigo. Figure 7 shows an example for the initial page of Vertigo.

At the moment of writing, we do not have yet feedback from film experts on the prototype. Remote access to tool is under analysis to facilitate the prototype evaluation by film directors and film schools professors.

Regarding concept map production with Cmap Tools, the creation of the concept map file is simple and straightforward, and the export as .html file is straightforward. However if the page needs modifications in html links, no direct html editing is possible, the modification must be done in Cmap tools and the file exported again. The reason is that the html code generated by Cmpa Tools is not human understandable (at least non-expert) for direct html editing. The integrated maintenance inside a tool like Dreamweaver is then not possible.

Regarding stored clips, compromises and alternatives are the norm. Depending on the requirements for portability (storage size for clips) we must balance image size and quality vs file sizes. The minimum for video are .mpg files with small size images (aprox. 2 Mb for a 40 seconds sequence). Good image quality with .avi may require about 50 Mb for the same duration. Most flexibility is provided by DVD playing selecting clip from a previously prepared playlist, accessing it by chapter, by timestamp selection with the time cursor in the Windows vlc interface or using the seek command of command line interface (on an MS DOS screen or preselected inside the tool).

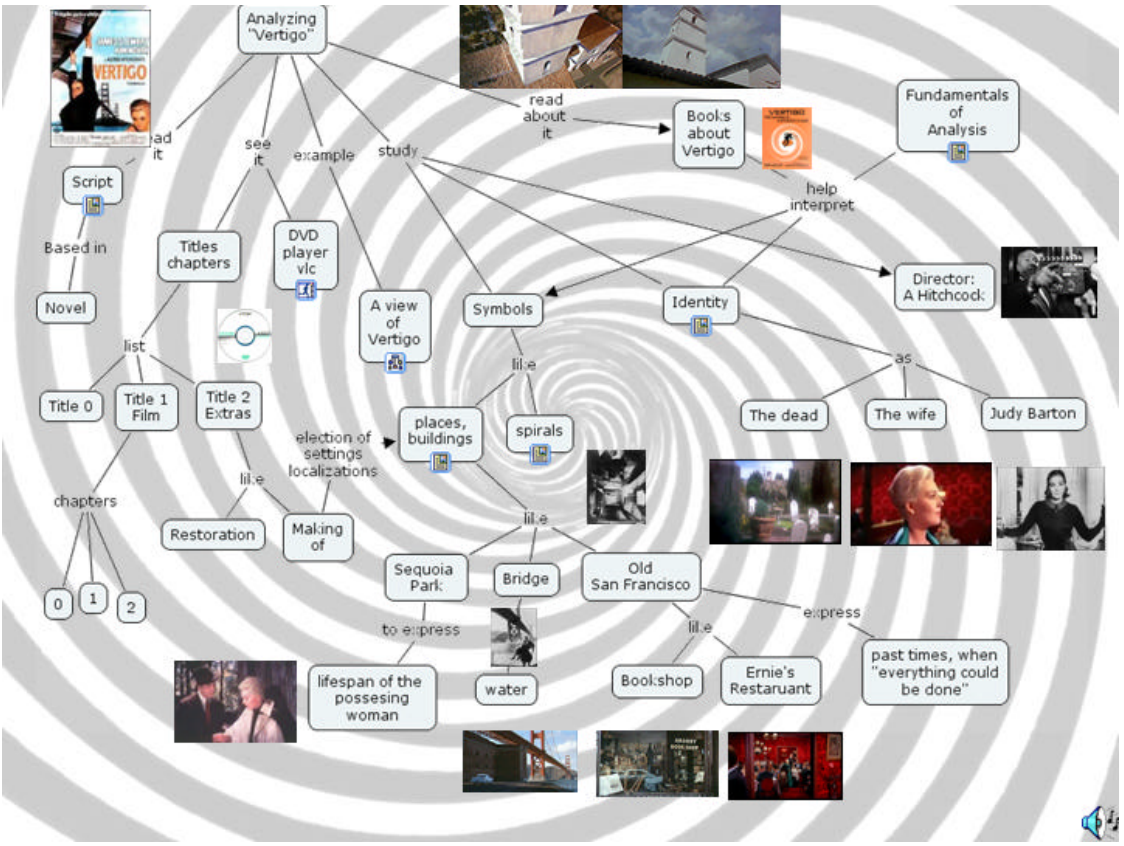

Fig. 7. Example of initial page for “Vertigo”

