An Audio-Visual Database for Post-war Architecture and the City in Greece

Stavros Alifragkis* and George Papakonstantinou**

Laboratory of Environmental Communication & Audiovisual Documentation (LECAD),
Department of Architecture, School of Engineering, University of Thessaly
Pedion Areos, 38334 Volos, Greece
stavros.alifragkis@cantab.net, gpapakon@arch.uth.gr

Abstract. This paper reconsiders the notion of the archive in the context of a multimedia database for the city. It investigates the aesthetic and ideological constitution of the archive as a list, examines the nature of the urban historical evidence that is being transcribed into the conceptual setting of the database and, finally, experiments with the database as a storytelling mechanism that allows for multiple narrations about the city. A pilot, proof-of-concept interactive production experiments with an audiovisual database, initially comprising Greek newsreels and documentaries. This web-based prototype functions as the touchstone against which our main research questions are raised. The conceptual and production framework, outlined in this paper, represents work in progress conducted at the Laboratory of Environmental Communication and Audiovisual Documentation (LECAD) of the Department of Architecture, University of Thessaly. The project is generously funded by the Research Committee of the University of Thessaly and Thales Research Support Program.

Keywords: Database, List, Architecture, City, Cinema, Interactive, Metadata, Vocabularies.

1 Introduction

This paper readdresses the concept of the archive with reference to the representation of architecture and the city via the moving image. Here, some initial results from on-going research conducted at LECAD, Department of Architecture, University of Thessaly will be presented in brief. The project is generously funded by the Research Committee of the University of Thessaly and Thales Research Support Program. Using as a point of departure Lev Manovich and Umberto Eco's seminal work on the database and the list respectively, this research examines how our understanding of the city and its architecture can be shaped using the moving image as our primary resource. For this purpose, the project involves the setting up of an on-line multimedia

* Dr. Stavros Alifragkis is Post-doctoral Research Associate at LECAD, Department of Architecture, School of Engineering, University of Thessaly.

** George Papakonstantinou is Associate Professor at the Department of Architecture, School of Engineering, University of Thessaly.

C.T. Angelis, D. Fotiadis, and A.T. Tzallas (Eds.): AMBI-SYS 2013, LNICST 118, pp. 1–15, 2013.

database with existing footage, sourced from Greek newsreels, documentaries and family footage by individual contributors. Initially, the pilot prototype will be using archival material from the collections of the Hellenic National Audiovisual Archive from the 1950s and 1960s, when the Greek urban landscape experienced an unprecedented growth of construction activity. This entails handling approximately 250 newsreels that depict daily life, social events and state ceremonies in Athens and other Greek cities. Gradually, the audio-visual database will expand to include both Greek documentaries and more recent moving image works. Efforts will be made to enrich the database with complementary material from private collections that narrate the informal history of the city. The paper discusses the conceptual framework for setting up the project –compiling the audio-visual database and annotating with metadata the media files– and the digital tools utilized in the project.

2 Cinema and the City: Theoretical Framework

According to French philosopher, cultural theorist and urbanist Paul Virilio, early in the 20th century, perceptive faith –founded in the Middle Ages– began to lose ground over faith in the technical sightline. This crisis brought about the automation of perception and the production of synthetic vision afforded by technological advancement [1]. Virilio's 'eyeless vision' –the act of substituting the 'ideal alignment of the look' along an imaginary axis for a line of aim that 'appears thoroughly objective'– describes a great semantic loss in the history of perceptual faith [2]. No one managed to encapsulate this visual paradigm shift more comprehensively than the Soviet film-director Dziga Vertov (1896-1954). In Vertov's movie *The Man with the Movie Camera* (tMwtMC) [3] –originally intended to coincide with the tenth anniversary of the October Revolution– shots of the movie-camera and the machinegun are used interchangeably on several occasions. Vertov was determined that the human eye was not equipped to record the complexity, the multiplicity and the simultaneity of contemporary life [4]. Therefore, he sought to obtain unobstructed, unmediated and unbiased views of urban life via the omnipotent and omnipresent technologically advanced eye of the movie-camera, which always assumes an ideal point of view [5]. Montaged sequences with shots of the human eye, the camera lens and, finally, their visual overlap have become iconic of Vertov's theoretical package about cinema and particularly the act of catching 'life unawares' or, as film-historian Yuri Tsivian maintains, life 'off-guard.'[1] Vertov's anthropological laboratory was the Soviet city. His films constitute cinematic rhetorical arguments [8] that propagandize the link between the city and the countryside, between the peasantry and the proletariat [9]. In tMwtMC in particular, shots depicting the electrification of the USSR counterpoint dialectically shots portraying daily activities in no less than three major Soviet cities. These creative filmic reconstructions of the city suggest a wider understanding of the urban phenomena and their complexity, which is on par with some of the most contemporary urban theories [10]. Hence, the study of the celluloid metropolis not only enables alternative historical narratives about the urban form but also delivers

[1] The human eye/movie-camera superimposition is first introduced in Man Ray's experimental film entitled *Emak Bakia* [6]. The theme of the movie-camera and the cameraman is addressed in Sedgwick and Keaton's movie *The Cameraman* [7].

powerful heuristic devices for theorizing the city and imagining potential futures for the urban landscape.

