

I-MEDIA-CITIES

**Innovative e-Environment
for Research on Cities
and the Media**

**Teresa-M. Sala
Mariona Bruzzo (eds.)**



Singularitats Collection

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PROLOGUE

I-Media-Cities. Reflective Societies: Cultural Heritage and European Identities

I-Media-Cities (IMC) is an ambitious, innovative project designed by the Association of European Film Archives and Cinematheques (ACE) that began life in 2016 with the wish to generate new ways of approaching cinematic heritage. The European Union's Horizon 2020 programme (H2020) offered the appropriate framework for carrying out a project of these characteristics, and Nicola Mazzanti, then president of the ACE and director of the Royal Belgian Film Archive, managed to encourage nine film archives to take part. Then, within the framework of H2020, which is focused on research and innovation, these film heritage institutions thought that cinema, and especially that which has least exposure, could be adapted to make the most of new technologies. And so, Innovative e-Environment for Research on Cities and the Media, the project we call I-Media-Cities, was born.

The nine film archives involved placed their respective cities at the heart of the project (Athens, Barcelona, Bologna, Brussels, Copenhagen, Stockholm, Frankfurt, Turin, and Vienna), and several research centres and technological innovators were co-opted as partners.

The final list of participants is as follows:

- Cinematek. Royal Belgian Film Archive, Brussels (film archive)
- Cineca. Consortium of Universities, Bologna (technology developer)
- Fraunhofer Institute for Digital Media Technology IDMT, Ilmenau (technology developer)
- iMinds-IMEC, Brussels (i-business)
- Cineteca di Bologna, Bologna (film archive)

- Institute For Cultural Heritage of the Emilia-Romagna Region, Bologna (research)
- National Museum of Cinema – Maria Adriana Prolo Foundation, Turin (film archive)
- Urban Center Metropolitano, Turin (research)
- Austrian Film Museum, Vienna (film archive)
- University of Barcelona, GRACMON, Barcelona (research)
- Filmoteca de Catalunya – ICEC, Barcelona (film archive)
- Swedish Film Institute, Stockholm (film archive)
- Stockholm University, Stockholm (research)
- Greek Film Archive Foundation, Athens (film archive)
- University of Athens, Laboratory of Visual Media, Athens (research)
- Danish Film Institute, Copenhagen (film archive)
- Deutsches Filminstitut, Frankfurt (film archive)
- Ludwig Boltzmann Institute for Digital History, Vienna (research)

The principal objective of the project has been to develop a digital platform in order to view a significant selection of films from archive collections, with the aim of stimulating research in the field of the humanities. Thus, the cities and the films shot in them are the essential core of the I-Media-Cities project, as works in their own right and as documents. The producers, actors, directors, places, people, and historical, social and political events are there to be studied, interpreted, analysed and compared, with similarities and differences being established, by fields such as sociology, urban anthropology, town planning, and the history of architecture, among others. The research carried out for the project has been a fruitful laboratory of experiences and exchange, but it can be considered merely a starting point for new methodologies that may be developed in the future. This ambition, what we called “wild ideas”, has required an innovative technological approach in the development of the platform and other computing applications, in order to make this cross-sectional research into film collections possible and also to offer this content to other users, especially the educational community and the general public.

Finally, and in accordance with European guidelines, a specialist in new digital business models has been incorporated, to propose

economically sustainable models to continue the project after EU funding ends.

A selection of significant work resulting from the project is presented below in the following sections.

The Filmed Cities (research into new methods of research)

In order to unify the chronology, it was agreed to establish the time-span of 1890 to 1989, from the period of the demolition of the walls of the major European cities to the fall of the Berlin Wall, a symbolic time that, seen today, takes on new meaning.

Within the general context of the filmed cities, some important points about their idiosyncrasies are raised. Thus, Stockholm analyses the question of cinematic genres, while Athens focuses on the structures and the processes of constructing identities. Of movement through the modern metropolis, Barcelona points out the phenomenon of the crowd as a protagonist. The portrait of the city of Turin, based on urban planning and architecture as a factor in tourism, contrasts with that of Bologna, a missing or unknown city that is recovering its images, while those of Vienna show how space becomes a social and representative product. All this came about when the city and the cinema were an intrinsically urban phenomenon.

Film Heritage

More than 1,000 films have been incorporated in the platform, expressly selected to give the project coherence and meaning. Each city is represented both singularly and generally, revealing similarities and differences between them. As for the technical aspect, we must say that we have seen and understood the complexity of being able to transmit the physical characteristics of films in an online research environment.

When the initial stage of IMC is over, the film archives proposed introspective views of other dissemination and research projects carried out previously, contextualizing and highlighting not just what has been done so far, but the ability to take a step further in or-

der to advance in the promotion of research connecting the past with the present.

Technological Tools

IMC is the attempt to join together two worlds — films and researchers — and so we needed to find a common sustainable environment. Thus, in a sort of hackathon, in the first stage the technology developers invited us to a collective experience in order to talk about everything we were expecting from the project, even the most unexpected things. The aim was therefore to pool all the ideas that could take us towards a new paradigm in the field of research, education, and the dissemination of cultural heritage. This is how the “user stories” emerged, to systematize the proposals and gradually be able to specify their technological development, and in which the metadata of each title became a basis for interoperability, essential to the project. Nowadays, the automatic indexing of images has become a very powerful tool in the audio-visual world. In this context, IMC was presented as an opportunity to test these tools on archive images, some of them more than 100 years old and of very poor quality.

As an epilogue, we can say that the incipient results point to a promising future, with a new way of disseminating and bringing film collections to the public. It is with this sincere and legitimate wish that we confront the challenge of the financial sustainability of the project, in a Europe where access to culture is not only an option but a right.

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SPREAD. (RE)SEARCH

Nicola Mazzanti

When thinking and talking about I-Media-Cities for this book, I was brought back to the beginning of the idea for the I-Media-Cities platform. Therefore, if you permit me, I would like to start with some of the issues that laid the foundations for this project.

As any director of an audio-visual archive will tell you, cultural heritage and museum institutions across Europe are increasingly holding large digital collections — either digitized or born digital — that can have a significant impact on many research fields, both in Social Sciences and Humanities. This available digitized content being a somewhat recent development, a strong, efficient link between many of these institutions and the research field still largely needs to be established, as well as a true bi-directional dialogue that aligns the efforts and the focus of these institutions to the needs of research.

It is not a revelation to say that at the dawn of the twenty-first century all the humanities, social sciences and historiographical disciplines now use sources and documents in traditional and interdisciplinary approaches, which they would certainly not have used a few decades ago. And in this context the iconographic sources of the media, or of so-called popular culture, play an increasingly fundamental role that goes well beyond the narrow confines of the disciplines of cinema history and the media. No historian or serious sociologist would today face a twentieth-century research question without referring in any way to the existing iconographic sources, be they fixed or moving images.

But if these sources have multiplied in type, importance, and origin, their access has certainly not been simplified. Indeed, this multiplication of types and origin and this exponential increase in their quantity (millions of hours of motion pictures, hundreds of millions of photographs, of pages, of various materials...) has actually contrib-

uted to complicating the lives of researchers and, in fact, to making the use of these sources frustratingly complex.

If we keep in mind that some analogue types of sources need technology to be consulted — you read a book with your eyes, as you look at a picture, but if you put your ear on a record or lift a film to the window, you do not hear or see the work — then we might conclude that having digitized versions of these sources would take away those particular difficulties and open up the path to increased research efforts. However, when we first started thinking of the idea for I-Media-Cities, there was also the important fact to take into consideration that neither cultural heritage institutions nor the research field are yet taking full advantage of information technologies in order to improve opportunities and quality for research, nor to provide access to these collections. As a result, audio-visual content suffers from what I would call “technological barriers”, which has led to a situation where almost no significant research has been done on them and there is a need for intelligent, technology-intensive, and user-engaging solutions (platforms, working environments, applications, etc.), designed to foster research on digital cultural collections across Europe.

Unfortunately, access is made even more complex by legal barriers, mainly copyright law, which often seems to be deliberately written in Europe to prevent research, education and culture. Whereas in other contexts and countries the notion of “fair use” allows all researchers to do their job, in Europe even the act of seeing a visual document from the past can sometimes be illegal, let alone that it could be studied for scientific purposes. In the twenty-first century, it is difficult to justify and accept that there is no effective and efficient exception whatsoever across all the EU member states for non-commercial use, and more specifically for research. Why should it be conceivable that collections which are maintained and sometimes digitized with public money cannot be studied or even viewed by anybody in any country in a legal way?

Surely in a digital society, a mechanism that allows European citizens and European scholars to watch moving image content in a safe and legal way can be found and actualized. Europe has a great need and would greatly benefit from introducing a blanket exception for any type of research on moving image and photographic materi-

al. This blanket solution should be valid across all member states, and allow universities, professors, teachers and students to access documents that at the moment are locked away. It seems to be a strange dichotomy to invest in digitization, if this material then cannot be viewed, not even for research purposes. Of course, some might rightly say that research can be done on the physical documents, on papers, on photos, on films, and that there is no need for internet access, but all sources necessary for a research project are rarely to be found in one archive, let alone one country, which would mean that research would need more funding. The reality these days, however, is that budgets for travelling to research these materials are often severely slashed, and it is hard to imagine that only providing research access to non-digitized materials is in line with the digital goals the European Commission has set for itself.

There is this pervasive idea amongst national and European governmental institutions that the digitization work done so far on cultural heritage collections, and the existence of Europeana (www.europeana.eu/portal/nl), has solved all the problems described above. Unfortunately, this could not be further from the truth. First off, the multiplication of digital access channels has, in a strange way, had the adverse effect of complicating and multiplying the rules of copyright. This, in turn, has generated the impression that any document — even the most general or harmless — could or should generate some form of income (the discourse on culture and education is much more barbaric in the digital age than in the analogue one).

Secondly, the so-called digital revolution that was promised to researchers as a golden haven filled with limitless potential, was hindered by two phenomena on the European level. The first was the birth and subsequent development of the overarching Europeana platform, which for years and years appropriated more and more of the available funds for digital projects, thereby blocking any development not strictly centralized in the Europeana vision. The second was the economic crisis that swept through Europe, washing away available national funds dedicated to research institutions and archives. Combined, these two factors have pushed digital research developments, and the research infrastructure in general, back for at least a decade or two.

The assumption which lay at the basis of the H2020 call, for which I-Media-Cities was submitted, is that a significant amount of work has been done on the digitization of European cultural motion picture heritage, to the extent that we can consider this issue to be resolved. This is of course deeply untrue. The experiences within the project show that in the motion picture sector, within which a large number of the consortium is active, digitization projects came to almost a complete standstill in recent years. There are barely any hints of any mass digitization projects for moving image material beyond some limited projects around television content. Needless to say, at this speed and this level of budget, digitizing European cinematographic — and in a broader sense all moving image — collections, dating from 1896 to today, will never be finished. The risk therefore, of not providing FHIs with the means to further digitize specific collections will be that advanced European projects like I-Media-Cities will be left like a cathedral in the desert.

It was in this context, which certainly did not seem conducive to research and the “search for new ways of research”, that the I-Media-Cities proposal was accepted. This allowed a group of film archives, universities, and other European research centres to launch the project, with the aim of exploring the participatory modalities of access to large collections of images and creating tools to support research into them, allowing not only viewing, but also, for example, the annotation of images and sharing of these annotations with other researchers.

Even if technology plays an important role in the project (creation of a separate and free access platform for researchers, manual annotation tools and automatic image analysis, tagging possibilities for the general public, etc.), the objectives were not purely technological, but methodological. The aim was to create technical and practical conditions (digitization of documents) and legal conditions (use and access permits) to experiment with new methods of access to large single-issue collections (in this case images of different European cities from 1896 to yesterday) and to stimulate and facilitate collaborative research between scholars, and even between scholars and the general public.

I am therefore very happy to see that the overwhelmingly positive results of the I-Media-Cities project have not only addressed these overall barriers that exist, by creating conditions for effective collaboration between research institutions on one side and archival institutions on the other, but also they offer support through innovative solutions, which contain both new developments as well as the integration of existing technologies. The platform improves the research user's experience, augments the quality of research possibilities, and is built on an economically sustainable model that allows the use of digital content in different contexts.

In order to maximize the impact of this approach in the field, the project is designed to focus on areas of research and on types of content that are both neglected, and likely to bear even more fruit. A prime example of this has been our choice of European Cities as a topic as depicted in primarily audio-visual materials, which has ensured a truly multi-disciplinary project approach, and an extremely deep field of research subjects (proven by the wide-ranging research interest represented in the consortium). Let's not forget that although, during this project, we may have aimed at creating conditions and technical solutions under which researchers and scholars could work on a broad corpus of moving image materials that refer to one specific topic, the experience of the I-Media-Cities platform can be used in any topic of research based on moving image materials. The platform design and the technical solutions are created in a way that will allow them to be used independently on any topic.

The choice to focus heavily on moving images as the source and object of research (obviously properly contextualized with other data and information) has made the project highly innovative in terms of technology and conceptualization. The digital collections opened up to research are both unique and were until now almost inaccessible. Their use has guaranteed a strong impact on the research users — who have never had access to this content, and who have been able to have a strong guiding hand in the way audio-visual materials can be digitally researched.

It is my sincere hope that the results of a relatively small project like I-Media-Cities, which in and of itself is obviously too small to affect the systemic lost opportunities of the past decade, will inspire

other projects that contribute to creating the conditions for research based on digital or digitized archives, or seek to improve the interaction of the general public with digital collections. As heritage institutions, we are all convinced that the potential of digital technologies for research and education has barely been scratched.

THE FILMED CITIES

Research Subjects Related to Images of the City

Teresa-M. Sala, Irene Gras Valero, Isabel Fabregat,
Núria F. Rius, Enric Ciurans

The City as a Filmed Subject

The city does not tell its past, but contains it like the lines of a hand, written in the corners of the streets, the gratings of the windows, the banisters of the steps, the antennae of the lightning rods.

ITALO CALVINO, *Invisible Cities* (1972)

The field of research into images of cities is inexhaustible.¹ Picturing the city in images refers us to a series of memories and stories that have left their mark, places for exchanging words, the movement of people and things. At the same time, the modern city is construction, life experience, and representation. Because, rather than a form, it

¹ With regard to the bibliography, there are several authors who, generally speaking, have dealt with the subject. See BARBER, Stephen (2006). *Ciudades proyectadas: Cine y espacio urbano*. Barcelona: Gustavo Gili; CAMARERO, Gloria (ed.) (2013). *Ciudades europeas en el cine*. Madrid: Akal; DALMAU, Rafael and GALERA, Albert (2014). *Ciudades de cine*. Madrid: Cátedra. The I-Media-Cities project converges with another research project of which the team from the University of Barcelona is also a part: “Entre ciutats: Paisatges culturals, escenes i identitats (1888-1929)”, funded by the Ministry of the Economy and Business (MINECO) (ref. HAR2016-78745-P). The research subject is focused on the study and analysis of the arts and the artistic elements that make urban spaces special, from an open approach to different focuses and points of view that help us to better understand the city’s landscape. These kinds of studies on the cultural landscape are part of cultural history studies and their common denominator is the concern for symbolic representation and its interpretation.

is also a complex changing process, with its own peculiarities, that is transformed decisively into a metropolis, becoming the nerve centre of cultural transfers. It is therefore no surprise that the Belgian poet Émile Verhaeren should have said, “All roads lead to the city”.² Moreover, from an interdisciplinary perspective the city is identified with the world, it is “the compendium of a world”, as the Catalan poet Joan Maragall would say. After industrialization, the phenomenon of modernity coincided with the birth of the cinema, when the city ceased to be a mere stage for political, festive and religious events and became an “object of representation”.³ It was between 1895 and 1929 when the mode of institutional representation was established,⁴ in space and time, which launched spectators on a “motionless voyage”⁵ that is its essence. According to Burch, it is through constant identification with the camera’s point of view that the experience of film questions us as *corporeal individuals*.