6 Future work

The described hypermedia system using concept maps seems useful in several areas related to films: film teaching, film analysis and criticism of a new type (“embedded criticism”), note taking on films, and perhaps as a communication vehicle between film enthusiasts. As a film teaching aid it helps a teacher to construct a consistent yet open environment for active learning. As an authoring tool, different, personal views of the same film may be constructed by anyone, as there are currently many books about a film.

Movie appreciation is enhanced as the movie can be watched actively and selectively. The magic of master film sequences emanates from them. Software DVD players use makes possible an integrated tool without bandwidth limitations and law infringements on authors rights.

Among the enhancements to the tool it might be obviously the access to movie sequence databases of indexed film sequences that would be accessed online via hyperlinks to illustrate examples of film styles, alternative solutions to same narrative sequences and the like. This looks difficult due to author’s right restrictions and lies more in the cinematographic documentation field, but it is a subject of real interest, that includes indexing of films (using topic maps) to access them at sequence level. The next step on this would be to review the state of the art of this kind of movie databases.

Scripting capability is a feature that some platforms like Kmap support and that could be interesting to explore in the final implementation for more interactive implementation. It is not needed for collaboration because Cmap Servers and conventional hypertext links suffice for this application.

7 Summary

This article has described a new and open concept map-based hypermedia system for film analysis and film teaching (direction, narration). It uses Cmaps as navigational and conceptual structure for non-linear access and flexible interaction on multimedia materials for film analysis or study. Cmaps and Hypermedia fit very well with the objectives of the project to explore new ways of analyzing films. The methodological model and the demonstration and evaluation prototype being built were described. Standard and free widely available tools are used to enable universal use. Further tool evaluation and development is foreseen as it opens new and alternative paths for film analysis and communication.

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References

Castro de Paz, J.L. Alfred Hitchcock. Vértigo/ De entre los muertos. Paidós películas 1999.
García Rueda J.J., 2002. Modelado y Diseño de Experiencias Educativas en la World Wide Web. Tesis Doctoral. Capítulo 3 . Metodología de diseño. http://www.it.uc3m.es/~rueda/Tesis/tesis.htm
Freemind. http://freemind.sourceforge.net/PublicMaps.html
Gaines, B.R., Shaw M.L.G. Concept Maps as Hypermedia Components. http://ksi.cpsc.ucalgary.ca/articles/ConceptMaps/CMa.html
Griffith in context. http://griffith-in-context.gatech.edu/
Jahn, M. Narratology: A guide to the theory of Narrative. http://www.uni-koeln.de/~ame02/pppn.htm
Johnson, B. *The Critical Difference*, 1981.
Monaco, J.How to read a film. DVD ROM
Moreno, I. Musas y nuevas tecnologías: el relato hypermedia. Paidós comunicación 2002.
Manning, E. Deconstruction and the Visual Arts: Art, Media, Architecture. Cambrige Univ. Press, 1994.
Novak, J.. Concept Maps. http://www.ihmc.com.
Phillips, M. Why a cinemology? http://communication.students.rmit.edu.au/1998/mairead_phillips/hitch11.html 1998.
Phillips, M. Cinemology of the kiss. http://communication.students.rmit.edu.au/ 1998/mairead_phillips/hitch00. html and http://hypertext.rmit.edu.au/students/1998_outcomes/mairead.html
Power DVD. http://www.gocyberlink.com/english/products/product_main.jsp?ProdId=28
Tomás I Puig, C. Del hipertexto al hipermedia. Una aproximación al desarrollo de obras abiertas
Trías, E.: Vértigo y pasión. Ed. Taurus, 1998
VideoLan Project. VLC. http://www.videolan.org/
Williams, M. Taxonomy for multimedia. T-MUM . http://www.t-mum.com/tmunm3D.jpg