Vertov's screen language epitomizes the formal and stylistic characteristics of a film genre that is generically referred to as 'city symphonies' or 'city films.' These are moving image works that encapsulate the dynamics of the modern metropolis by portraying a multitude of daily activities in the city and arranging them along a dawn-to-dusk narrative arc [11]. 'City symphonies' are characterized by certain formal features that distinguish them from other film genres. Indicatively, the main narrative mechanism that drives the story of a 'city film' forward is not based on human leads (protagonists, main characters, etc.), scripted dialogue and causally linked sequences and scenes, which have been associated with narrative cinema and classical Hollywood style in particular. Rather, the rhetorical ordering of brief vignettes on different urban themes –what could be construed as a visual argument for/against the city– dictates the episodic, fractal-like structure of many 'city films.' Furthermore, each brief, montaged vignette consists of shots depicting 'life unawares' in the city. Their succession in the narrative flow is regulated by complex editing rules that elicit analogies in the form and/or content between consecutive sequences and even shots. Finally, urban life is presented in documentary style, even though 'city films' do not constitute documentaries in the traditional sense [12]. 'City symphonies' were particularly popular in the 1920s and 1930s, however, their storytelling mechanism is still very much in use today, in the form of music videos, experimental moving image works, documentaries and brief montage intervals in fiction films.[2] The reconstruction of the image of the urban landscape in film is not exhausted in the study of 'city films.' The examination of other film genres, such as the film noir, has contributed greatly to our understanding of both the urban form and how it is perceived by everyday people. Nevertheless, the rigorous analysis and interpretation of the reconstructed celluloid city in classic 'city symphonies' from the 1930s, such as Ruttmann's *Berlin: Symphony of a Great City* [15] or Vigo's *On the Subject of Nice* [16], sharpen the conceptual and digital tools utilized in our investigation of the city in cinema.

The aim of our research project is to compile a multimedia database consisting of time-based media with a view to broadening our understanding of the Greek city and its architecture and to examining how societies perceived the urban landscape in the course of the second half of the 20th century. Moreover, the proposed proof-of-concept production intends to enable the potential user to navigate the database via a user-friendly, web-based interface. A set of project-specific options for interaction will enable the potential user to compile sequences of moving images on the fly, with media sourced from different content providers (newsreels, documentaries, family footage, etc.). The annotated with metadata media files of the audio-visual database will be thus reconfigured according to the rules that regulate the narrative structure of 'city symphonies' and Vertov's tMwtMC in particular. This approach was first introduced in a previous interactive moving image project by Alifragkis and Penz, *Cambridge City Symphony* [17].[3]

---

[2] Strand and Sheeler's *Manhatta* [13] constitutes one of the first 'city films' and Glawogger's *Megacities* [14] one of the latest.

[3] For additional information on the project refer to: Alifragkis, S., Penz, F. & Williams, D. 2006 [18].

Content-wise, it is crucial to determine early on what type of footage may be deemed relevant to our purposes. Protests, carnivals and festivals, promotional events, religious processions, outdoors performances, celebrations, riots, protests, art events and happenings, political rallies and official, State ceremonies describe only a fraction of the breadth and wealth of social events that take place in the city. Whether in the epicenter or as distant backgrounds of cinematic –fictional or documentary– narratives, these phenomena have been documented extensively by the camera-lens and function today as valuable resources for the urban historian and theoretician. Our project reserves a special place for media that captures unplanned, temporary and unconventional uses of the public space of the city –streets, squares, parks, public buildings, etc.– and enables an alternative historical narrative about the development of the urban form. We wish to construct a moving-image record of the landscape of the Greek metropolis, where marginal urban phenomena take center stage in the representation of daily city life on the screen. These often manifest themselves in the form of unorthodox and imaginative activities organized by grassroots urban social movements, who act locally in response to global socio-political stimuli [19]. Reclaiming disused or misused urban spaces and introducing alternative urban functions that promote high quality recreation over consumption constitutes fundamental issues that shape the current agenda on the future of the city. Media files sourced from newsreels and documentary films or personal raw footage will form a diverse pool of valuable moving image assets for the documentation and examination of the way public spaces in the city are weaved into the fabric of social life diachronically.