Within the scope of the research of the I-Media-Cities project, the central point under consideration has been the analysis of the filmed city, when in the cinema the city becomes the indisputable protagonist of the new medium:

On one hand, the city is without doubt what the cinema has filmed the most; on the other hand, the cinema was born in cities and the history of the cinema accompanies the development of cities. This begins with the Lumière factory in Lyon, the railway station of La Ciotat, the Grand Café in Paris. Studios are established in cities, on the outskirts of metropolises; later, the studios that represent settings in the city become actual places in the city, as happened with Cinecittà.⁶

² VERHAEREN, Émile (1920, 18th ed.). “La ville”. In: *Les villes tentaculaires*. Paris: Mercure de France, p. 9.

³ LLORENTE, Marta (2015). *La ciudad: huellas en el espacio habitado*. Barcelona: Acantilado, p. 341.

⁴ BURCH, Noël (1999). *El tragaluz del infinito*. Madrid: Cátedra.

⁵ BURCH, Noël (1999). *Op. cit.*, p. 250.

⁶ COMOLLI, Jean-Louis (2012). *Filmar para ver. Escritos de teoría y crítica*. Buenos Aires: Simurg/Cátedra La Ferla (UBA), p. 273.

Some authors have even claimed, “The cinema is an urban invention”.⁷ The truth is that films of urban landscapes, in famous cities like Paris and in exotic ones like Delhi, can be shown in faraway places, where they show moving pictures of cities to people who have never visited nor will ever visit them.

The cinematic interpretation of the city, because of the medium’s condition — of a city in *motion* — and its configuration and type of perception, differs from painting or photography because of the time factor. As Comolli continues to say, “One can imagine a city as no more than an accumulation of spaces (‘the impossibility for urban planning of translating the invisible’); it is equally true that it makes specific a prodigious accumulation of tempos and all this time is not perfectly visible at all times”.⁸ So real time and filmed time, namely, the chronological time that each film shows and the film’s *tempos*, eventually shape a dynamic history of the images of the city.

The name of each city has an evocative feel, which makes its nature unique, conserves symbols and identities of a heritage and a common space, with all its light and shade. Sometimes, the cinema has even managed to modify urban views, since, depending on the point of view adopted, the same city is or appears to be radically different. Moreover, we cannot forget that filming the modern metropolis also includes destruction and infernos, capturing the images of war and the conflicts that destroyed many European cities in the twentieth century. They are itineraries and processes that the cinema and photography enable us to witness.

Thus, since the appearance of the cinema cities are no longer known only through literary, pictorial or photographic descriptions, whether the camera is planted on one particular observation point or if it moves around the city.

⁷ MARIE, Michel (2001). “La thématique urbaine dans les films”. In: GÉVAUDAN, Jean-Michel (ed.). *Le Cinéma dans la cité*. Paris: Félin.

⁸ COMOLLI, Jean-Louis (2012). *Op. cit.*, p. 271.

The Beginning of a Collaborative Research Experience for the Development of a Conceptual Map

In the new social universe in which we find ourselves, digital technology helps to construct shared digital imagery. Information and communication technologies (ICT) have changed the way filmed documents are created, preserved, disseminated and (re)used. Without doubt, these tools offer a series of possibilities that will allow us to make more rigorous interpretations and discover new connections that will increase knowledge of these objects full of meaning that are films.

The configuration process that has been followed to set up the digital platform, where different kinds of users will be able to discover these hitherto rather inaccessible materials, has been long and complex.⁹

The proposed model came about with the aim of disseminating cinematic heritage and becoming a useful tool for education and research. The film corpus is made up of a selection of non-fiction films coming from each of the cities associated with the project (Athens, Barcelona, Bologna, Brussels, Copenhagen, Stockholm, Frankfurt, Turin, and Vienna). The timespan they cover stretches from the beginnings of cinema (1895) to the 1990s, although the aim is not to produce a diachronic evolution. During the development of the process a common conceptual map was drawn for the purpose of including the iconographies of the urban landscape.

⁹ Documentary research and analysis, carried out collaboratively by research centres and archives, have been essential and are the point of departure for future research work. In order to adapt to the structural needs of the platform it was necessary to perform several documentary tasks: reworking films' synopses, seeking and adding sources of reference, identifying important personalities, sculptures or buildings of great artistic interest — an aspect that would enrich the platform's "similarity detection" and "facial recognition" functions. Finally, the indexing of the items in the archives' documentary files was revised and expanded. In short, the research work has been carried out for the preparation of the platform and also for the documentary expansion of the archive material. Moreover, mention should be made of another kind of qualitative research: that relative to particular case studies. This allows us to focus better, for the purpose of establishing another level of analysis within the integrated system.

Point of View

It was Hannah Arendt who clearly showed the non-existence of a single point of view from which a worldview can be constructed.¹⁰ There is in fact an unlimited multiplicity of positions from which it is only possible to make provisional constructs. Discerning an external, distanced, objective view is not feasible. The only way to approach reality is through many individual gazes. Like Comolli, we ask ourselves questions and we echo his answers:

What is the cinema for? To (re)consider the world based on the connection between the gaze and power. From where do you look? And who is looking at you? What do you not see and who sees you? One side of the world that looks at us, places us as subjects of the gaze, it surrenders us to the power of the other's gaze, the cinema is at one and the same time a tool for thinking, a history book, the critical memory of the world-as-gaze, having precisely experienced in a century all or almost all of that which concerns the power, the might and the impostures of the gaze to endanger my situation.¹¹

Indeed, from a theoretical perspective we can analyse the adopted point of view and the chosen framing. *How* does the cameraman film or *who* is he filming? Moreover, the gaze at the camera and the gaze of the spectator-as-onlooker have also been explicit since the beginnings of the cinema.

Likewise, the Lumière brothers' films and the practices that arise from them, as Burch says, are the roots of "Documentary ideology, still very much alive, but which in its day experienced a particularly acute form that it will be useful for us to know."¹²

The way of looking, thinking and feeling the modern city is partly channelled through image technologies,¹³ but also through sound

¹⁰ ARENDT, Hannah (1958). *The Human Condition*. Chicago: University of Chicago Press.

¹¹ COMOLLI, Jean-Louis. *Filmar para ver. Escritos de teoría y crítica*, p. 309.

¹² BURCH, Noël (1999). *Op. cit.*, p. 51.

¹³ MCQUIRE, Scott (2011). *The Media City. Media, Architecture and Urban Space*. Los Angeles: SAGE.

and the word. Apart from the musical accompaniments and those of commentators (whose scripts we often do not have), we wish to draw attention to the intertitles interspersed between the images, which accompany or add information to what is being seen and organize the narrative sequencing.

Professional cinema (institutional or private enterprise) and amateur cinema share in this constellation of ideological and visual references in a different way.¹⁴ Can we talk of universal and objective experiences of the city? No. Just the opposite, in fact; these views are conditioned by multiple factors: the degree of acceptance of the capitalist system, gender, ethnicity and race, the socio-economic and cultural configurations of the urban fabric, and the political contexts of each region.

Information films¹⁵ present a series of very diverse materials: documentaries with urban views, newsreels and actualities, commemorative tributes, advertising, tourist and promotional reportage (professional productions and those for political, business, ideological, and institutional propaganda purposes). The professional cameramen of the nascent film industry adapted to the requirements of each job. Institutional documentaries are usually strongly marked by the ideology of power, while many films made by private enterprises are for advertising purposes.

It is useful to mention that the visual dimension of a historical event is often more interesting than the actual event. Without doubt, the cinema opens a window on to reality in keeping with what photography had shown: it reproduces and restores life, so that these gazes through the camera end up shaping the city's collective imagination. The spectacle of industrial progress is offered to the masses

¹⁴ This is the result of a process of visual and ideological sedimentation around the city and the nation through different nineteenth-century image and visual technologies. See UMBACH, Maiken (2009). *German Cities and Bourgeois Modernism, 1890-1924*. Oxford: Oxford University Press; MALLART, Lucila (2015). "Illustrated Media, the Built Environment and Identity Politics in Fin-de-siècle Catalonia: Printing Images, Making the Nation". *Cultural History*, vol. 4, no. 2, pp. 113-135.

¹⁵ PAZ, Maria Antonia and MONTERO, Julio (2008). *El cine informativo 1895-1945. Creando la realidad*. Barcelona: Ariel Cine.

as an entertainment industry for the working classes and, later, for the general public. Both professionals and amateurs film urban images with the technology of the moment.

If amateur photography spread from the 1880s onwards thanks in part to the introduction on the market of silver gelatin and the proliferation of easy-to-handle small-format cameras, the film industry promptly sought a similar formula with simple cameras, which gave the amateur cameraman a certain degree of autonomy, and smaller formats, such as 9.5 mm and 16 mm, which lowered material costs. Kodak in America and Pathé in France monopolized the market in the early 1920s, with their Cine Kodak and Pathé-Baby cameras. In this respect, photography and the cinema were twin technologies with regard to their potential. The expansion of amateur film cameras took place above all in the large and medium-sized cities of Europe along with the growth of consumer capitalism in the inter-war years.

Often, when amateurs film relatives or friends, views or landscapes, they do so when and where it is possible: outside working hours, on public holidays, and vacations. And in significant places in the amateur's own world, with which they identify: the home, the street where they live, important places in the city, in the territorial imagination of the nation, or the socioeconomic and cultural group to which they belong. Finally, the people filmed perform in front of the camera according to what the film culture and the social and emotional codes dictate and determine: the funny faces, the dances, the silent conversations, or playing in front of the camera are not so common in photography, normally more associated with the reaffirmation of people's presence and with the increasingly objective confirmation of things.¹⁶

¹⁶ In other words, despite the functional and technological universality of the camera, it is activated in accordance with a network of social and cultural codes that determine its possibilities, while it operates from the point of view of relationality. BOURDIEU, Pierre and BOURDIEU, Marie-Claire (2010). "El campesino y la fotografía". In: *El sentido social del gusto*. Buenos Aires: Siglo Veintiuno, pp. 51-63; KNAPPETT, Carl (2002). "Photographs, Skeuomorphs and Marionettes: Some Thoughts on Mind, Agency and Object". *Journal of Material Culture*, no. 7, pp. 97-117; CROSS, Karen (2012). "The Relational Amateur". In: POLLEN, Annebella and BAILLIE, Juliet (eds.). *Reconsidering Amateur Photography*. Bradford: National Media Museum. Online edition: <http://eitherand.org>.

The Scenographic Dimension

The transformation of art forms is not an autonomous process, but is guided by social transformations, as Miquel Porter Moix stated many years ago:¹⁷ “The cinema is the most powerful weapon we have to educate with and to influence mankind in the future. Television and radio finish with the end of the day’s programmes. The press will merely be what it was for us, a source of information. With the cinema we shall leave our own life to our descendants, the everyday one or the one we would like. And they will only have to look”. The appearance of cinema is in itself a scenographic revolution of incalculable magnitude. Before it, cultural obsessions were based on the creations of nineteenth-century bourgeois theatre, with its philo-dramatic schools, theatres *à la Italiana* and, above all, the defence of ideas about what culture and entertainment were (or ought to be) in cities. The uninterrupted task of performing arts creators in the twentieth century consisted of demolishing those ideas, and the cinema, with the images of the filmed city leading the way, was an indisputable starting point for achieving a new scenographic dimension not just of the city, but also of the very essence of the performing arts.

The urban landscape becomes aesthetic and “as a result of this aestheticisation, a feeling emerges, a certain interpretation of the city that manifests itself and is reaffirmed: the city as a stage, an exhibition, a sensitive surface”.¹⁸ As in the theatre, the characters (the actors, the crowd) and the objects (props) are situated in these spaces and the chain of events takes place in them.

They are what we could call choreographies of the filmed city, which sometimes even invite the inhabitants to take part in them, by announcing the filming in the newspapers, as happened with *Barcelona en tramvia*, by Ramon de Baños. Moreover, “City centres are increasingly treated as stage sets, they are lit with groups of spotlights planned by set designers-cum-urban planners, designed by designers-cum-decorators and staged according to a script intended to at-

¹⁷ PORTER MOIX, Miquel and HUERRE, Guillemette (1958). *La cinematografia catalana*. Palma: Moll, p. 15.

¹⁸ COMOLLI, Jean-Louis. *Filmar para ver. Escritos de teoría y crítica*, p. 275.

tract tourists that, by organizing the gaze, imposes a cinematic view”.¹⁹ In short, “Reality has become a dream filmed and set to music with the expected airs of violins and accordions. The lighting and the music establish a dialogue in a true-false reality, in a true-false film, tourism as universe-cinema”.²⁰

Staging is a shared act performed by a group of people, those filming and the characters filmed: it involves the eye that observes and the subject observed. It therefore becomes a depiction of the present and the flux of the future, of everything that is happening.

In this new context of filmed images, what we could call dramaturgies of complexity appear: the world and its future as seen by an audience surprised by actual reality. The image of the streets, the place where things happen, becomes a stage set as well as reality. In this game of mirrors modernity appears.

Iconography and Symbolic Elements of the Urban Landscape

In the process of constructing modern cities one can observe similar characteristics and other specific ones. Emotional symbols are generated that define the city’s identity and image, which is related to the buildings, monuments, personalities, historical events and places, attributes, and so on.

The iconographical study of the urban landscape is based on different themes related to the place occupied by people and objects in the spaces of the transformed city. It is an urban iconography that is transformed over time and which, within the social context, on the subject of work achieves a notable presence. Moving pictures of people coming out of factories, the workers, the manufacturing processes, coexist with machinery, fairs, advertisements, shops, and so on. In contrast, there is leisure time, entertainment and recreational activities, which also have an important place, with a series of films dedicated to the world of the performing arts, to sporting competitions,

¹⁹ LIPOVETSKY, Gilles and SERROY, Jean (2009). *La pantalla global*. Barcelona: Anagrama, p. 324.

²⁰ LIPOVETSKY, Gilles and SERROY, Jean (2009). *Op. cit.*

outings, and excursions, as well as religious and profane rituals (processions, burials, weddings, tributes, carnivals and festivals). At the same time, some places become the stage for all kinds of cultural, commercial and political activities. Among the most outstanding we find, for example, the holding of (local and international) fairs and competitions of an artistic or industrial nature, and political propaganda, with meetings, official visits, ceremonies, demonstrations and strikes.

On a different level, urban development is present in the processes of urban transformation and in some episodes of the destruction of the city during wars or due to changes of aesthetic taste. With regard to significant icons, such as certain buildings and monuments, we can say that it is as if the cinema were in some way making a documentary of the city. These icons are sometimes seen as protagonists through the camera, while in other cases they appear simply as the backdrop. One particular example is the views filmed to promote tourism.

Moreover, in the modern city traffic is another notable phenomenon of the urban fabric: buses, trams, cars, trains, ships, horse-drawn carriages, zeppelins, bicycles, funicular railways, lorries, etc., will end up as the protagonists of the street, in constant dizzying movement that will shape the serpentine image of the metropolis. The counterpoint to these images that attempt to show the progress of industrial society is the filming of war and violence. The results of it — urban destruction, destitution, grief and despair — clearly show terrible views of the city.

By Way of an Open Conclusion

In short, from all the issues dealt with so far, other subjects for reflection that have been dealt with in monographic articles emerge. Some of them overlap with the filmed subject, in the subject's moment of crisis, which in another way is related to the phenomenon of the crowd or the emergence of the people. As Paolo Virno says, both concepts played a very important part in the "definition of the socio-political categories of modernity", ²¹ becoming central aspects in

²¹ VIRNO, Paolo (2003). *Gramática de la multitud*. Madrid: Traficantes de Sueños, pp. 21-22.

the shaping of the new Europe and the society of the twentieth century. At the same time, they stand out as a crowd, a concept that resulted in the masses²² and which goes against the cohesive unity of the people. Later, the theme of identity becomes another subject for consideration. On this point, it is useful to remember that it provides the project's title, *Reflective Societies: Cultural Heritage and European Identities*, with the objective of strengthening integration within the growing diversity of European societies. Straight away, another concept no less important derives from this one, that of heritage, which refers to a series of inherited cultural assets. To be precise, cultural heritage comprises a set of (material and immaterial) values and assets that express the identity of a people, a city, or a group, which have to do with tradition, customs and habits, and which arouse special historical, artistic, aesthetic, plastic, architectural and/or urban interest.