3 Media Annotation with Spatial Metadata

The initial stage of the project involves reviewing the results of similar, successfully completed projects and exploring the possibility of collaborating with research teams in Greece and abroad on the development of a common theoretical framework for discussing the urban form in film. An instance of the former, reviewing similar projects, is the AHRC-funded project entitled 'City in Film: Liverpool's Urban Landscape and the Moving Image' (2006-8), ran jointly by the School of Architecture and the Department of Communication and Media of the University of Liverpool [20]. The research team compiled a list of moving image files depicting the city of Liverpool, which were collated from a wide range of sources. The catalogue is publicly available on-line and users can search the collection using keywords such as: date, duration, genre, director/production credits, format (35mm, 16mm, 9.5mm, VHS, etc.), color/b&w, general synopsis, name and contact details of the archive holder or collector and viewing information, or:

> 'a list of locations and buildings; the architectural and urban space represented (e.g. public buildings and spaces, commercial and industrial areas, sites of leisure and recreation, education, health, religion, etc.); and the spatial use or function of the various spaces (e.g. festivals and parades, transit and mobility, everyday life, commercial, leisure, contested and political spaces, etc.)'[4] [24]

[4] For additional information on the project refer to Roberts & Koeck 2007:84-93 [21]; Hallam 2007:272-284 [22]; Roberts & Koeck 2007:7-11 [23].

Sadly, viewing the media files referenced in the list is currently unavailable. An instance of the latter, seeking collaborations, is the recently launched, AHRC-funded, collaborative project between the School of Architecture of the University of Liverpool and the Department of Architecture of the University of Cambridge entitled 'Cinematic Geographies of Battersea: Urban Interface & Site-Specific Spatial Knowledge' (2012-3) [25]. The research team has coined the term 'cinematic urban archaeology' to describe a systematic method of revisiting the city's recent past by carefully unveiling successive layers of celluloid reconstructions of the urban tissue. The aim of the project is to compile a database of relevant media files about Battersea, collated from official and unofficial –amateur filmmakers– sources. Furthermore, the team plans a series of 'urban interventions' that involve the use of cutting-edge information and communications technology and the digital media in order to augment the way people experience the city in their everyday lives. This will involve the recording and the subsequent retrieval of personal memories about specific sites by individual contributors. In this respect, asides enriching people's knowledge about Battersea's past, the project aims to reconstruct the area's unofficial history through oral testimonies. Likewise, LECAD will draw from relevant literature and experience with similar projects in order to address what appear to be two main research questions: a. how to describe the content of media files with reference to architecture and the city (media annotation); and b. how to navigate the database in a way that is both instructive and meaningful with reference to the reconstruction of the image of the city and the spatial mapping of digital data (media recycling). Media annotation is tackled in this section, while media recycling is discussed in the following part of our paper.

Umberto Eco draws our attention to the fact that both primitive and modern societies tend to resort to definitions that involve listing the properties of a substance rather than providing an account that signifies its essence. In other words, listing properties amounts to an enumeration of characteristics or inherent qualities and does not specify the 'what it is' of a substance. These lists, according to Aristotle, are essentially non-finite and, to a certain extent, arbitrary or accidental. Nevertheless, in everyday life, defining substances by listing their properties communicates more effectively data about our world, especially from the perspective of empirical thinking [26]. Therefore, researching the cinematic city could very well boil down to a list of accidental properties that serve the purpose of describing in detail –not exhaustively though– the visual and conceptual attributes of the city on the screen. This list of criteria could provide the much needed common denominator and provide justification for the compilation of a database –a diverse pool of media files– comprising footage that might appear to be otherwise unrelated to the untrained eye of the non-expert. In this early phase of our project, we experimented with a limited number of media resources –moving image clips containing single shots and/or brief sequences of shots– originating from three main sources: a. newsreels and documentaries from the Hellenic National Audiovisual Archive [27], b. documentaries and fiction films from the Greek Film Archive Foundation [28], and, most importantly, c. family videos, personal footage or amateur films submitted by

Fig. 1. The index page of the project's website

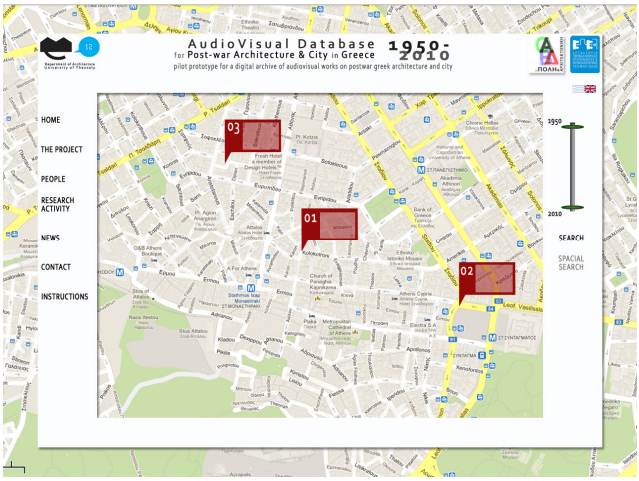

Fig. 2. Spatial mapping of metadata. Database assets are analyzed in scenes, sequences and shots. Subsequently, each element is pinpointed on the map by using its geographical location.

individuals to the official website of the project, which is currently under construction [29]. Essentially, this pilot, proof-of-concept production will attest which categories of spatial properties or urban features are most suited to the study of the city in film. These categories exist in the form of coded descriptive information pertaining to individual media files: database assets annotated with descriptive, structural and administrative metadata [30].