To conclude, the recovery of the filmed memory of cities becomes a story, sometimes contradictory, full of stories — of men and women, boys and girls, of joy and despair, of holidays and work — that is explained as much by the presence as by the absence of representations.²³

²² CANETTI, Elias (1977). *Masa y poder*. Barcelona: Muchnik, 1977.

²³ See LEFEBVRE, Henri (1983). *La presencia y la ausencia. Contribución a la teoría de las representaciones*. Mexico City: FCE.

IDENTITY. IDENTITIES

Athens: Constructions of National Identity in Newsreels and Feature Films of the 1930s

Ioulia Mermigka, Anna Poupou

As film and cultural studies scholars, our experience with I-Media-Cities has been very interesting and challenging, as it gave us the chance to enter the world of vaunted technological innovation and computational thinking for the making of an urban moving image platform. The I-Media-Cities research program can be placed within the broader emerging academic discipline of digital humanities. We nevertheless heed the arguments about the lopsided existing functionalism of digital humanities and platform studies, where the field of digital humanities has yet to become a place to exercise critical thinking.¹ In what follows we seek to leverage this potential, retain the critical edge, and move away from the perspective of a tourist gaze and towards the direction of a critical digital humanities approach in relation to the cinematic representations of Athens, the capital city of the modern Greek state, in I-Media-Cities.

This chapter examines how the concept of national identity has shaped the urban space of Athens. It introduces cultural debates about Greek history and identity, since Athens and its monumental images have often been seen to embody and illustrate the diachronic narratives and modern myths of historical continuity. This examination will focus on the mapping of the symbolic locations in newsreels and feature films of the 1930s, in which the hegemonic narrative about historical and architectural continuity is paradoxically integrated into the wild urbanization of the period and the discourses of

¹ SIMANOWSKI, Roberto (2016). *Digital Humanities and Digital Media. Conversations on Politics, Culture, Aesthetics and Literacy*. London: Open Humanities Press.

urban modernity. Specifically, we will refer to the site of the Panathenaic Stadium, a venue that appears in selected newsreels, and to the location of the so-called Athenian Trilogy, as one of the most used sites in feature films; both sites charged with intense national and political discourses and obvious links to the narrative of historical continuity.

Usages of Antiquity: The City and the Nation

A major political and cultural act embodying the nation-building effort was the conscious selection and remodelling of Athens in 1834 as the capital of the newly established modern Greek nation-state that emerged after the so-called “Revolution of 1821” against the Ottoman rule. Athens was preferred to other major political and financial urban centers, such as Nafplio and Patras, despite the fact that it did not have any civil structures, an organized city life, or a strong political upper class: this ‘tabula rasa’ in social terms gave the chance for the Bavarian King Otto to create a capital from scratch. This reinvention of Athens in the 1830s as the capital of Greece resulted in its paradoxical image as an ancient city and, at the same time, younger than most of the European capitals of the time. The name of Athens, associated worldwide with ancient history, the location, and its ancient monuments were the only reasons for which this small city, nested in the shadow of the Acropolis hill and devastated during the War of Independence, was selected to fulfil the role of the Greek capital. Thus, this re-created city became the showcase of the nation-state from the beginning of its existence, while architectural neo-classicism was the medium used to achieve a visual illusion of historical continuity with classical antiquity and to deny any association with the Ottoman tradition.²

This link to the ancient past was used by King Otto as a way to construct the new national identity, hiding at the same time the com-

² KARATZAS, Georgios (2012). “Athens: The Image of Modern Hellenism”. In: RAMPLEY, Matthew (ed.). *Heritage, Ideology, and Identity in Central and Eastern Europe: Contested Pasts, Contested Presents*. Woodbridge: The Boydell Press.

plex multicultural ethnolinguistic environment of the new nation-state, which included a wide range of Greek idioms as well as other languages spoken by a large part of the population of Albanian, Vlach, Turkish, Armenian and Jewish origin. As historian Alexis Politis has explained, this link to antiquity was forged mainly by two means, through language and architecture: just as the new language *katharevousa*, which means ‘cleansed’ and was an artificial construct that imitated ancient Greek, had to be ‘cleansed’ of all Balkan, Romanic, Turkish and other foreign linguistic elements, so architecture should be free from all Turkish or Byzantine features in order to bring to mind the purity of the classical past.³ This attempt can be witnessed in the architectural vocabulary that was used at that time, and remained dominant even in the first decades of the twentieth century, and was, of course, neoclassicism. As Politis remarks, every construction in the new city, from the humblest hut to the most luxurious official mansions, were talking the same architectural language, featuring elements of neoclassicism. The new buildings had to break the links to Ottoman, Byzantine and Balkan traditions and aim for a ‘return’ to classical architecture and aesthetics, an aim achieved by the importation of the architectural trend of the Munich School.⁴ However, neoclassicism served not only as a link to the classical past, but most importantly as a link to the rest of Western Europe: through the cultural authority of ancient heritage, this new Greek state could legitimately participate in the social, political and cultural imaginary of ‘Western civilization’. In this context, the creation of the Athenian cityscape was not the result of a spontaneous and inclusive urban development through various historical periods but, on the contrary, a conscious attempt at self-representation and creation of a concrete image of the dominant ideological discourse of the nineteenth century through architecture and urban planning.

³ POLITIS, Alexis (2003). *Τα ρομαντικά χρόνια. Ιδεολογίες και νοοτροπίες στην Ελλάδα του 1830-1880*. [The Romantic Years: Ideologies and Mentalities in Greece 1830-1880]. Athens: Mnemon, p. 87.

⁴ PHILIPPIDIS, Dimitris (1984). *Νεοελληνική αρχιτεκτονική / Modern Greek Architecture*. Athens: Melissa, pp. 69-70.

In less than a generation, Athens was transformed from a typical Ottoman town into a European peripheral neoclassical capital. In the final decades of the nineteenth century, Athenian city planning was used to serve the “Great Idea”, which was the dominant geopolitical expansionist discourse of the time, and according to which Athens was going to play a hegemonic role in the Balkans and the Near East. Athenian architecture in the late-nineteenth century was used to serve exactly this ideology: for a city of a population of less than half a million, Athens had grandiose neoclassical mansions, parks, theatres, avenues, and emblematic buildings such as Zappeion Hall and the Athenian Trilogy, in contrast with the city’s small size and an absence of basic infrastructure. The first signs of modernity appear in the Athenian cityscape of the “*belle époque*” in the fields of transportation, consumerism, entertainment and architecture. Defeat in the Greco-Turkish War in 1922 and the arrival in Greece of one million refugees would not only transform the demographics of the capital but also, as Guy Burgel describes, “mark a change in the city’s historical destiny” and the abandonment of the extravagance and large scale urbanism that served the “Great Idea”.⁵

Newsreels of the Panathenaic Stadium

There is speculation that the first newsreels ever produced in Greece recorded the revived Olympic Games of 1896, staged in the Panathenaic Stadium, however no footage has been found. Newsreels that certainly exist and are documented as the oldest newsreels are from the Intercalated Olympic Games, held again at the Panathenaic Stadium in 1906, shot and developed in Athens by a Gaumont cinematographer called Leon.⁶ First of all, the regeneration of the Olympic Games in Athens for the young nation-state suggested that

⁵ BURGEL, Guy (2002). *Le miracle athénien au XX^{ème} siècle*. Paris: CNRS, p. 11.

⁶ LAMPINOS, Fotos (2012). *Ισχύς μου η Αγάπη του Φακού. Τα κινηματογραφικά επίκαιρα ως τεκμήρια της Ιστορίας (1895-1940)* [My Power the Love of the Lens. Newsreels as Documents of History (1895-1940)]. Athens: Kastaniotis, pp. 91-114.

Greece had a symbolic role to play in Western modernity and in the glorification of classical antiquity. From early on it was realized that the classical heritage was a valuable asset, substantially supported by the national and European narrative of historical continuity with antiquity. From as early as 1836, archaeological excavation uncovered the ancient stadium where the Great Panathenaia took place, and by 1870 the Panathenaic Stadium was rebuilt with fine Pentelic marble.⁷ Known also as the Kallimarmaron ('beautifully marbled' in modern Greek) the stadium serves as a classical/modern Athenian landmark, symbolizing Greece's accession to modernity paradoxically through its classical past.⁸

The systematic production of newsreels in Greece, by cinematographers like Joseph Hepp, the Gaziadis brothers, and George Prokopiou, among others, started with the Balkan Wars in 1912-1913, the First World War and the National Schism between 1914-1918. The culmination of Greek nationalism and irredentism was reached during the Asia Minor Expedition, 1919-1922. After the so-called Asia Minor Catastrophe, "wild urbanization"⁹ began to affect Athens, as one of the major issues was the mass arrival of Greek refugees from Asia Minor. Between 1922-1928 politicians with the support of high ranking military officers abolished the monarchy and imposed a quasi democracy based on military power. From 1928 to 1932 the political stability of the liberal regime was marked by the deep entrenchment of anti-communism in the state apparatus.¹⁰ The relative stability was followed again by political and social unrest. From 1933 to 1935 there

⁷ PANATHENAIC STADIUM (2018). Panathenaic Stadium-History. www.panathenaicstadium.gr/ThePanathenaicStadium/History/tabid/96/language/en-US/Default.aspx (Consulted: 21-1-2019).

⁸ PLANTZOS, Dimitris (2012). "The Glory That Was Not: Embodying the Classical in Contemporary Greece". *Interactions: Studies in Communication & Culture*, vol. 3, no. 2, pp. 147-171, doi: 10.1386/iscc.3.2.147_1, p. 150.

⁹ LEONTIDOU, Lila (1989). *Πόλεις της Σιωπής, εργατικός εποικισμός της Αθήνας και τον Πειραιά, 1909-1940* [Cities of Silence. Working-class Colonisation of Urban Space, Athens and Piraeus, 1909-1940]. Athens: ETVA Polytechnic Institute.

¹⁰ MAZOWER, Mark (1997). "Policing the Anti-Communist State in Greece, 1922-1974". In: MAZOWER, Mark (ed.). *The Policing of Politics in the Twentieth Century*. Providence: Berghahn Books, p. 138.

was a series of military movements and coups which led to the restoration of the monarchy in 1935 and the “Fourth of August Regime”, that is, Metaxás’ dictatorship in 1936. Throughout this whole period, apart from the more or less staged battle scenes, newsreels depict the glamorous appearances of the royal family, of feisty politicians and military men and, of course, the presence of all of them among crowds at national celebrations and anniversaries staged in the Panathenaic Stadium. As Lamprinos suggests, these newsreels from the Kallimarmaron mediated the dominant point of view in relation to which events are worthy of documentation for the nation-building process.¹¹

The Nazi-friendly Fourth of August Regime, in the ideological context of the emergence of the “Third Hellenic Civilization”, invested highly in the production of massive outdoor spectacles, which were recorded by state commissioned cinematographers and compulsory screened as newsreels in movie theaters.¹² In the newsreel from the “Fourth of August Stadium Ceremony” of 1938 in the preferred Panathenaic Stadium venue, noticeable within the shots are the cameramen documenting the event. The newsreel depicts a ritual, where the altar made from Greek flora, symbolic of the fascist soil doctrine, and covered with the Greek flag is surrounded by young women and men from the highly appreciated National Youth Organization (*EON*) performing gymnastics and traditional dances. What this newsreel documents is that the Metaxás Regime, imitating Hitler’s and Musolini’s antiquity-inspired grandiose celebrations, orchestrated the meta-theatrical and national uses of the mass stage of bodily spectacles, where ritualized outdoor performance and nationalistic sport were intertwined as supportive of a totalitarianism of the body, which was paradoxically serving a totalitarianism of the mind.¹³

¹¹ LAMPRINOS, Fotos (2012). *Op cit.*, p. 196.

¹² PETRAKIS, Marina (2006). *The Metaxas Myth: Dictatorship and Propaganda in Greece*. New York: Tauris Academic Studies, p. 66.

¹³ PANOURGIA, Neni (2009). *Dangerous Citizens: The Greek Left and the Terror of the State*. New York: Fordham University Press, p. 42; VAN STEEN, Gonda (2015). *Stage of Emergency. Theater and Public Performance under the Greek Military Dictatorship of 1967–1974*. New York: Oxford University Press, p. 170.

In terms of archival value, the Greek Film Archive holds a unique color newsreel from the same ceremony of 1938, shot by the Greek-American professor of Political and Social Geography at the University of Philadelphia, Michael Dorizas. Given the omnipresent nature of the regime and the regulations about film, it is more than likely that it must have served as an instrument of propaganda for Metaxás at home and abroad.¹⁴ Apart from the performative gymnastics, what is also documented in this newsreel is the display of folk dance. Irini Lountzaki, arguing about dance as propaganda, emphasizes that the ceremonial, educational and disciplinary value of folk dance contributed to a large extent in the construction of national identity as an essential symbolical stage for the perpetuation of the nation. The Syrtos performance specifically, used in every ceremony, transformed what was recognized as a pan-Hellenic dance into a key symbol for uniting the diverse regions of the country in a synchronized circular path.¹⁵ Especially for the women dancers that pose in front of Dorizas' lens, it should be noted that Metaxás drew on initiatives taken by the Lyceum of Greek Women (*Lykeion Hellenidon*), a conservative female voluntary association that in conjunction with other institutions organized parades, ancient and modern folk dances, and spectacles at the Panathenaic Stadium from 1914 through the 1930s. The Lyceum's festivals created the "blueprint of spectacular representation of Greek historical continuity".¹⁶

Images of the Athenian Trilogy in Feature Films

The temple of Parthenon and the monuments of the Acropolis hill were always the metonymic markers that declare that 'this is Athens', 'the action is set in Athens'. Brief stock-shots showing the Acrop-

¹⁴ PETRAKIS, Marina (2006). *Op. cit.*, p. 106.

¹⁵ LOUNTZAKI, Irene (2008). "Dance as Propaganda. The Metaxas Regimes' Stadium Ceremonies, 1937-1940". In: SHAY, Anthony (ed.). *Balkan Dance. Essays on Characteristics, Performance and Teaching*. Jefferson: McFarland & Company, Inc. Publishers, pp. 89-102.

¹⁶ PAPAKONSTANTINOY, Zinon (2010). "Prologue: Sport, Bodily Culture and Classical Antiquity in Modern Greece". *International Journal of the History of Sport*, vol. 27, no. 12 (August 2010), pp. 2005-2013.

olis, or views of the monuments in travelogues were the usual introduction of touristic journals and features films of early cinema. However, the Acropolis hill rarely appears in feature films as a space of action and as a narrative feature: it is usually shown as a spectacle, with the characters and the camera looking from a distance, reproducing a point of view, such as, for example, in the film *The Adventures of Villar* (Joseph Hepp, 1924). Usually, it is not filmed as a space that relates to the living experience of visiting the ruins and ‘being there’, but appears as a space of contemplation, a kind of mirror that reproduces the vision of the spectator, and a ubiquitous, even dominating presence that reminds one of the superiority of antiquity over modern Athens.