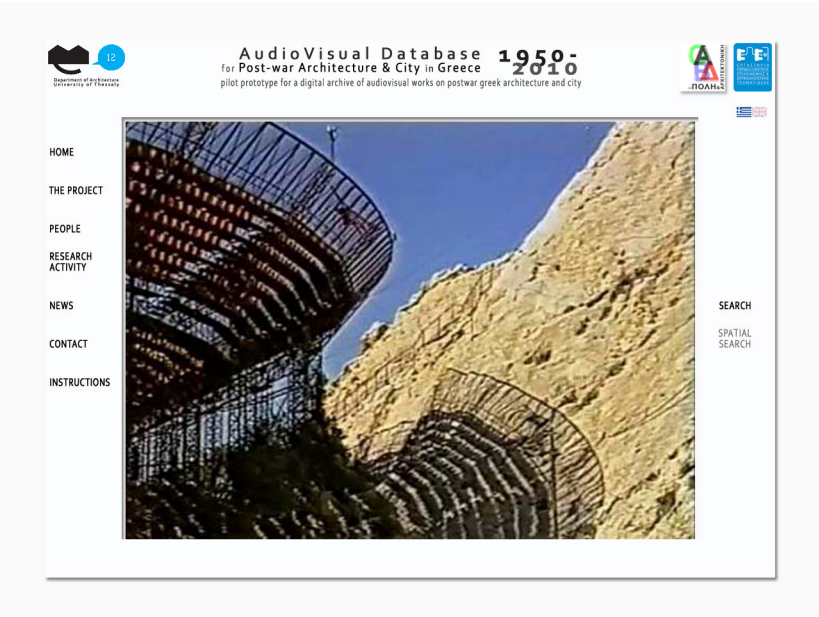

Fig. 3. Previewing window. Here, potential interactors may watch user-generated sequences of database items based on a set of finite options for navigating the audio-visual database.

Structural and administrative metadata have no particular bearing to the description of qualities that pertain to the reconstruction of the image of the city on the canvas of the screen. Conversely, descriptive metadata –or resource discovery metadata– is particularly relevant to our project, as it enables the potential user to identify, locate and retrieve relevant media files, by means of a finite set of categories. The categories introduced here foreground particular types of spatial information and attempt to highlight aspects of content that refer to specific urban features, such as the ones previously described in brief. Drawing from experience with earlier projects that utilized 'city symphonies' as raw material for studying the osmosis between the city and cinema (e.g. *Cambridge City Symphony*), we devised a set of limited criteria for the annotation of all media files with descriptive metadata [31]. Therefore, descriptive metadata can be further analyzed in three major categories: thematic metadata, spatial metadata and temporal metadata. Thematic metadata pertain to the description of the theme of a particular media file. As far as our research is concerned, themes are gleaned from relevant literature on urban planning as discussed below. Spatial metadata pertain to the description of filmic space. Finally, temporal metadata may refer to the date a media file was created but mostly to the era it depicts. Naturally, this research shows a special interest in the analysis and creative use of spatial metadata in particular. Here, we rely heavily on French film-director Eric Rohmer's study of space in cinema, as discussed in his 1972 work, first published in 1977, entitled *L' Organisation de l' Espace dans le Faust de Murnau* [32]. Hence, we utilize Rohmer's categories (pictorial space, architectural space and filmic space) in

order to further elaborate and expand upon the different types of spatial metadata. Even within these categories, metadata pertaining to the description of architectural spaces in cinema appear to be more relevant to the purposes of our project. In this respect, this type of spatial metadata requires additional clarification and refinement. Our research introduces three subcategories, which tackle different but complementing aspects of the metadata that pertain to the description of architectural spaces in cinema: spatial categorisation, location, and spatial interpretation. Each respective subcategory is populated by a finite set of criteria that formulate controlled vocabularies.

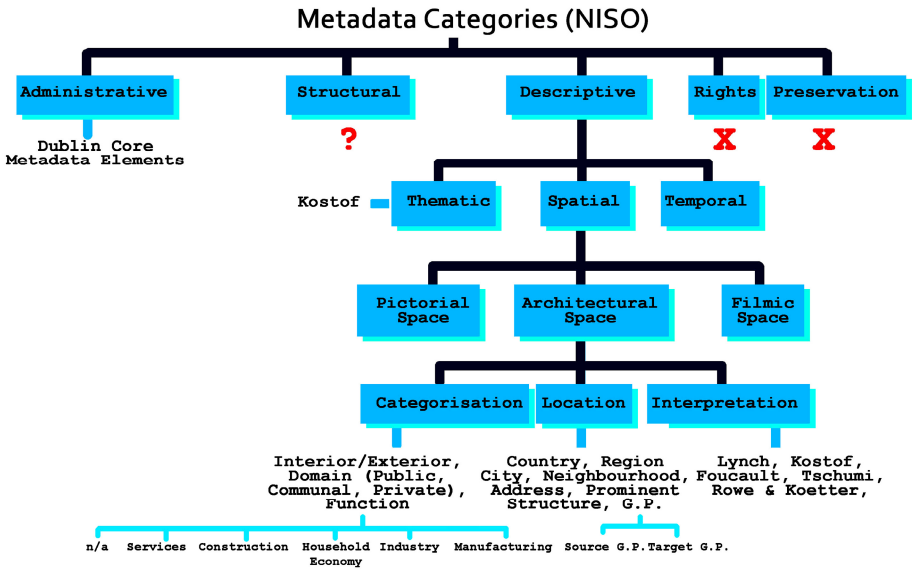

Fig. 4. *Metadata Categories*. Proposed analysis of *Descriptive Metadata* with a special focus on unearthing spatial features.

Vocabularies are introduced from existing literature on urban theory and history, with minor modifications where appropriate. Indicatively, one may examine the possibility of adopting urban themes from the widely discussed and much referenced work of architectural historian Spiro Kostof [33] [34]. Logging information about urban elements –the street, the square, the park, the natural limits, etc.– for each individual shot or sequence of shots could provide a loose narrative framework for the exploration of our diverse database.[5] The Greek Film Centre used to offer basic services in this direction, when the digitization of its limited collection was concluded in 2008 [35].[6] Currently, there is a call for offers for the design of a new on-line tool

[5] This line of inquiry is rather similar to the one the Liverpool-based research group pursued in 2008.

[6] The link is not active anymore.

for navigating the database with the use of descriptive metadata.[7] This straightforward approach provides a broadly accepted method for understanding and appreciating different urban, spatial categories. It remains to be seen whether it can trigger a more imaginative reshuffling of the assets in the database, hence the heuristic value of our pilot production. Our project seeks to explore alternative ways of exploiting the storytelling potentiality of visual or conceptual cues embedded in our database items. One such way could be based on the creative reworking of Kevin Lynch's classic study on place legibility [36] –the creation of mental maps that illustrate very eloquently how city dwellers perceive the urban fabric– and the implementation of his set of unique urban elements –paths, edges, districts, nodes, and landmarks– for the annotation of the moving image assets of our database [37]. The latter may be supplemented with additional categories originating from the works of city theorists Colin Rowe and Fred Koetter's *Collage City* [38] and architect and theorist Bernard Tschumi's *Event Cities* [39]. The abovementioned studies are hardly complementary to each other. However, they represent significant shifts in the way specialists perceive the development and imagine the future of cities. In this respect, it would be interesting to see to what extent logging data about a wide range of urban features can sustain a more creative reshuffling of the database assets. The process of selecting a suitable framework of urban theory with a corresponding finite set of categories and subcategories and a hierarchical structure outlining their relations will be presented in detail in a future publication, as it falls slightly outside the scope of this paper.

Naturally, this research involves reviewing existing digital tools for the annotation of database assets, that is, logging descriptive metadata and experimenting with their storytelling potentialities. Currently, the all-pervasive spread of digital technologies offers a wide range of software that assists various types of research for different research phases in the arts and humanities.[8] Furthermore, several software packages have been designed for the purpose of logging, computing and visualizing aspects of film style, based on the annotation of individual shots. In 2005, the collaboration between film historian Yuri Tsivian and computer scientist Gunars Civjans resulted in the production of 'CineMetrics,' a 'movie measurement and study tool database' that enables the logging and processing of stylistic metadata [41]. The software uses two modes, 'simple' and 'advanced.' 'Simple' mode allows the user to manually log shots while watching the movie with the play-back software of her/his choice. Here one can calculate the number of shots, shot duration and the Average Shot Length. 'Advanced' mode functions in a similar way, but allows for the logging of different types of metadata via eight user-customized buttons. Basic statistical processing is readily available, but more advanced handling of the metadata –including the visualization of the statistical processing– is possible only when one submits the results to the online database. Based on Tsivian and Civjans' 'CineMetrics,' 'Shot Logger' –developed at the Department of Telecommunication & Film of the

[7] For additional information on the forthcoming project for a digital archive please refer to: `http://www.gfc.gr/index.php?option=com_content&task=view&id=1283&Itemid=118&lang=en` [last accessed: 07/05/12].

[8] For the various tools offered today refer to: Digital tools: Arts-Humanities.Net: Guide to Digital Humanities & Arts [40].