Another urban landmark, however, is the most common *topos* that appears in almost every feature film of the period. The ‘Athenian Trilogy of Neoclassicism’ is the complex of three emblematic buildings that decorate one of the main arteries of the city of Athens, Panepistimiou (‘University’) Street, created during the second half of the nineteenth century and commissioned by King Otto. The original design was made by Danish architect Hans Christian Hansen and the first building, the University, was constructed in 1864. In the following decades, the trilogy was completed with the two other structures, the National Library, by Theophil von Hansen, and the Academy, by German architect Ernst Ziller. The three buildings, and especially the older one, the University, were considered as models for the integration of neoclassical principles and created a formal pattern that consolidated the national version of neoclassicism, that in the Athenian case was distinguished by the smaller scale of the buildings (compared to European examples), and by direct dialogue with ancient examples.¹⁷ Specifically, the Trilogy enters into dialogue with the monuments of the Acropolis, which served as an inspiration for specific features of the modern buildings, such as the Propylaea or the Parthenon Frieze. The Trilogy stands as a supplement of the Acropolis, as a kind of more familiar replica that combines the remembrance of antiquity in a modern setting, and the rhetoric of classical heritage’s superiority transfused in Modern Greek cultural institutions. As such, it

¹⁷ PHILIPPIDIS, Dimitris (1984). *Op. cit.*, p. 80.

can be seen as a typical example of the usage of architecture in the historical narrative of national continuity.

The Trilogy appears in the first feature film that is saved today, *The Adventures of Villar* (1924) by Joseph Hepp, a slapstick comedy. In a long travelling shot from a vehicle, the cameraman follows the character who is running in Panepistimiou Street, and passes before the three emblematic buildings, framed from a slightly low angle. In the film the character visits most of the monuments of the city: the Temple of Zeus, the Pnyx (which served as an observation point for gazing at the Acropolis), the Faliron Coast, the Royal Gardens, the Theatre of Herode Atticus, and Zappeion Hall. The comic element in this scene, however, derives from the combination of the high status of these monuments, and the hilarious gestures of the character who runs because — literally — his ‘butt is on fire’, as a result of a fight in the previous scene. This comic scene has a subversive character that challenges the seriousness of the monuments through ridicule. A similar attitude towards this space can be found in the newly discovered film *The Apaches of Athens* (1930) by Dimitris Gaziadis: two poor fellows, Kouroumbas and Karkaletsos, unexpectedly gain a large sum of money, and they decide to make their wildest dream come true: a ride around Athens in a taxi. In these scenes they ride along Panepistimiou Street, drinking champagne in the taxi and having a good time, with the buildings of the Trilogy in the background.

However, at the end of the 1920s and during the 1930s most feature films avoided Athens and set their stories in the mountains, in a pastoral setting of Arcadian villages, that are represented in a timeless and un-historic context.¹⁸ In that way, the filmmakers stayed away from a troubled political sociohistorical context and thus ensured that their creations would not have problems with censorship

¹⁸ STASSINOPOULOU, Maria (2000). “Ο κινηματογράφος στον ελληνικό αστικό χώρο και η κινηματογραφική εικονογραφία της ελληνικής πόλης στο Μεσοπόλεμο” [Cinema in urban Greece and cinematic iconography of the Greek city during the interwar period]. In: the proceedings of the 2nd international conference *Η πόλη στους νεότερους χρόνους. Μεσογειακές και βαλκανικές όψεις (19^{ος} και 20^{ος} αιώνες)* [The City in Modern Times: Mediterranean and Balkan Views (19th – 20th centuries)]. Athens: Etairia Meletis Neou Ellinismou, pp. 353-368.

control. One of these films is *Astero*, a pastoral melodrama set in a mountain village: there is nevertheless a short introduction that presents Athens in a few minutes, before the plot continues in the periphery. This introduction is structured on the division between the classical monuments of the Acropolis hill and the “glory of the old city of Pericles” — as we read in the surviving French intertitles — and the “fervent” Modern Athens that lies in its shadow. There follows a montage sequence that juxtaposes details from the monuments of the Acropolis and architectural features of Modern Athens: in a particular match cut we see, for example, an overview of the eastern facade of the Parthenon and in the next shot a frontal frame of the University building, which recreates the same formal pattern. Interestingly, the frame of the University building is oblique, and a tram traverses the space of the screen, so as to underscore not only the historical continuity, but also its transcription to modernity. In this way, the initial juxtaposition seems to evolve to a gesture of convergence. To this relationship is added a third imaginary space, the periphery: the real opposition is between the city and the village, and not between the past and the present. Here, as we read in the intertitles, “we find again unspoiled the essence of eternal Greece”. This kind of essentialism, recalling the return to a pure, idyllic past that combines ancient history and pastoral imaginaries, would grow stronger in the 1930s and culminate in the celebratory aesthetics of Metaxás’ regime.

The Trilogy appears in almost every feature film of the 1920s and the 1930s set in Athens, as an everyday central space, surrounded by offices, hotels, commercial stores and arcades. In the social drama *Social Corruption*, the main character is a student, so in the first sequences he is shown in the building of the University and the spaces have a narrative and descriptive function. The Propylaea (‘gateway’) of the University was a space of gathering for student demonstrations from the beginning of the twentieth century, and it continues to be the place where all kinds of sociopolitical protests usually start. In feature films of this period, representations of demonstrations would be banished, however in newsreel footage and photos we can see images of this space filled by crowds, protesting for political causes.

Conclusions

In the following decades, the imagery of the Panathenaic Stadium not only remained the same, but it was intensified during the Regime of the Colonels (1967-1974). The military regime was inspired by the fascist aesthetics of Metaxás' ceremonies, and recreated similar kinds of celebrations in the Panathenaic Stadium, with performances referring to antiquity. As a space controlled and immutable through the years, it became the privileged venue for the celebrations of The Junta. Footage from the period, from newsreels and TV shows, gives an overview of this official usages of the Stadium. To the contrary, the buildings of the Athenian Trilogy, as central spaces of everyday activities that underwent many urban changes through the years, were open to new meanings and participative activities of citizens. In many films from the second half of the century, also featuring on I-Media-Cities, we see massive political demonstrations, protests, and strikes with the Propylaea as a gathering point, for example, in *Face to Face* (Manthoulis, 1966), *Megara* (Giorgos Tsemperopoulos and Sakis Maniatis, 1974), and *Arpa Colla* (Nikos Perakis, 1984). Also, a newsreel from 1975 documents the first massive strike of industrial workers after the fall of The Junta and their sit-in at the Propylaea. The I-Media-Cities platform gives users the chance not only to locate these venues and learn a few things about their history, but also to contextualize, compare and unpack the processes of the construction of national identities, their rhetoric, and usages through the moving image.

MULTITUDE

The Image of The Crowd in Animated Urban Scenes. Barcelona, the City of People / People of the City

Teresa-M. Sala

Cinema is predominant due to its popular, massive, serialized, repetitive, voluntary character, which transcends borders, brings new points of view and renewed forms. It became the best fun for the crowd, considered the poor theater. Scenes from everyday life captured by Lumière's operators, thanks to the cinematograph, to show life on screen, would be discovered. In capital cities, at the beginnings of cinema, short film documents were shown where certain city views and urban spaces with people traveling through the streets take on a new meaning. The pleasure we obtain from the representation of the present is not only due to the possible beauty it possesses, but also to its present quality.¹ The visual dimension of a historical event has its most striking testament and performance at the cinema. Mapping the city is possible following the visual paths that are made with the camera.

Progressively, films proposed other types of outdoor scenes: actions, journeys, or news that, according to the adopted *point of view*, could form signs capable of registering and propagating ideology. All of this constitutes a record of reality, a shared visual memory standing as testament to the nature and magnitude of the transformations that were taking place in cities and that make up a certain construction of social images. In this short piece, we will deal with the subject of the crowd. People and the city grow and transform together and they are the main protagonist in the cinema: pedestrians traveling through the streets of the city, people doing activities (working, celebrating, protesting...). "Who gets in the crowd, he loses his

¹ BAUDELAIRE, Charles (1975). *La Pléiade*. Paris: Gallimard, vol. II, p. 684.

soul”,² says the Catalan writer Raimon Casellas. The stormy movements of the crowd have always struck the citizens. The proclamation of the Republic, the celebration of popular festivals, demonstrations, parades, and so on. And, of course, rights are defended from the streets.

The Metropolis and the Crowd

In every period, the city offers a look at itself. Urban visions that, during the nineteenth century, become increasingly amplified and dizzying. Literature, works on the dimension of affections and emotions: “All the conceptual imagery of nascent science is implicit in the great poets.”³ The influence of poets, among whom stands the figure of Charles Baudelaire, represents a rejection of industrial and materialistic society. He opens the door to a free, dreamlike and visionary creation that embodies the infinite colors and multiple forms of the creative impulse.⁴

Along with Dickens, between 1842 and 1844, Friedrich Engels would undertake a study of the living conditions of the working class in England. He emphasizes the way in which

The very turmoil of the streets has something repulsive, something against which human nature repels. These hundreds of thousands of all classes and ranks crowding past each other [...] the brutal indifference, the unfeeling isolation of each in his private interest becomes the more repellent and offensive, the more these individuals are crowded together, within a limited space.⁵

² CASELLAS, Raimon (1906). *Les multitudes*. Barcelona: Llib. Francesc Puig.

³ SAER, Juan José (1977). “Freud o la glorificación del poeta”. In: *El concepto de ficción*. Buenos Aires: Ariel, pp. 159-160.

⁴ BAUDELAIRE, Charles (1975). *Op. cit.*

⁵ ENGELS, Friedrich (1845). *The Condition of the Working Class in England* (1845), p. 8.

The Characterization of the Crowd and the Body Politic

One of the first performances of the crowd appears on the frontispiece of the publication of the book *Leviathan* (1651) by Thomas Hobbes. The engraving by Abraham Bosse represents the image of a monarch who maintains authority in the unit formed by the mass of people turned into a political body. Spinoza also defines the concept of a crowd that “indicates a plurality that persists as such in the public sphere, collective action [...]. The crowd is at the base, the foundation of civil liberties”.⁶

The great enthusiastic observer and physiognomist was Edgar Allan Poe. He is located in the middle of the urban crowd of London when it was the most populated city in the world. There he contemplates and characterizes “The Man of the Crowd”, this new phenomenon of the urban masses concentrated in cities — or on the outskirts of cities — that are incommunicado, “as if feeling in solitude on account of the very denseness of the company around.”⁷

The crowd cannot stop moving and it is this incessant movement that Poe sees and feels:

This latter is one of the principal thoroughfares of the city, and had been very much crowded during the whole day. But, as the darkness came on, the throng momentarily increased; [...] I looked at the passengers in masses, and thought of them in their aggregate relations. Soon, however, I descended to details, and regarded with minute interest the innumerable varieties of figure, dress, air, gait, visage, and expression of countenance.⁸

The street, as we see, was no longer a place of passage but a space of traffic. The crowd was immersed in the dizzying rhythm of mod-

⁶ VIRNO, Paolo (2003). *Gramática de la multitud*. Madrid: Traficantes de sueños, pp. 21-22.

⁷ POE, Edgar Allan (1840). *The Man of the Crowd*. Philadelphia: Burton's Gentleman's Magazine.

⁸ POE, Edgar Allan (1840). *Op. cit.*

ern life that turned solitude into vertigo, a sensation similar to that which is felt in Nature, of chaos and immensity.⁹ In short, the metropolis becomes an abyss and the space is built by the crowd.¹⁰

Poe and then Baudelaire evoked the urban crowd located in the modern city, which is increasingly labyrinthine. In the poem cycle of the Parisian paintings – which appears in *The Flowers of Evil* after the second edition – the mass, in the gaze of the urban poet, appears like a veil in front of the *flâneur*, the leisurely walker: it is the drug, most recently available to the lonely. The mass erases any trace of the individual: it is the most recent asylum that the marginalized can have. For the artist of modern life, “The crowd is his element, as the air is that of birds”.¹¹ Thus, the gaze of the poet immersed in the crowd becomes the “soul that gives itself fully to the unforeseen event that appears, to the unknown that happens”.¹² A reflection that also takes aesthetic form.

Between 1893 and 1895, the Belgian symbolist poet Émile Verhaeren offers us a fantastic and amazing view of urban modernity in his work *Les villes tentaculaires* (“The Tentacular Cities”). “All roads lead to the city”, he tells us at the beginning of the journey. Irregularly, he evokes movement and seeks his soul. The writer simulates the modern world through the verses, with the noise of the combined sounds, with a game of synesthesia and oscillating duals between the greatness of the past and the disturbing monstrosity of the new. On the other hand, from Berlin, Georg Simmel in his 1903 essay “The Metropolis and Mental Life”¹³ catalogs a series of defining features of the metropolises, “emerging monsters where citizens are strangers”.¹⁴

⁹ BAUDELAIRE, Charles (1975). *Op. cit.*, vol. I, p. 607.

¹⁰ CHAPPEY, Frédéric (1993). “El desbordamiento de las multitudes urbanas. De lo innumerable a lo innumerable”. In: *Visiones urbanas. Europa 1870-1993. La ciudad del artista. La ciudad del arquitecto*. Barcelona: CCCB / Centre Georges Pompidou, pp. 43-47.

¹¹ BAUDELAIRE, Charles (1975). *Op. cit.*, vol. II, p. 691.

¹² LÓPEZ CASTELLÓN, Enrique (1999). “Sensaciones”. In: *Simbolismo y bohemia: la Francia de Baudelaire*. Madrid: Akal, p. 13.

¹³ SIMMEL, Georg (2002, 1903). “The Metropolis and Mental Life”. In: BRIDGE, Gary and WATSON, Sophie (eds.). *The Blackwell City Reader*. Oxford and Malden, MA: Wiley-Blackwell.

¹⁴ SIMMEL, Georg (1986). “Las grandes urbes y la vida del espíritu”. In: *El individuo y la libertad*. Madrid: Península.

For some, when the crowd is excited, in the form of what is presented as an uncontrolled mass, it becomes a social evil, a type of epidemic that must be confronted, a threat. In this series of coincidences and centers of interest that occurred in the 1890s, we find the one that may be the first systematic theory on the crowds. It appeared in 1891 by the Italian criminologist, Scipio Sighele,¹⁵ influenced by Cesare Lombroso, initiator of criminal anthropology, and was followed by Pasquale Rossi with *The Madness Anime*, a book published in 1899. However, in 1895 Gustave Le Bon's book appeared, *The Psychology of the Masses*, which was undoubtedly the most influential of the theories on the behavior of compact mobs, an apocalyptic view of the crowd as tumultuous, that accompanied the process of industrialization and its derivations throughout the century. From this, the collective soul is the one that "makes them feel, think and act in a manner quite different" than they would do in isolation. The crowd has "the spontaneity, the violence, the ferocity and also the enthusiasm and heroism of primitive beings".¹⁶

Freud relates the brutality and the moral action of the crowd to the unconscious of the individual.¹⁷ From psychology of intracellular masses, sociologist Gabriel Tarde in *L'opinion et la foule*, sees the multitude as the sum of molecules and the emergence of the public as a new collective subject, destined to happen to the crowd in a positive scheme of social evolution. In fact, the object of concern was no longer the masses, as a concept, but their incarnation in the proletariat.

On the other hand, the image of the people emerges as a force of action. The bourgeoisie feels serious panic of the new ascending class. As Paolo Virno states, the concept of the multitude is related to that of the people, and both played a fundamental role in defining the political and social categories of modernity. In the painting *The Fourth Estate* by Giuseppe Pellizza da Volpedo, painted in large format in 1901, the representation of the proletariat is manifested as group in the street. This painting uses a technique similar to pointillism, where

¹⁵ *La muchedumbre delincuente: ensayo de psicología colectiva*. La España Moderna, 1892.

¹⁶ LE BON, Gustave (1895, 1905). *Psychology des foules*. Paris: Félix Acan.

¹⁷ FREUD, Sigmund (1980). *Psicología de las masas*. Madrid: Alianza.

each point of color and light are fragments that end up forming a unit. It is not surprising that Bernardo Bertolucci chose this image for his film *1900*, which takes place precisely in January 1901.

The great city reveals the best of its virtues: to be a spectacle and to be able to offer the widest and most varied sample of human characters. The outraged crowd in Barcelona explodes in the events of Tragic Week (but no film has been preserved) and at the outbreak of the Civil War, with visions of both sides (the Republicans, and the triumphant). The behavior of one and the other, the ways of showing themselves, the image of the people of Barcelona changes according to the moment. The visual chronicle of filmed events always responds to a certain position. When people take the streets, even if they are pursued, they are an emerging force.

We want to conclude with a reflection from Michel Foucault, from his work *The Archeology of Knowledge*, where he says that every archive generates its own field of presence. Thus, the field of presence of film archives has to do with the time captured: it explains, sees, describes, imagines, unfolds and orders its reality. Warburg and Benjamin said that it should not be so much about explaining the world but showing it. It is not just a perception of a period, but of the production of the look of that period.

ARCHITECTURE AND URBANISM

Documenting City Change. The City and its Images 1928-1936

Giulietta Fassino

This article attempts to illustrate the use of the I-Media-Cities platform as a tool that can aid and promote an understanding of the urban change that occurred in Europe during the twentieth century. Focusing on Turin as a case in point, the footage and photographs that the Museo Nazionale del Cinema made available for this interdisciplinary research project can help define, strengthen or even call into question the image and/or images of the city in a particular era. We will focus on the available material that was produced in the 1920s and 1930s, a special time in the history of a city that is generally known as Italy's Fiat company town.

For most of the twentieth century, at least up until the 1990s, Turin was always considered the manufacturing city *par excellence*, the home of the Fiat car company, an urban laboratory that was analysed and described by a wide-ranging and well-established historiography; where, for decades, the progressive bourgeoisie's cultural values jostled with the political values of the working class movement, and where issues were raised and where proposals and models, clashes and crises were experienced that later spread at a national level.¹

Between the wars, Turin was the city of the elite, the headquarters of Fiat as well as the luxury goods industry, where the social structure increasingly identified itself with industry, and the intellectual milieu attempted to balance the plans of a group of entrepreneurs who were open to new forms of manufacturing rationalisation with the conditions of the working class. In the 1920s, writers, art critics, painters and architects from all over Italy contributed to this

¹ TRANFAGLIA, Nicola (ed.) (1998). *Storia di Torino: Dalla Grande Guerra alla Liberazione*. Turin: Einaudi, vol. 8.

turmoil, all of whom gravitated around the figure of Riccardo Gualino, an educated businessman who was open to the latest trends. These sophisticated intellectuals tended to express the desires of an evolving society and made every effort to escape from cultural parochialism, introducing the latest developments from France and Germany to the inward-looking and aristocratic environment that was Turin's bourgeoisie.

It was in such a cultural milieu that intellectuals such as Edoardo Persico, Giuseppe Pagano, Felice Casorati, Alberto Sartoris and Nikolay Diulgheroff worked alongside Turin-based professionals such as Eugenio Mollino, Annibale Rigotti, Gino Levi Montalcini and Mario Pasanti, attempting to establish a cultural programme that could address the demands of a rapidly changing society. It was in the Turin of the 1920s that some of the most interesting early experiments in Italian contemporary architecture were tried and tested. Described as “the first laboratory of modern Italian architecture”,² Turin took the demands of the avant-garde, of the Modern Movement, of the figurative, applied and industrial arts — as well as the intrinsic rationalism of the professions — and condensed them into ephemeral designs, buildings and events, fluctuating between impressionistic and abstract ‘taste’, official grandeur, and the rationale of manufacturing structure.

The World's Fair of 1928 is an example of the lines of research that evolved during that period. Set up in Turin's Valentino park, it celebrated the tenth anniversary of Italy's victory in the First World War. Directed by Giuseppe Pagano, the exhibition showcased this emerging ‘modern’ architecture in 22 pavilions designed by Pagano himself, by architects who habitually worked with him, such as Levi Montalcini and Cuzzi, and by artists such as Casorati and Diulgheroff, acting as a mediator between positions that became increasingly at odds with each other.

Not one building dating from the 1928 expo remains. However, an amateur film shot by the photographer and amateur filmmaker Luis Bogino in 1928 does offer a few glimpses of that event. The foot-

² CIUCCI, Giorgio (2002). *Gli Architetti e il Fascismo: Architettura e Città 1922-1944*. Turin: Einaudi, p. 43.

age of various events that took place during the World's Fair is condensed into a film that lasts approximately 22 minutes: the expo's construction site, the pavilions, and a parade of floats celebrating the grape harvest. Next we see footage of Bogino and his wife strolling through Valentino park's medieval village and along the banks of the Po River, as well as the Festa del Grano Piedmontese harvest competition, a public demonstration by the fire brigade, a few scenes of Turin's city centre, and portraits of women and children. In this particular case, architecture plays a marginal role: while there is footage of the construction site in Valentino park in the first minute of the film, the pavilions only appear in a few brief frames, mostly as a background for the crowds of people that were the real focus of the director's attention.

Like many other amateur films made in Turin that can be analysed on the I-Media-Cities platform, Bogino's highly personal film offers us small traces and partial records that help us fill the gaps when building up an image of the city, which often appears quite different from the standard, generally accepted image of Turin. A sideways glance that adopts the point of view of photographers and amateur filmmakers, who were not attempting to record architectural innovation or urban development, allows us to understand the context of ordinary city life in which public spaces and works were completed and thus assess the distance between the narrative describing places and the way they were experienced at first hand.

The period we chose to carry out this brief analysis, from 1928 to 1936, allows us to adopt this diagonal view of the changes that the city underwent, thanks to an examination of the work by Luis Bogino and two other Turin-based photographers who are as yet unfamiliar to the general public: Italo Bertoglio and Vittorio Zumaglini.

The photographer and amateur filmmaker Luis Bogino (Santa Fè, Argentina, 1892-Turin 1960) began his career in 1915, when he was recruited by the Italian Royal Army to record the various phases of the war, following the movements of troops and of soldiers in the rear guard.³ The footage filmed by Bogino from the late 1920s to the early

³ Ample proof of this is the collection of approximately 2,000 images (including photographs, stereoscopic image pairs and slides) taken by Bogino from

1950s features various moments of his private life in the company of his wife, particularly during their free time when strolling through Valentino park, filmed at different times of the year; views and moments of daily life in Turin with glimpses of the cars, motorcycles and public trams crowding the city centre's streets, and a few films that focus on events taking place in the city, such as fashion shows filmed in colour that focus on the elegant clothes displayed on catwalks, evidence of the photographer's sudden swerve towards the fashion industry. As well as his footage focusing on the World's Fair in Valentino park, Bogino shot another film — *Documentario su Torino* — in 1928. The city at the centre of the film is still the old Turin, which is on the brink of a decade of enormous change and where, at least when seen from the film director's point of view, there is no trace of the issues that gripped Turin at that particular time in history: the Fascist regime (which is only glimpsed at the beginning with the brief appearance of a group of soldiers); the residential conditions of the suburbs, which were increasingly packed with immigrants attracted to Turin by factory work and hailing from Piedmont's countryside and from the north-east and south of Italy, or the worsening economic crisis. The city portrayed by Bogino is represented by a handful of locations in the city centre: the area outside Porta Nuova railway station, the main road of Corso Vittorio Emanuele II near the station, the stretch of Corso Regina Margherita between Piazza della Repubblica and the royal gardens, and Umberto I bridge. This is the old, established city where Bogino shows the viewer how these places were frequented, with their markets, trams and car traffic, and a fair number of horse-drawn carriages. It is a city, in short, that is far from the Turin that was to begin evolving in just a few years' time, establishing an image featuring new buildings and entire city blocks, thanks to large-scale public works, as was about to occur with the construction of the new Via Roma high street.

1915 to 1919 and purchased by the Museo Nazionale del Cinema from his wife, Orsola Canavesio, in 1962. Apart from photographs of the Great War, the museum also acquired a number of amateur films in 1964, shot by Bogino from the late 1920s up until the early 1950s. The collection at the Museo Nazionale del Cinema currently features 30 rolls of film, including copies for projection and raw footage.

Italo Bertoglio's photographs which are available on the I-Media-Cities platform, were taken just three years after Bogino's film and record the changes that the city underwent up until 1934. However, his point of view is already drastically different. An engineer by trade, Italo Bertoglio (Turin, 1877-1963) designed large-scale hydro-electric systems for the SIP company (Società Idroelettrica Piemontese), which he recorded in detailed reports made both in Piedmont and the Aosta Valley. He debuted as a photographer from 1905 to 1907 with a number of studies of human figures, and in 1923 exhibited his work at the First International Photography Exhibition. In 1933, he became a member of the organising committees and the juries and, following the Second World War, he was appointed to prestigious posts such as President of the Società Fotografica Subalpina, and appointed the first president of the FIAF (the Italian Federation of Photographic Associations). However, his work focused on advertising and promotional work for companies belonging to the SIP group, recording a particular sector of the business and its innovations.⁴

Whilst his photographs focus on the geographical area of Turin, they portray an entirely different urban image from Luis Bogino's representation. The map built up using Bertoglio's images embodies themes that were dear to this engineer-cum-photographer (working tools and locations, modernity, electricity) and at the same time summarises the main rhetorical stances concerning the growth of the city during the 1930s in a few specifically chosen locations. From the Mussolini stadium (renamed the 'Civic Stadium' at the end of the Second World War) in the south part of the city, where trams packed with young athletes perfectly represent one of Fascism's primary rhetorical values, to the old city centre that regenerates itself by building one of the main landmarks of the Fascist era in Turin (the Littoria tower, part of the large-scale renovation work that was transforming Via Roma), right up to the area north of the centre, where the Vanchiglia gasworks and Fiat's Ferriere ironworks represent the mass industrial production that was a hallmark of the city. Bertoglio's

⁴ The Bertoglio photographic archive kept at the Museo Nazionale del Cinema consists of 2251 silver bromide negatives, 355 slides and 54 prints. Anita Bertoglio Salvetti donated the archive in the years between 1963-1967.

photographs, taken from 1931 to 1934, immortalise a phase of enormous urban expansion. These are the years when the regime carried out ‘great works’, when the emphasis on the quantity of public improvements — infrastructure and large-scale urban and territorial services — played a crucial role in creating an image of the efficiency of the Fascist state, and in the attempt to relaunch the construction industry as a way of solving the unemployment crisis that plagued the nation. The area south of the city centre particularly became a hub of modernisation. Molinette hospital (Eugenio Mollino and Michele Bongioanni, 1926-1934), the fruit and vegetable market (Umberto Cuzzi, 1933), and the royal maternity hospital (which later became Sant’Anna hospital — Giovanni Chevalley, 1934) were all built a stone’s throw from Fiat’s Lingotto factory, which was completed in 1923.⁵ In 1939, the Fiat Mirafiori factory buildings were inaugurated — even though they were not yet completed — just south of there, destined to become the definitive symbol of Turin, the ‘factory-city’. Bertoglio captures the new stadium and its water tower, designed by Raffaello Fagnoni and the engineers Ortensi and Bianchini and inaugurated in 1933, with photographs that highlight the stark ‘rationalism’ of the architecture, celebrating the grandeur of the project as it looks out over open countryside, an outpost of the development that was to sweep over this part of the city after the war.

Bertoglio also covers the north of Turin, where industry had sprung up and established itself as far back as the nineteenth century, along the banks of the Dora river. The material available on I-Media-Cities covers two emblematic locations in Turin’s manufacturing history and its regeneration today:⁶ the Vanchiglia gasworks (owned by Turin’s Società Italiana per il Gas, where gas for lighting and heating the city was produced from 1856 to the 1950s and where the University of Turin’s campus is now located), and Fiat’s Ferriere iron-works further north, part of the steel and tyre production branch that came to occupy one million square metres in the 1970s and re-

⁵ MAGNAGHI, Agostino et al. (2005). *Guida all’Architettura Moderna di Torino*. Turin: Celid.

⁶ CHIORINO, Cristiana; FASSINO, Giulietta and MILAN, Laura (2015). *Architectural Guide: Turin*. Berlin: DOM publishers.

mains, together with Fiat's Mirafiori industrial estate, the industrial jewel in the crown within the city's borders.

Going back towards the centre of Turin, Bertoglio maintains his documentary approach, and particularly focuses on the architectural and technological aspects of buildings, as evident from the shots taken in Piazza Castello in order to capture the construction site of the Littoria tower, designed by the architect Armando Melis de Villa and built in 1933-1934 during the redevelopment of the Via Roma high street. A seminal event in Turin's urban and architectural history between the wars, the reconstruction of Via Roma was justified by the prestige and urban regeneration it created and partly compensated for the high levels of unemployment caused by the 1929 stock market crash. The redevelopment work replaced the previous small-scale urban fabric, featuring craftsmen's workshops and studios, with shops and associated homes and offices, designed for a clientele with a much higher income. This episode, which triggered heated debate within the local area's architectural elite, highlighted the differing stances as regards the use of formal styles and a complex framework of relationships binding the financial, institutional and professional players involved. The demolition work was funded by the state and managed by companies working in the textile industry, the banking industry, and in insurance. The first section of the street, between Piazza Castello and Piazza San Carlo squares, was designed in a nineteenth-century style, combining various simplified versions of the Baroque architecture found in Piazza San Carlo. Nevertheless, the 19-floor Littoria tower, located on the western side of the first two city blocks, was an exception to this rule. The reconstruction of the second section of the street, between Piazza San Carlo and Piazza Carlo Felice, was the subject of a call for ideas launched by the city council, which attempted to find a compromise that would calm the growing controversy concerning the appropriate architectural style for the modern age.⁷ No one won the call for ideas and the final design was produced from within the city council, supervised by Marcello Piacentini: a Roman architect

⁷ Rosso, Michela (1998). "La Crescita della Città". In: TRANFAGLIA, Nicola (ed.). *Storia di Torino*. Turin: Giulio Einaudi, pp. 425-471.

who was to have a leading role in architecture and town planning during the Fascist era.

We can follow the demolition and reconstruction of Via Roma more closely by studying the pictures of the photographer Vittorio Zumaglini, taken between 1931 and 1936: from the rubble left behind by the demolition of the first section of the street to the views of the Littoria tower's steel frame as it was being built (the first metal-frame civic building ever constructed in Turin), from the construction site of the Galleria San Federico shopping arcade to Piazza San Carlo covered with advertising posters, up until the new layout of the street was completed, with elegant ladies shown strolling under its porticoes.

Vittorio Zumaglini (Turin, 1904-1967) was a journalist on Turin's *La Stampa* daily newspaper. Although he was a sports correspondent who travelled throughout Europe, his reports and photographs depict the Italy of the 1930s in a different way: from architectural photographs showing the enormous urban change that Turin was undergoing in the Fascist period to reports on the city's old, established factories, such as Venchi or Lenci, including everything from reports from inside the correctional facilities set up by the regime to portraits typical of a street photography that was as yet unknown in Italy.⁸

Working within the limited confines of the city centre's avenues, Zumaglini's refined street portraits build up an image of Turin that is almost rarefied, almost abstract. The urban space he captures features few people, the lights and shadows that skim the surfaces depict a city that is there to be seen rather than experienced. The image of Turin that emerges from Zumaglini's observations is a pictorial image, the result of personal research that ignores the city's daily life and uses moments of change, such as the construction of Via Roma

⁸ The Vittorio Zumaglini archive was donated to Turin's Museo Nazionale del Cinema by his daughter Piera Zumaglini in 1992. It is currently being catalogued and digitally recorded. In 1936, Zumaglini joined forces with the art critic Marziano Bernardi to publish a collection of his photographs, grouped thematically: see BERNARDI, Marziano; ZUMAGLINI, Vittorio (1936). *100 Istan-tanee*. Milano: Hoepli.

and its new layout, to highlight forms and spaces, or uses emblematic locations as the backdrop for intense portraits of passers-by.

Far from the Turin of industry and politics, it is, instead, a personal, metaphysical Turin that is used to clearly interpret the forms of architecture and the spaces and buildings that characterise the urban landscape.

Thanks to the I-Media-Cities platform, we can identify very different 'urban itineraries', along which we can multiply the depictions of a city undergoing rapid growth. The three itineraries described here are personal and partial, even considering the availability of the material, which is yet to be systematically ordered, from which we perceive the use of public space and a daily relationship with the venues of day-to-day life that are less coloured by the rhetorical narrative of the industrial city and its political, entrepreneurial and financial affairs.