University of Alabama by Professor Jeremy Butler– allows the user to manually capture and log shots and, in addition to other software, generate screen-shots and attach them to the statistical data [42]. In 2007, the Vienna-based research group entitled 'Digital Formalism' –a collaboration between the Department of Theatre, Film and Media Studies of the University of Vienna, the Austrian Film Museum, and the Interactive Media Systems Group of the Vienna University of Technology– embarked on an ambitious project that involved, among other tasks, performing a computer-aided analysis of Vertov's work [43].[9] The group utilized 'Anvil' for the annotation of Vertov's tMwtMC [45]. This rather sophisticated piece of software, designed and programmed by Michael Kipp –Professor for interactive media at the University of Applied Sciences in Augsburg, Germany– is a free moving-image annotation tool that offers 'hierarchical multi-layered annotation driven by user-defined schemes.' 'Deconstructor' was introduced in 2002 by filmmaker and Adjunct Professor at the Film Division of the School of the Arts at Columbia University Larry Engel as 'a constructivist approach to learning about film' [46].[10] 'Deconstructor' accommodated: a. scene and shot preview and detection in 'storyboard' mode (duration, in point, out point); b. annotation of shots in 'databoard' mode (graphic arrangement, shot type, shot angle, shot perspective, camera movement, camera movement type, camera movement value, subject movement, subject movement direction, subject movement to/from camera, subject movement zoom strength, entrance and exit); and c. generation of graphs based on the statistical analysis of the accumulated metadata. This on-line tool is no longer available. One of the most practical on-line tools for logging metadata is the aptly called 'Vertov,' a media annotating plug-in for 'Zotero,' which is an on-line tool for managing resources [48]. With 'Vertov' one could mark in and out points on the timeline of locally-stored media files and annotate individual shots or sequences. There were no predefined categories, only plain text boxes. Vertov could generate screen-shots but it could not process the metadata statistically. Currently, the plug-in is inactive. 'ImagePlot' by Lev Manovich, Professor of Visual Arts, University of California, San Diego, is 'a free software tool that visualizes collections of images and video of any size' [49]. It has proven to be very reliable and grants the user a great degree of freedom that enables extremely diverse and imaginative visual representations of the annotated metadata, with artistic merit in their own right. Less reliable freeware is available on-line. These vary in sophistication, functionality, and accuracy. Some boast automatic detection of shots or movement within the shot (e.g. surveillance software). These are extremely unreliable, especially with low quality, b&w footage. Our research experiments with the functionalities offered by 'Anvil.'

4 Media Recycling: Database Narrative and the City

Eco argues that a list is much more than a compilation of items bound together by certain attributes, shared in common under the pretext of a mutual denominator. The

[9] For additional information on the project refer to: Kropf et al. 2009:117-132 [44].
[10] For additional information on the software refer to: Sosulski et al. 2004 [47].

list is a powerful art form with immense storytelling potentiality. British film-director and digital media artist Peter Greenaway has been experimenting with the list as a storytelling mechanism ever since his first feature-length movie entitled *The Falls* [50]. Greenaway uses linear narratives as a stepping stone for his multi-focal cinematic narrations, which transcend the expressive confines of film and spill over to neighboring artistic fields such as opera, art exhibitions, happenings and art-books [51]. His moving image experiments illustrate what Manovich terms 'competing imaginations' in new media cultures: database and narrative [52]. Manovich suggests that sequential, cause-and-effect, single or multiple storyline trajectories (narrative threads) and unstructured, non-hierarchical collections of items (databases) take on different statuses as far as contemporary computer culture is concerned. Naturally, he prefers the latter over the former, as database narratives put into effective use functionalities afforded by current technological advances with computer software.

Databases may consist of unstructured media files but the navigation of the database can rely heavily on complex sets of predefined rules described by the author, which can be manipulated –to a certain extent– by the user. Manovich, commenting on his multimedia interactive production entitled *Soft Cinema*, notes that:

> '[t]he DVD was designed and programmed so that there is no single version of any of the films. All the elements –including screen layout, the visuals and their combination, the music, the narrative, and the length– are subject to change every time the film is viewed.' [53]

Marsha Kinder attempts to provide the following working definition for database narratives:

> 'Database narratives refers to narratives whose structure exposes or thematizes the dual processes of selection and combination that lie at the heart of all stories and that are crucial to language: the selection of particular data […] from a series of databases or paradigms, which are then combined to generate specific tales.' [54]

Our aim is to generate multiple itineraries across the database assets by developing a 'selection of particular data' –transcribing and modifying existing spatial categories from relevant literature and/or devising new– that pertains to the creative reconsideration of aspects of urban form. Utilizing software for the manual and automated annotation of our database items –with descriptive metadata about the city and its architecture– is expected to enable a more creative –even artistic– use of the archive and result in a better understanding of its valuable contents. This aspect of the project is referred to as media recycling and describes an extremely potent and current area of artistic endeavor. The practice of using and reusing footage in different storytelling frameworks is fairly common, especially with particular types of production (newsreels, documentaries, experimental movies, music videos, advertisements). In the 1920's, Vertov, for example, used to recycle his own material –even footage captured by others– into new productions, due to the scarcity of raw materials and time constraints. However, a practice that was born out of necessity soon became a matter of aesthetic choice.[11] In this context, retrieving, ordering

[11] See for example Sfikas' *Metropolises* [55] or Shub's *The Fall of the Romanov Dynasty* [56].

sequentially and previewing database items that meet specific criteria –i.e. shots, sequences and/or scenes that address Lynch's notion of the 'edge' or render visually what Tschumi describes as an 'event'– from a much larger pool of media files, could reveal new ways of working with digital, moving image archives. The juxtaposition of media files from diverse sources dictated by a specific set of montage rules might bring forth otherwise unattained analogies or contradictions between the database assets.