The work of Bogino, Bertoglio, and Zumaglino therefore seems to provide traces that we can follow in our research, where images can enrich the urban history of Turin and at the same time render the city more complex than it appears in its widely accepted, emblematic representations. They are itineraries where a leading role is played by the individual interpretation of urban space and the way it is used, the behaviour and the intentions that characterise it. Through such images, the perception of urban space is no longer a single, unified notion; it overlaps with the collective imagination made emblematic by studies on working class and socialist Turin, and detaches from it, breaking up into fragments of personal memory, professional interests, and promotional objectives.

HERITAGE

Bologna, City of Water

*Silvia Ferrari, Margherita Lanzi, Stefano Pezzoli,
Pier Giacomo Sola, Priscilla Zucco*

The I-Media-Cities platform has particular relevance for an institution such as IBC, the Institute for Cultural Heritage of the Emilia-Romagna Region. Since 1974, IBC runs research, studies, and projects on artistic, cultural and natural heritage of the region, and I-Media-Cities provides us with the opportunity to experiment, assess and deal with a multiplicity of skills and knowledge that have always been the true reason for IBC to exist. The work of IBC has been consolidated over the decades in a complexity of paths, including census, cataloguing, development of databases, historical research, protection and enhancement of heritage. All these activities now find a new place of application and verification. On the one hand, it can be traced back to a centralized archival preservation model, oriented towards the adoption of a single language, as a unique container of international archives giving access to different cultural objects with a variety of descriptive traditions consolidated behind. On the other hand, it presents itself as an 'open' tool in its multidisciplinary potential, with the capacity to offer a different access to the growing demand for content.

Through the IMC platform, IBC has tried to reconstruct the documentary traces of an investigation that the IBC conducted for many years on the theme of water in the city of Bologna. It focuses on the ancient hydraulic system of the urban area of Bologna, which has characterised the image of the city for a long time and has influenced its economic development, between the sixteenth and nineteenth centuries, favouring the development of important industries — first of all, the silk trade — and allowing traffic and transport thanks to navigation on the waterways.

Starting from the photographic and video heritage of the Cineteca di Bologna, the study of this important heritage has been updated, reconnecting the various research paths developed around the theme. They bring together historical research and cartography, toponymy, sociology, and economics, exploiting all the technological tools of the IMC portal to provide the researcher with many opportunities. They also offer the potential for integrated access to resources: search engine response to queries, thesaurus research, LOD, links, georeferencing, bibliographic references, maps.

We start our analysis from the documentary *Bologna Monumentale*. This film, dated 1912, shows two very short clips that bear witness to a city life unknown to most of its inhabitants and visitors: the ‘hidden half’ of Bologna. The first clip shows some clothes hanging on the balustrade of a wooden bridge that connects the houses facing the canal. A man is walking along the terminal stretch of the bridge, while two women are crossing the wooden walkway along the canal. In the background there are two other bridges and a hydraulic wheel. A washerwoman appears and dips the clothes in running water to rinse them and then beats them on a wooden board. Next to her, a second washerwoman carries a tub. In the canal you can see a trench-type washtub, consisting of a single barrier along the riverside, allowing the washerwomen to work while standing dry.

The street appearing in the two clips is Via Capo di Lucca, and the water channel the Canale delle Moline, a stretch of the Canale di Reno, where a waterwheel was located at the back of the building at via Capo di Lucca 12. This hydraulic artefact is the only one remaining of the many waterwheels once existing in Bologna. It is now held at the Museum of the Farming Culture of San Marino di Bentivoglio, following its restoration, which was funded by the IBC.

A waterwheel, an exact copy of the original, was put back into operation for documentary and educational purposes at the former tannery in Via della Grada, first built in 1681. The building now houses the headquarters of the Reno and Savena Consortium in Bologna, which maintains the artificial hydraulic network and hosts the documentation and education centres on urban waters. The Consortium’s historical archive was also restored by the IBC, which launched a series of studies displayed in a multimedia exhibition entitled “Bologna

and the Invention of Water”, organized within the Bologna 2000 – European City of Culture events.

The exhibition was an opportunity to exhibit the historical cartography, land registers, photographs, and reproductions of works and archival documents related to the subject of water; during the exhibition the public had also the chance to watch a film outlining the close link between Bologna and its waters. Currently the film is shown at the Museum of Industrial Heritage in Bologna.

Since ancient times Bologna has had a strong link to water. The only natural stream that bathed the Etruscan Felsina and the Roman Bononia was the Aposa, which descended from the Roncizio valley and divided the town into two branches. In the Augustan age, due to population growth, the first aqueduct was built. The water supply system consisted of an underground tunnel, which conveyed water from the Setta river to today’s Via D’Azeglio.

This ancient Roman aqueduct, fallen into disuse, was discovered in the late Middle Ages, but only in the sixteenth century was a continuous supply of drinking water set-up, through two cisterns: the one that collected water from the hill of San Michele in Bosco, and that of Valverde capturing water from the hill of Osservanza. Both of them supplied a reservoir near the Annunziata church, from where water was driven to two main fountains: the Fountain of Neptune in Piazza Maggiore, and the Old Fountain (*Fonte Vecchia*), in today’s Via Ugo Bassi, also supplying the botanical garden that was in the place now occupied by the Sala Borsa public library. However, until the end of the nineteenth century, the city’s water supply was mainly secured by numerous wells. Ultimately, the lack of hygiene, and



Waterwheels and canal in Via Capo di Lucca, Bologna, ca. 1900. Courtesy Cineteca di Bologna.

Santa Maria della
Misericordia church at
the beginning of 1900.



the last spread of cholera in 1881, led to the abandonment of the wells and the restoration of the Roman aqueduct.

By the end of the twelfth century Bologna was developing economically, but significantly it hadn't a river, so the Municipality decided to draw upon the waters of the Reno and Savena rivers, through the construction of locks diverting part of the flow into direct channels to the city. Thus, from the thirteenth to the nineteenth century, the urban, economic and social events of Bologna were determined by water, used as a defensive measure, for food needs and cleansing purposes, but most of all as a driving force for mills used in various manufacturing activities. Between the fifteenth and eighteenth centuries, the production of silk involved much of the population, gave a strong impulse to the city's economy, and inspired a local genius for mechanics that would emerge definitively in the industrial revolution of the twentieth century. Waterways were also important transport routes from the Middle Ages to the mid-nineteenth century, when they were supplanted by asphalt roads and railway development. For many centuries Bologna had a harbour, guaranteeing transport of goods and people towards the Po river and Venice. It was located close to the current Porta Lama, where goods warehouses, customs offices and landing docks were built.

The I-Media-Cities platform is, therefore, a stimulus for thinking or rethinking about a missing and unknown Bologna that bears the signs of the importance of water, both in the development of nobiliary palaces and convents located where water refuelling was richer, as well as in the names of streets.

For example, in Via Pellacani, now Via Petroni, there was a concentration of tanneries for the processing of leather, an activity that disappeared in the second half of the seventeenth century.

Via Cento Trecento owes its name to a hundred – or ‘many’ – *traxenda*, i.e., water-derived bulkheads.

In Via Cartolerie and Via Cartolerie Nuova (now Via Guerrazzi), the water started several mechanisms for the processing of parchment: in fact, the word *cartolaro* meant the person who prepared the parchment.

In the mid-fourteenth century the production of silk was introduced in Bologna and the first silk mill was built in Via Castellata.

The presence of water in Bologna is also found in the evocative name of some churches: San Bartolomeo di Reno, Madonna del Ponte delle Lame, SS. Girolamo and Eustachio (also called the “Church of the Waters”), the Crucifix of the Ships, San Michele del Ponticello, Madonna della Grada, San Martino dell’Aposa, Santa Maria della Chivica, the Annegati, Sant’Antonio di Savena.

Almost all the artificial canals in the city were buried for construction reasons, to allow the movement of vehicles, and for hygiene and cleanliness reasons. Hydroelectric energy supplanted the hydro-mechanical generators, and industrial production began to focus on mechanics. Under the 1889 City Regulatory Plan, the harbour was no longer considered a strategic infrastructure and was demolished, and in 1934 the buildings next to the harbour were demolished too: only the Salara survives today.

Since the 1970s, with the goals of uncovering the ‘ancient’ Bologna, works began on reopening some views of the Moline canal, as well as on the restoration of the former factory in Via della Grada, the rediscovery of the underground route of the Aposa stream, the arrangement of the Cavaticcio area, the creation of a cycle pathway along the Navile canal, the consolidation and night lighting of the San Ruffillo lock, and seaside initiatives at the Casalecchio lock.

GENRE

Genre in I-Media-Cities: Urban Imagery and Film Categorization

Ingrid Stigsdotter

Introduction

Within an interdisciplinary project like I-Media-Cities, which approaches the topics of cities, architecture and urban space through digitized moving images, the concept of genre merits consideration for several reasons: firstly, because genres existed before film was invented, and so the films on the I-Media-Cities platform do not just belong to film genres, but depict various architectural genres, and refer to genres within other art forms (literature, music, painting...). Secondly, in a project concerned with the representation of cities, where films are considered as historic documentation of actual plac-

Sveriges huvudstad

Stockholm - 1917

1 annotations



Shot from *Sveriges huvudstad* (1917) viewed on the I-Media-Cities platform.

es, the distinction within film theory approaches to genre between fiction and non-fiction, on the one hand, and between the documentary genre and other forms of filmic documentation, on the other hand, becomes particularly interesting. This chapter has as its focus the project's collection of Stockholm films, but the discussion should have relevance for the collection as a whole, and by extension for other similar film platforms.

Film Genre

The notion of genre is defined in the Oxford English Dictionary as broadly meaning “kind; sort; style”, and in the more specific signification relevant to this essay, a “particular style or category of works of art; esp. a type of literary work characterized by a particular form, style, or purpose”.¹ The latter meaning has roots going back to Plato's *Republic* and Aristotle's *Poetics*,² and so the categorization of films into different genres follows a long tradition of dividing works into different categories within a particular literature, but also relevant to the study of, for example, painting and music. However, while such categorization goes back to Greek philosophy, as the film genre theorist Steve Neale explains, the term genre is firmly rooted in the nineteenth century: “Although the concept itself is clearly much older, the term itself emerges precisely at the time that popular, mass-produced generic fiction is making its first appearance”.³ The relationship between genre and mass production is important to our understanding of film and genre, since apart from the idea of various genres of film, there is also the expression “genre film”, which is sometimes used to describe popular cinema — commercial productions in recognizable popular genres such as “horror”, “comedy” or “war film” — usually as a way to distinguish such films from docu-

¹ OED Online. Oxford: Oxford University Press, December 2018. www.oed.com/view/Entry/77629. Accessed 4 January 2019.

² COHEN, Stephen (2006). “Genre”. In: SCOTT KASTAN, D. (ed.), *The Oxford Encyclopedia of British Literature*. Oxford: Oxford University Press, p. 404.

³ NEALE, Steve (1990), “Questions of Genre”. In: GRANT, Barry Keith (ed.) (2012). *Film Genre Reader IV*. Austin: University of Texas Press, p. 195.

mentaries or fiction films that are made with more artistic ambitions, aiming primarily for festival prizes and/or critical acclaim, and only secondarily (or not at all) for box office success.

At the same time, the film categories of “documentary” and “art film” are sometimes used as genre labels, and as Alan Williams has suggested, the labels “narrative film”, “experimental/avant-garde film” and “documentary” might actually make more sense for someone trying to categorize films than many of the genre labels that do exist⁴ — even though one might respond that all films are “narrative”, and the distinctions between these three modes are not always as clear-cut as in the examples provided by Williams. In any case, clearly all films are to a certain extent “generic”, if we understand the term to mean using conventions and patterns for telling a story through moving images. Indeed, as Neale points out, “No artist, in whatever sphere of aesthetic production, at whatever point in history, in whatever form of society, has ever been free either of aesthetic conventions and rules or of specific institutional constraints”.⁵ Furthermore, art (including film) produced to express artistic ideas rather than to generate income still exists in a capitalist economic context. Nevertheless, the notion of “genre film” has often been used as an implicitly or explicitly derogative term, as a result of the emphasis placed on originality in art evaluation; since popular genre films more obviously than other films build on pre-existing patterns and formulas they have often been perceived as less artistic than films that are not so easily defined according to genre.

In the 1970s, film scholars found inspiration in the ideas of the anthropologist Claude Levi-Strauss, and approached film genre via text analysis, identifying patterns and structures in films in order to group films together based on their shared themes and structural designs.⁶ Later generations of film theorists, such as Neale, have placed

⁴ WILLIAMS, Alan, quoted by NEALE, Steve (2012). *Op. cit.*, p. 195.

⁵ NEALE, Steve (1990). *Op. cit.*, p. 196.

⁶ Examples include CAWELTI, John (1976). *Adventure, Mystery and Romance*. Chicago: University of Chicago Press; WRIGHT, Will (1975). *Sixguns and Society: A Structural Study of the Western*. Berkeley: University of California Press.

more emphasis on the use of functions of genre, since both the film industry and film audiences actually make practical use of the concept of genre. In film production, genres develop and transform as the commercial success of one film often leads to the making of a similar film. Audiences, on the other hand, use their knowledge of film genres to describe films as well their own taste, and to make decisions around film consumption, both regarding which films to see, and which films to avoid. Distributors, exhibitors and critics also use generic labels to mediate the encounter between film and audience. In film criticism, placing a film within a genre works as a kind of shortcut in the description of the film, and also allows the reviewer to compare the film to and value the film in relation to other films within that genre, rather than in relation to all films. In order for a genre term to be functional, a level of consensus between the users — the producers who make the film, the mediators who sell and review the film, and the audience who view the film — is necessary. This might seem self-evident, but taste and conventions change over time, and so while genres named “comedy”, “tragedy”, “horror” and “thriller” continue to elicit laughter, tears, fright and frissons from their viewers, the conventions that create such reactions transform and develop. In addition, genres combine, resulting in hybrids like “sci-fi comedy” or “true crime”.

Film genre theorists have identified a number of issues that complicate the analysis of film according to genre. One question regards the room for change within a particular genre — if we understand a film to be a “western” because it is set in a certain time and place and features certain types of characters (what Rick Altman would call its semantics) and is structured in a certain way (its syntax, to use Altman’s linguistic terms), how much can a film deviate from the known formula and still be called a western?⁷ Another problem is that film genre labels are not comparable in terms of their scope; concepts like “comedy” or “drama” are broad and wide-ranging, whereas terms like “screwball” or “gangster film” are narrow and could be described

⁷ ALTMAN, Rick (1984). “A Semantic/Syntactic Approach to Film Genre”. In: GRANT, Barry Keith (ed.) (2012). *Film Genre Reader IV*. Austin: University of Texas Press, pp. 27-41. The original version of the article in *Cinema Journal* 23.3 was published in a slightly different form.

as subgenres to “comedy” and “crime”, respectively. As previously mentioned, it could also be argued that it is perhaps less useful to discuss the wide variety of genre categories within fiction film than to consider the distinctions between such films and “documentary”, “experimental/avant-garde film”,⁸ and perhaps other kinds of “non-fiction”, a term we will have reason to come back to. Furthermore, certain genres are associated with specific eras, and genre labels that were popular in one period may not be used at all, or apply to a different kind of film, in another period. As Neale would put it, “Genres are inherently temporal”.⁹ In addition, popular filmmakers in most countries make use of genre formulas associated with American film, but the relationship between, for example, a vampire film made in Sweden and one made in Hollywood is complicated, at least in terms of how the film is marketed, reviewed and received by audiences in different countries.¹⁰

When considering genre in relation to the archival films featured on the I-Media-Cities platform – representations of nine real European cities in film footage from various historical periods – it becomes clear that placing these films within a genre category is not always easy, as generic conventions that were recognizable to viewers in one particular time period or place may no longer be familiar to contemporary viewers, and the original motives and intentions behind the making of some of the films may no longer be clear. For example, in the case of Stockholm films, how should the *Paramount-journalen* newsreels from the 1920s be categorized? They are examples of newsreels, a film category that relates to earlier “actualities” from the first decades of film and to later newsreels (where a voiceover would replace the titles), but they are also related to docu-

⁸ See WILLIAMS, Alan, quoted by NEALE, Steve (1990). *Op. cit.*, p. 195.

⁹ NEALE, Steve (1990). *Op. cit.*, p. 187.

¹⁰ As Tommy Gustafsson and Pietari Kääpä note in relation to Nordic cinemas, scholarship on film production in smaller nations often focuses on art or auteur cinema, neglecting the existence of popular genres. See GUSTAFSSON, Tommy; KÄÄPÄ, Pietari (2015). “Introduction: Nordic Genre Film and Institutional History”. In: GUSTAFSSON, Tommy and KÄÄPÄ, Pietari (eds). *Nordic Genre Film: Small Nation Film Cultures in the Global Marketplace*. Edinburgh: Edinburgh University Press, pp. 1-2.

Shot from *Godthem*
(1954) viewed on the
I-Media-Cities platform.



mentary filmmaking and to moving image news journalism that is still produced today. Eric M. Nilsson's *Brutal* (1980) is an experimental film, but plays with documentary narrative techniques.

Godthem (1954) advertises the eponymous Stockholm inn, but is so different from contemporary advertising that contemporary audiences might easily interpret it as an informational newsreel. Indeed, blurred lines between information, journalism and advertising characterize many of the film titles from Stockholm included on the site.

Documentary and Non-Fiction Film

While much of the material featured on the I-Media-Cities platform can be described as documentary in character, this does not mean that "documentary" is necessarily a fitting genre label for the films. Many of the films from Stockholm featured on the I-Media-Cities platform can be described as non-fiction film, and while this chapter does not try to consider the entirety of the I-Media-Cities collection, most of the other cities portrayed on the platform are represented in similar kinds of film materials. The label "non-fiction" encompasses information films, newsreels, documentaries and various kinds of short films, including amateur movies, providing an umbrella term

for a heterogeneous film culture that has generated increasing interest from film scholars in recent years.¹¹ Since these films in general do not have the same ability to attract paying audiences as commercial fiction films, the relationship between producing and receiving users is different to the situation with popular genre films, and therefore how to categorize them has been more of interest to filmmakers (who need to be able to describe the film to whatever channel it is intended for) and scholars than to audiences. On the I-Media-Cities platform, however, categorization is further complicated by the fact that the films selected for inclusion in the collection have been chosen on the basis of a specific theme: the city. So while the films may belong to different film genres, they all share the common feature of being about or at least featuring one of the cities included in the project: Athens, Barcelona, Bologna, Brussels, Copenhagen, Frankfurt, Stockholm, Turin, and Vienna. As such, they could also be described as “city films”.

City Films

What is a “city film”? It is a concept stretching across genres and time periods, as the titles most frequently characterized as “city films” include documentaries, fiction films and experimental works — some short, and some of feature length — made from the early days of cinema and with new titles being added still today. City films played an important role in early cinema culture, since recognizable locations recorded on film, often with crowds looking into the camera, proved popular with local audiences, who saw portrayed not only the built environment of the city (or town) they lived in, but also its inhabitants.

¹¹ For example, ACLAND, Charles R. and WASSON, Haidee (eds.) (2012). *Useful Cinema*. Durham: Duke University Press; FLORIN, Bo, DE KLERK, Nico and VONDERAU, Patrick (2016). *Films That Sell*. London: Palgrave; HEDIGER, Vinzenz and VONDERAU, Patrick (eds.) (2009). *Films that Work — Industrial Film and the Productivity of Media*. Amsterdam: Amsterdam University Press; JÖNSSON, Mats (2016). “Non-Fiction Film Culture in Sweden circa 1920-1960. Pragmatic Governance and Consensual Solidarity in a Welfare State”. In: HJORT, Mette and LINDQVIST, Ursula (eds.). *A Companion to Nordic Cinema*. Oxford: Blackwell / John Wiley & Sons, pp. 125-147.



Poster for *Stockholm, My Love* (2016).

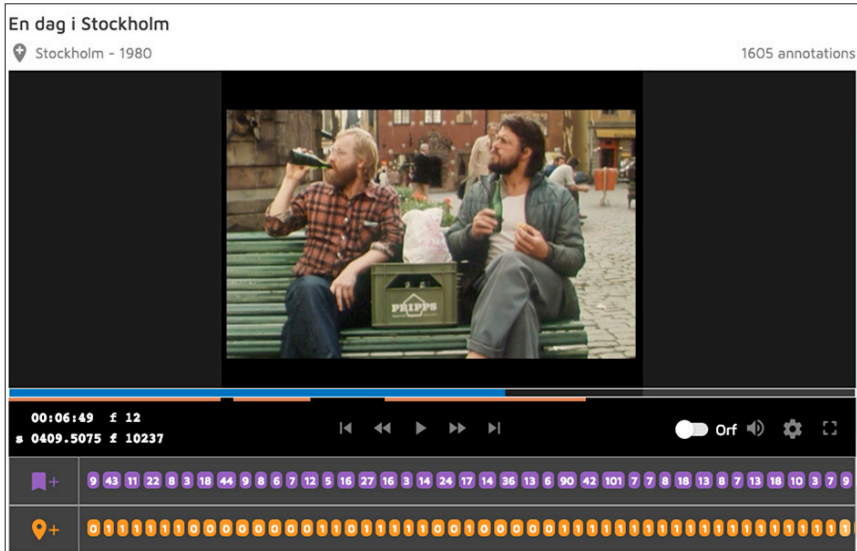
Erik Florin Persson describes the city film as a notion with a “self-evident place within film history and ranges from formal experiments in the so-called city symphonies of the 1920s to [...] more instrumental kinds of brief city portraits”.¹² However, while Florin Persson’s study is municipally sponsored short films made from the 1940s to the 1960s,¹³ there are also examples of feature-length fiction films aiming to portray a city, including very recent ones – in the case of Stockholm, for example, *Stockholm, My Love* (dir. Mark Cousins, 2016).¹⁴

One could also distinguish between “local” films, a category which would include documentary portraits of small towns and regions, and “big city” films aiming to depict the modern experience of the metropolis, whether named and real as in *Berlin, Symphony of a Great City* (*Berlin: Die Sinfonie der Grosstadt*, dir. Walter Ruttmann, Germany, 1927), generalized from reality as in *Man with a Movie Camera* (dir. Dziga Vertov, Soviet Union, 1929), fictional and contemporary as in *Sunrise: A Story of Two Humans* (dir. F.W. Murnau, USA, 1927), or fictional and futuristic as in *Metropolis* (dir. Fritz Lang, USA, 1927). When considering real cities, like Ruttmann’s *Berlin*, an interesting aspect is whether the buildings and structures portrayed in the film still exist, or to what extent the urban landscape has changed, whether due to war, modernization, or other reasons for transformation.

¹² FLORIN PERSSON, Erik (2017). “Useful Cinema and the Dynamic Film History Beyond the National Archive: Locating Municipally Sponsored Swedish City Films in Local Archives”. In: *Journal of Scandinavian Cinema* 7.2, p. 125.

¹³ About the city of Gothenburg, thus not included in the I-Media-Cities collection.

¹⁴ Not included in the I-Media-Cities collection.



Shot from *En dag i Stockholm* (1980) viewed on the I-Media-Cities platform.

If we take “city film” to mean a film in which the depiction of a city (or part of a city) is a primary aim of the representation, however, only a few of the Stockholm titles in the I-Media-Cities collection, such as *Staden växer* (“*The City is Growing*”, 1954), *En dag i Stockholm* (“*A Day in Stockholm*”, 1980) and *Sveriges huvudstad* (“*The Capital of Sweden*”, 1917) would fit the bill. In most of the Stockholm films, the city is one aspect of what is depicted, or the aim of the film is something completely different, but Stockholm happens to be portrayed in many of the images, or some interesting images.

Genre, Annotation and Urban Imagery

Within the context of film archive work, the notion of genre occasionally features as a descriptive category. When the I-Media-Cities annotation tool was created, “genre” was proposed as a possible metadata field within the vocabularies for manual annotation. This suggestion was not implemented on the platform, because as a label to categorize film, genre is generally not applied to a single shot or sequence, but to an entire film, whereas the annotation tools are designed for tagging on the basis of the shot or scene. Nevertheless, the idea of categorizing the films according to genre yields some inter-

esting questions regarding future uses of the platform. Comparative work, analyzing differences and similarities between the film titles from the various participating cities, has not been possible during the construction of the platform, since researchers did not have access to all the films, and some level of annotation is necessary in order to be able to conduct useful searches among the titles. However, in terms of future uses of the platform, the possibility to compare how urban spaces in different cities have been depicted in moving images from various time periods appears as an area with great potential. And while “genre” is not currently a descriptive category used in the project, free text searches could be used with relevant terms, in order to investigate how archives and researchers categorize the films in terms of genre.¹⁵

Future Use and Development of I-Media-Cities

In addition to the question of how archives and researchers within the project conceive of urban representations on film in terms of genre, it is also worth considering how future users of the I-Media-Cities platform approach the films in terms of genre. Foreseen platform users include researchers from different disciplines who, depending on their background, may categorize films and urban imagery in different ways. But some material on the platform will also be available to wider audiences who, based on the popularity of the “city film” category in the Swedish Film Institute’s and the National Library of Sweden’s joint venture *Filmarkivet.se*¹⁶ and the Facebook group *Det gamla Stockholm* (“The Old Stockholm”),¹⁷ which at the time of writing has over 80,000 members, have a great interest in historical representations of urban spaces that they recognize or re-

¹⁵ At the time of writing, a search for “documentary”, for example, yields 187 results on the platform. However, since English translations are not available for all descriptive data included in the project, a more thorough analysis would have to perform multilingual searches and also find out which archives systematically use which genre terms in their metadata.

¹⁶ Filmarkivet.se: www.filmarkivet.se (accessed 5 February 2019).

¹⁷ “Det gamla Stockholm” Facebook group: www.facebook.com/groups/44427853430 (accessed 5 February 2019).

member. How would such viewers categorize these films? Going back to an idea in film genre theory about a relationship between how (in this case) mediators/distributors and audiences categorize the films, from a viewers perspective, it would be highly recommended that future updates of the platform enable interaction with platform users not just in terms of making use of their knowledge to gather information about what is seen in the films, but also to find out about what the films represent to them, how they make use of the films, and how they feel about the experience of travelling in time and space to these nine European cities via an online platform.

VANTAGE POINT / LOOKOUT POST

The City in Views (Vienna)

Vrääth Öhner

Film and cinema are intrinsically urban phenomena: on the one hand, the city is the cradle of cinema as popular mass entertainment, and on the other, it was film that introduced audiences to the new metropolitan lifestyle characterized by anonymity, fleetingness and distraction. Nevertheless, the cinematic portrayal of real cities has so far remained merely a marginal note in film history. Apart from a few notable exceptions, the stories of narrative fiction films are frequently set in cities whose names are taken from reality — New York or London, Paris or Rome — but whose spatial and social structures remain largely in the dark. As Thom Andersen showed in his filmic essay *Los Angeles Plays Itself* (USA, 2003), the most-filmed city in cinematic history, Los Angeles, is also the city with the least visual evidence of its historical existence. In the course of film history, Los Angeles has not only played all sorts of cities from around the world; in the vast majority of cases, its role as a city has been limited to that of a background against which the dramatic plot unfolds. Hardly ever has Los Angeles itself become a character in a film's story, let alone its central subject.

Of course, there are good reasons for this. One of these is that the picture is much easier to control when shooting in the studio than when actually on location, in the midst of a city. Another is the adaptation of urban space to the requirements of the filmic narrative. This refers not only to the images and ideas firmly associated with a particular city — what would Paris be without the Eiffel Tower and love? — but in general to all the meanings that the script ascribes to the city as the story's location. What threatens to disappear from the cinematic representation of the city in this form of adaptation, as Geoffrey Nowell-Smith has described using the example of Italian

neorealism, is the pre-existence of the city and the situatedness of its meaning. The cities of neorealism, he wrote, “are there before they signify, and they signify because they are there; they are not there merely in order to be bearers of signification”.¹

The Mimesis of Observation

Nowell-Smith’s insight applies also beyond neorealism, particularly to those non-fictional forms of early cinema whose structure Tom Gunning described as a “view aesthetic”. Later documentary film as it emerged during the First World War, according to John Grierson’s classic phrase, replaced the simple descriptive function of the film image with the interpretation of cinematic facts. A ‘view’, by contrast, is about “presenting something visually, capturing and preserving a look or a vantage point”.² What captures the eye is displayed in the view and thus serves to satisfy the viewer’s curiosity. It is part of what Gunning called the “Cinema of Attractions”,³ but it also has specific characteristics. The first and most important of these is that the filmed view “maintains a large degree of independence from the act of filming it”.⁴ Views record things and events that existed before the filming (such as cityscapes or working methods), and that would have taken place even without the presence of the camera (such as ceremonies or processions). Second, because of this independence of the filmed view, it does not correspond to an all-seeing or, so to speak, ‘divine’ gaze, but to the act of seeing or observing situated in a particular life-world. “We don’t just experience a ‘view’ film as a presentation of a place, an event or a process, but also as the mimesis of the act of observing. The camera literally acts as a tourist,

¹ NOWELL-SMITH, Geoffrey (2001). “Cities: Real and Imagined”. In: SHIEL, Marc; FITZMAURICE, Tony (Hg). *Cinema and the City. Film and Urban Societies in a Global Context*. Oxford: Blackwell Publishers, p. 107.

² GUNNING, Tom (2016). “Before Documentary. Early Nonfiction Films and the ‘View’ Aesthetic”. In: KAHALA, Jonathan (ed.). *The Documentary Film Reader*. Oxford / New York: Oxford University Press, p. 55.

³ GUNNING, Tom (1986). “The Cinema of Attractions: Early Films, its Spectator and the Avant-Garde”. *Wide Angle*, vol. 8, nos. 3-4 (1986), pp. 63-67.

⁴ GUNNING, Tom (2016). *Op cit.*, p. 55.

spectator or investigator, and the pleasure in the film lies in this surrogate of looking”.⁵ Finally, the third aspect of this mimesis of observation realized by the ‘view aesthetic’ is that the camera always remains present: those filmed often react to the camera, address it with looks and gestures, or demonstrate local peculiarities such as work processes or customs.

Already the first films in film history establish a view aesthetic derived from painting and photography, even though, as Gunning emphasizes, the views in early non-fictional cinema — in contrast to those typical around 1900 — do not consist of a single shot, but convey a multi-layered image of a place through a series of views assembled according to spatial criteria. Nevertheless, the oldest surviving film of Vienna, *Le ring* (1896), shot by Charles Moisson on behalf of the Société Lumière, exhibits the characteristic described by Gunning. Set up at the intersection in front of the opera house, the camera shows in a single static shot the traffic dominating the Ringstraße: horse-drawn trams and buses cross the picture horizontally; carriages turn from Kärntner Straße onto the Ringstraße, and passers-by move towards or away from the camera, at least two of them obviously noticing it.

Le ring is thus the perfect example of a view film: what the camera records would have taken place without its presence, and what it shows us we could actually have seen if we had stood in its position. The particular focus of *Le ring* lies undoubtedly on the traffic, and this primarily emphasizes the new way of seeing that the moving image makes possible. However, because what is shown is the intersection in front of the opera house, another aspect becomes clear, which concerns the specific difference of the view aesthetic for the cinematic representation of the city: the city does not come into the picture as a carrier of a previously defined meaning; but it is there before it signifies and it signifies only to the extent that it is there. This thesis is supported in particular by the way in which one of the central representative buildings of the Ringstraße era, the opera house, is placed in the shot. The building fills the upper left quarter of the picture, but because only a small part of its right-hand front and side

⁵ GUNNING, Tom (2016). *Op. cit.*, p. 56.

can be seen, it blends seamlessly into the architectural ensemble along Kärntner Straße. From the perspective of the traffic, which *Le ring* presents as an attraction, the opera house does not come into view as a landmark that underscores Vienna's significance as a city of music, but as a component of an urban structure created by social practices.