5 Concluding Remarks

Evidently, the final deliverable of this project will be a user-friendly, web-based interactive production, where potential users –both researchers and the general public– will be able to locate, configure on the fly and preview a succession of shots that have been sourced from different narratological contexts (documentaries, fiction films, newsreels, family videos). Their ordering will be based on user-defined, project-specific spatial categories. Ideally, the production will serve as a digital workspace, where people can upload amateur films or home videos and contribute to the logging of basic or more advanced descriptive metadata. The technology for something like this already exists. In 2007, the American electronic media artist Perry Bard initiated a participatory reworking of Vertov's tMwtMC over the internet. She developed a web-based application where individual users can:

> '[i]nterpret Vertov and upload […] footage to [the] site to become part of the database. [They] can contribute an entire scene or a shot or multiple shots from different scenes. […] Every day a new version of the film is compiled from shots uploaded to the site.' [57]

Bard's project is particularly relevant to our research as it manages to successfully combine the analysis and interpretation of an existing moving image work on the one hand and innovative and artistic experimentation with visual communication on the other. Similarly, our proposed web-based application will enable the potential user to revisit and reassess the city's recent past via the creative reconfiguration its image on film. Hopefully, this visual retrospection of the urban form will generate a more wide-ranging discussion about the potential futures of the Greek city.

Acknowledgments. The authors wish to thank Mrs. Ifigenia Charatsi (laboratory staff at LECAD) and Mr. Giorgos Kalaouzis (computer engineer and laboratory teaching staff at LECAD) for their invaluable help in all phases of the research and production. Also, the authors wish to acknowledge and thank the Research Committee of the University of Thessaly for funding the initial phase of our study and the research project 'DEMUCIV, Designing the Museum of the City of Volos' (2012-2015) – funded by the Thales Research Support Program under the Greek Ministry of Education Lifelong Learning and Religion and the European Union– for funding the second and final stage of our research.

References

1. Virilio, P.: The Vision Machine, pp. 13, 16, 59–76. Indiana University Press, British Film Institute, London, Bloomington (1994)
2. Virilio, P.: War and Cinema: The Logistics of Perception, pp. 2–3. Verso, London (2000)
3. Vertov, D.: The Man with the Movie Camera [Film]. USSR, 68' (1929)
4. Vertov, D.: Kino-Eye: The Writings of Dziga Vertov, pp. 40–42. University of California Press, Berkeley (1984)
5. Heath, S.: Questions of Cinema, p. 32. Indiana University Press, Bloomington (1981)
6. Ray, M.: Emak Bakia [Film]. France, 18' (1927)
7. Sedgwick, E., Keaton, B.: The Cameraman [Film]. US, 69' (1928)
8. Bordwell, D., Thompson, K.: Film Art: An Introduction, pp. 102–141. McGraw-Hill, New York (1993)
9. Porter, R.: The City in Russian Literature: Images Past and Present. The Modern Language Review 94(2), 476 (1999)
10. Alifragkis, S., Penz, F.: Fragmented Utopias - Architecture, Literature and the Cinematic Image of the Ideal Socialist City of the Future: Dziga Vertov's Man with a Movie Camera. In: Harris, J., Williams, R.J. (eds.) Regenerating Culture and Society: Architecture, Art and Urban Style within the Global Politics of City-Branding, pp. 117–141. Liverpool University Press & Tate Liverpool, Liverpool (2011)
11. Penz, F.: Architecture and the Screen from Photography to Synthetic Imaging - Capturing and Building Space, Time and Motion. In: Thomas, M., Penz, F. (eds.) Architecture of Illusion: From Motion Pictures to Navigable Interactive Environments, pp. 135–164. Intellect, Bristol (2003)
12. Alifragkis, S.: City Symphonies - Restructuring the Urban Landscape: Dziga Vertov's Man with the Movie Camera and the City of the Future [PhD Thesis]. Department of Architecture, University of Cambridge, Cambridge (2010)
13. Strand, P., Sheeler, C.: Manhatta [Film]. US, 11' (1921)
14. Glawogger, M.: Megacities [Film]. Austria, Switzerland, 90' (1998)
15. Ruttmann, W.: Berlin: Symphony of a Great City [Berlin: Die Sinfonie der Großtadt] [Film]. Germany, 65' (1927)
16. Vigo, J.: On the Subject of Nice [À Propos de Nice] [Film]. France, 25' (1930)
17. Cambridge City Symphony, `http://expressivespace.org/research-NM2-p3.html`
18. Alifragkis, S., Penz, F., Williams, D.: D3.3: An Introduction to NM2 Production Cambridge City Symphony [Project Report]. New Media for the New Millennium, Cambridge, Ipswich (2006)
19. Castells, M.: The City and the Grassroots. University of California Press, Berkeley (1983)
20. City in Film: Liverpool's Urban Landscape and the Moving Image, `http://www.arts-humanities.net/projects/city_film_liverpools_urban_landscape_moving_image`
21. Roberts, L., Koeck, R.: The Archive City: Reading Liverpool's Urban Landscape through Film. In: Grunenberg, C., Knifton, R. (eds.) Centre of the Creative Universe: Liverpool and the Avant-Garde, pp. 84–93. Liverpool University Press, Liverpool (2007)
22. Hallam, J.: Mapping City Space: Independent Filmmakers as Urban Gazetteers. Journal of British Cinema and Television 4(2), 272–284 (2007)
23. Roberts, L., Koeck, R.: Liverpool in Film: Mapping the Past in the Present. Liverpool School of Architecture Journal 1, 7–11 (2007)

24. Mapping the City in Film: A Geo-historical Analysis, http://www.liv.ac.uk/lsa/cityinfilm/
25. Cinematic Geographies of Battersea, http://cinematicbattersea.blogspot.co.uk/ and http://www.expressivespace.org/battersea.html
26. Eco, U.: The Infinity of Lists, pp. 217–221. Rizzoli, New York (2009)
27. Hellenic National Audiovisual Archive, http://mam.avarchive.gr/portal/
28. Greek Film Archive Foundation, http://www.tainiothiki.gr/v2/lang_en/index/index/
29. An Audio-visual Database for Post-war Architecture and the City in Greece, http://www.arch.uth.gr/sites/arch-city-avdb
30. Wilson, A., et al.: Digital Moving Images and Sound Archiving Study, pp. 67–90. Arts and Humanities Data Service, London (2006)
31. Alifragkis, S., Penz, F.: Spatial Dialectics: Montage and Spatially Organised Narrative in Stories without Human Leads. Digital Creativity 17(4), 221–233 (2006)
32. Rohmer, É.: L' Organisation de l' Espace dans le Faust de Murnau. Cahiers du Cinéma, Paris (2000)
33. Kostof, S.: The City Assembled: Elements of Urban Form through History. Thames & Hudson, New York (2005)
34. Kostof, S.: The City Shaped: Urban Patterns and Meanings Through History. Thames & Hudson, New York (1999)
35. Greek Film Centre: Digital Archive, http://www.gfcdigital.gr/gfc/index.html
36. Lynch, K.: The Image of the City. Massachusetts Institute of Technology, Cambridge (1960)
37. Alifragkis, S., et al.: Production Report: Cambridge City Symphony [Project Report]. New Media - New Millennium, Cambridge (2006)
38. Rowe, C., Koetter, F.: Collage City. Massachusetts Institute of Technology, Cambridge (1978)
39. Tschumi, B.: Event Cities. Massachusetts Institute of Technology, Cambridge (1994)
40. Digital tools: Arts-Humanities.Net: Guide to Digital Humanities & Arts, \ http://www.arts-humanities.net/
41. Cinemetrics, http://www.cinemetrics.lv/index.php
42. Shot Logger, http://shotlogger.org/index.php
43. Digital Formalism, http://www.isis.tuwien.ac.at/node/4850
44. Kropf, V., et al.: First Steps Towards Digital Formalism: The Vienna Vertov Collection. In: Ross, M., et al. (eds.) Digital Tools in Media Studies: Analysis and Research: An Overview, pp. 117–132. Transcript Verlag, Bielefeld (2009)
45. Anvil, http://www.anvil-software.de/
46. Deconstructor, http://ccnmtl.columbia.edu/projects/engel/deconstructor/index.html
47. Sosulski, A.K., et al.: The Deconstructor. Providing the Scaffolds for Students to Excerpt, Describe, Analyze, Interpret and Synthesize to Form New Understandings (2004), http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.116.668 (last accessed: September 01, 2012)
48. Centre for Oral History and Digital Storytelling, http://storytelling.concordia.ca/; Vertov: A Media Annotating Plugin for Zotero, http://digitalhistory.concordia.ca/vertov/

49. ImagePlot, http://lab.softwarestudies.com/p/imageplot.html#features1
50. Greenaway, P.: The Falls [Film]. UK, 195' (1980)
51. Greenaway, P.: 100 Objects to Represent the World: A Prop Opera. Thessaloniki International Film Festival, Thessaloniki (1998)
52. Manovich, L.: The Language of New Media, p. 233. Massachusetts Institute of Technology, Cambridge (2001)
53. Manovich, L., et al.: Soft Cinema: Navigating the Database [Interactive Production]. ZKM, Berlin (2002-2003)
54. Kinder, M.: Hot Spots, Avatars, and Narrative Fields Forever. Film Quarterly 55(4), 2–15 (2002)
55. Sfikas, K.: Metropolises [Film]. Greece (1975)
56. Shub, E.: The Fall of the Romanov Dynasty [Film]. USSR, 90' (1927)
57. Man with a Movie Camera – The Participatory Global Remake, http://dziga.perrybard.net/