Space as a Social Product

In terms of their structure, more than half of the 80 Viennese city films collected on the I-Media-Cities platform can be said to follow the view aesthetic. Given that the curated selection covers a period of almost 90 years this suggests, on the one hand, that the view aesthetic was not completely replaced by the emerging documentary film, but instead continued to contribute to the development of non-fiction film until after the end of World War II. It remained influential not only through its core form — the actuality film — but also shaped the structure of newsreels, as well as of sponsored, industrial, and educational films, and of amateur non-fiction films. On the other hand, the view aesthetic is of particular importance to the question of the cinematic representation of real cities because it is itself, as a mimesis of observation, part of a spatial practice that Henri Lefebvre called the “social production of space”. Like other social agents, the camera both propounds its space and presupposes it at the same time: “It produces it slowly but surely as it masters and appropriates it”.⁶ This can be done statically, as in *Le ring*, or dynamically, as in all cases where the camera is set in motion — either in a panning shot or by being mounted on a moving vehicle. What is essential here is that the production of space by the camera remains dialectically linked to the prerequisites of the place from which it is filming. In the midst of a crowd of people, it cannot rise up to deliver an overview shot; mounted on a vehicle, it cannot suddenly jump off and become static. The view aesthetic remains closely connected to society's everyday spatial practice, even if, as a new way of seeing, it is at the same time a

⁶ LEFEBVRE, Henri (1991). *The Production of Space*. Malden, MA: Blackwell Publishers, p. 38.

practice of the gaze that, as Tom Gunning observed, “was one of the foundations of our modern world”.⁷

Lefebvre analytically distinguished the spatial practice of a society — i.e., the perception of space — from “representations of space” — how space is conceived — as well as from “representational spaces” — space as it is lived. It is beyond the scope of this essay to develop the implications of Lefebvre’s thought on our analysis of the representations of urban space produced by the view aesthetic. Perhaps it would suffice to point out that the view aesthetic, in contrast to the emerging documentary film, primarily presents space as it is lived — space that is mediated “through its associated images and symbols”.⁸ In this context, it is worth noting that the majority of actuality films from the Viennese collection show processions, marches, or political demonstrations. The fascination that these views still retain today has to do not least with the fact that they relate the symbolism of these activities taking place in public space to the symbolism of the built space, which itself represents nothing less than the sedimented expression of social power relations. In this way, the representative image of the city, determined by its architecture and by the spatial relations between center and periphery, is confronted with an always time-bound and necessarily fragmentary view of a lived space shaped by the activities and events taking place in it.

Sometimes this confrontation sparks, as in the case of the actuality film entitled *The Great Demonstration of the Viennese Workers on November 12, 1927*. It shows a protest march that fills and occupies the entire of Ringstraße from Schwarzenbergplatz to the Parliament, thus demonstrating the symbolic appropriation of a space originally designed for the representative needs of the bourgeoisie. Paraphrasing Walter Benjamin, one could say that in this actuality film, the past comes together with the present to form a constellation, a dialectical image at a standstill.⁹ The tension contained in this image has not been eliminated even today, but instead remains immortalized in it. In this tension lies the cognitive value of a city in views.

⁷ GUNNING, Tom (2016). *Op. cit.*, p. 62.

⁸ LEFEBVRE, Henri (1991). *Op. cit.*, p. 39.

⁹ BENJAMIN, Walter (1982). *Das Passagen-Werk*. Frankfurt: Suhrkamp, p. 576.

FILM HERITAGE

A Curatorial Approach to Making Cinematic Heritage Available Online

Mariona Bruzzo Llaberia, Camille Blot-Wellens

Cinematic heritage, the basis of the I-Media-Cities project, is just over 100 years old. Its recognition as such is far more recent. The fact that it was partly produced industrially distanced it from highbrow culture, as it was considered a mere form of entertainment or a means of communication, even a tool for commercial, tourist, cultural or political propaganda, and not one of the first examples of mass global popular art, something hitherto unprecedented in the history of art, and which eventually made it an icon of industrial society: the seventh art.

Now, in the twenty-first century, cinema and, by extension, the audio-visual arts are the subject of many digitization programmes. In Europe, the Commission played a crucial role by supporting several valorisation projects within the framework of Europeana,¹ a catalogue of heritage collections accessible online whose objective is:

To make it possible for citizens throughout Europe to access and use it for leisure, studies or work. It will give Europe's diverse and multilingual heritage a clear profile on the internet, and the digitisation of their assets will help Europe's cultural institutions to continue carrying out their mission of giving access to and preserving our heritage in the digital environment.²

¹ "All across Europe, museums, galleries, libraries and archives are digitising their collections so that anyone anywhere can explore and learn from them. Once these collections are made public online, we work hard to make sure you can find, use and share them: for research, for learning, for creating new things" (Europeana.eu).

² See *Commission Recommendation of 27/10/2011 on the digitisation and online accessibility of cultural material and digital preservation*, p. 2.

These initiatives were singled out for cinematic heritage through the European Film Gateway (EFG) platform; in doing this, the viewing of films held in European archives and museums was encouraged.

The I-Media-Cities project, whose objective is “to share access to and valorise audio-visual content from their collections for research purposes”, falls fully within the policy developed by the Commission in its wish to democratize access to European cultural heritage. The project is based on the collections of nine film archives, institutions responsible for the conservation of cinematic heritage; they are mostly films conceived to be screened in cinemas, but there are also some made outside the commercial sphere, such as amateur, experimental or documentary films. They are works that reflect the wealth and the diversity of film production from both a cultural (in genres and subjects) and a technological point of view, with different systems, gauges, formats and emulsions.

With the arrival of digital technology to cinema and audio-visual work, the dematerialization of films appears. Before then they were physical objects that, by having a beam of light shone through them, projected the image on the medium onto a screen, their shadows. Instead, digital projection is an image coded in pixels transmitted through light to micro-mirrors that project them, creating an image made of light; to this we must add other screens, such as monitors, televisions, tablets or mobile telephones, which in turn use other technologies to reproduce audio-visual images, mostly TFT, LCD or plasma.

With the idea of making films visible outside their original technological contexts, we at the film archives must act as intermediaries between the technologies, translating the images into new and different languages. Projects to place our cinematic heritage online require the homogenization of files, their standard codification in order to be ‘seen’ on any device. Keeping the promise to respect the films — analogue or digital — this presents film archives with the challenge of being able to transmit the works in their entirety, including information on their physical and technological characteristics, since these are a part of them, intrinsic to their nature.

This challenge is not new; other cultural institutions, such as museums and libraries, have had to face it. In the case of cinema,

however, the technical complexity and the volume of data involved in the digitization of films has delayed their accessibility through the networks and there has therefore been a lack of systematisation of technical data for the purpose of making them intelligible to those who wish to access these films via the internet. Works of art disseminated on the internet by museums are accompanied by detailed information on their sizes, techniques and procedures. In the case of texts, digitization tells us if we are looking at handwritten letters or an edition of them, or if the book we are consulting is the first edition or an illustrated version adapted for children, for example; this information is essential in the field of research.

In this aspect, I-Media-Cities becomes an opportunity to systematise this information about films, which is multiple and diverse due to the different technologies used in cinema and their reproducibility. Seen this way, the researcher looking at a film on the internet — although he or she may perceive it through the screen as a single artefact — is in fact viewing an adaptation or a translation, which has had to pay the price of being standardised in order to be on the internet and interact with other works and documents in this new digital habitat. This simplification, difficult for archivists and curators to manage, is aimed at facilitating new approaches to cinematic heritage and emerging unpublished research that will reveal greater and better knowledge of films.

Selecting the Films

Athens, Barcelona, Bologna, Brussels, Copenhagen, Frankfurt, Stockholm, Turin, and Vienna are the nine representatives of this project, based on the collections of the film archives associated with these cities. The city as a concept and representations of it were the guide that marked the possible candidates for a title. In principle, there had to be no filters from the archives, or the least possible number.

Availability. The majority of the works had to be digitized to facilitate access to them and begin the project as soon as possible with our research partners, based on films that were easy to view. When titles appeared that were not digitized — sometimes not

even preserved — but which looked particularly interesting for the project, the research team was informed immediately so that it could assess the need to incorporate them in the project and digitize them.

The titles chosen had to be *representative* of the city as a concept, not just because they were filmed in it, but because they showed the city or provided an interesting view of it.

Another aspect that was borne in mind was that the representation of the city, in relation to the entire film, had to be *significant*. Here we have the problem of the whole and the parts: if the whole added up to more than the parts in relation to the city, it was obvious that it might be important for the project; if a small part appeared, even though it might be very significant with respect to the city but only a fragment of a larger work, the option to add just that part was often ruled out, because by isolating it from the rest of the film, the context of the whole was lost. With this decision, a lot of fictional films were excluded from the project, since the cities appeared represented in a fragmentary way and, bearing in mind that we are addressing different researchers, adding the whole film could confuse them. In the case of actualities, it was often decided to keep the original footage without separating the news of the city from it; of course, those relevant in the context of the project had to be significant as a whole, either by quality or quantity.

With the idea of making access to this cinematic heritage as flexible and as easy as possible, running *time* was another point that had to be taken into account, given that working on films with thousands of shots, sequences and frames, all of them full of collateral and parallel information, could stress the tool and make it incapable of processing so much data clearly for future researchers. And so it was: the tools of analysis developed in the context of the project, both the automatic ones (object detection or shot segmentation), and those annotated manually, provided by researchers and archivists (geolocation, annotations, bibliography, characters, references...), could generate such a huge volume of data that it is necessary to limit the footage and its running time.

The legal situation of the works was also an important aspect to consider when making the selection.

To begin with, all the archivists had the intention of giving priority to public domain titles,³ to thus create a more homogeneous platform between research, education and the citizenship, as public domain makes unlimited access to all the contents of the platform possible. But it was surprising to find that works of this kind represent just 15.5% of the final selection. There are several reasons: cinema is a young art (just 124 years old), and therefore the films' period of protection (between 70 and 80 years after the death of the last author) is still in effect. Film archives also conserve relatively few works from the early years of the cinematograph, as much of this heritage has been lost.⁴

In relation to orphan works,⁵ which represent a significant proportion of European archive collections (approximately 20%) and for which we have obtained from the European Commission the possibility of preserving them and even promoting them after legally registering them (Orphan Works Database of European Union Intellectual Property Office),⁶ they are strangely almost all missing from the project (0.5%). This figure reveals the complexity of the process (diligent search) for film archives to register this kind of work.

³ "Creative works that are in the public domain can in principle be used without permission and with no copyright restrictions." <http://outofcopyright.eu>.

⁴ Nevertheless, it is important to point out that the proportions are very different as far as the platform's photographs are concerned.

⁵ "Item [for which] either [a] no rights-holder[s] have been identified or [b] one or more rights-holder[s] have been identified but none have been located even though a diligent search for the rights-holder[s] has been conducted. [...] It can only be applied to Items derived from works that are covered by the Directive: works published in the form of books, journals, newspapers, magazines or other writings as well as cinematographic or audio-visual works and phonograms (note: this excludes photography and visual arts). It can only be applied by organizations that are beneficiaries of the Directive: publicly accessible libraries, educational establishments and museums, archives, film or audio heritage institutions and public-service broadcasting organizations, established in one of the EU member states" (<http://rightsstatements.org/vocab/InC-OW-EU/1.0/>).

⁶ <https://euipo.europa.eu/orphanworks/>. See also the EU-funded Forward project developed in 2014 to "create an EU-wide, standardized system to assess and register the rights status of audio-visual works and to support the diligent search for orphan works". <http://project-forward.eu>.

Thus, the great majority of the works on the platform are protected by Intellectual Property Law, which protects the authors' rights (80%). Although this proportion varies a great deal depending on the archives, it is interesting to point out that heritage institutions are including more and more protected works, which could mean an improvement in relations between archives and rights holders. Nevertheless, it is important to mention that some film archives, like the Swedish Film Institute or the Filmoteca de Catalunya, are the rights-holders of some of the films chosen for the project.

Of course, the use of the works protected by archives takes place within the (not-for-profit) educational and cultural framework established by the European Union; in other words, the works can be consulted for research or educational purposes if the institution that grants access holds the rights or is authorized by the rights-holders.⁷ The I-Media-Cities project, highly focused on research, allows access through a restricted access website, but also pursues the possibility of reaching the sphere of education and stimulating general consultation for anyone who is curious and interested in this kind of platform.

Once all the curatorial and legal aspects have been taken into consideration, the fact of it being a research project was decisive for creating a collection that is not just rich and diverse but also coherent, to make it possible for transverse and common research subjects to arise among the different selections made by the nine film archives. For example, not only was it important to try to achieve a certain degree of exhaustiveness in terms of the timespan, but also to focus on the periods of production in different collections in order to compare different cities. In the same way, the presence of various genres had to be ensured (documentaries, newsreels, fiction films), from different archives, to obtain more accurate results, because how can we compare the treatment of certain themes in different cities if the only possibility is between professional newsreels of the

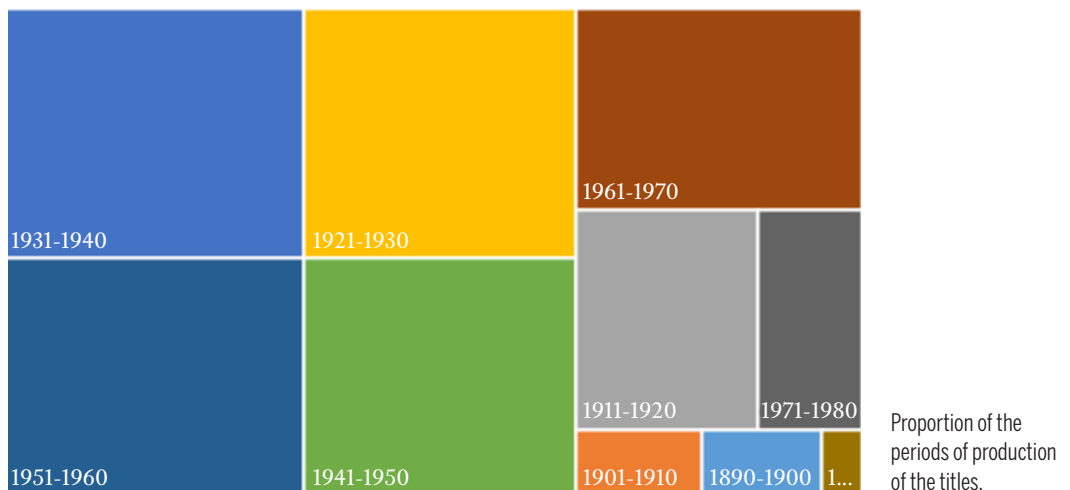
⁷ "In Copyright — Educational Use Permitted. This Rights Statement can be used only for copyrighted items for which the organization making the item available is the rights-holder or has been explicitly authorized by the rights-holder[s] to allow third parties to use their work(s) for educational purposes without first obtaining permission" (<http://rightsstatements.org/vocab/InC-EDU/1.0/>).

1940s, made to be shown in cinemas, and small-format home movies of the 1970s intended to be shown in the living room? Thus, the analytical comparison of the collections (periods represented, themes and genres), in accordance with the lines of research proposed by the researchers, was crucial for the final selection.

The resulting collection, of films and photographs, was established by the two main types of institution taking part in the I-Media-Cities project: film archives, in charge of managing the collections, and universities and research institutes, leaning more towards academic research and its dissemination. These different experiences and approaches were very beneficial for the project, and the diversity and variety in the proposed lines of research allowed for the presence of other subjects, not just in terms of concept, but also in perspective: histories of the cinema, architecture, politics, urban development, subjects as a diverse as their treatment.

Corpus

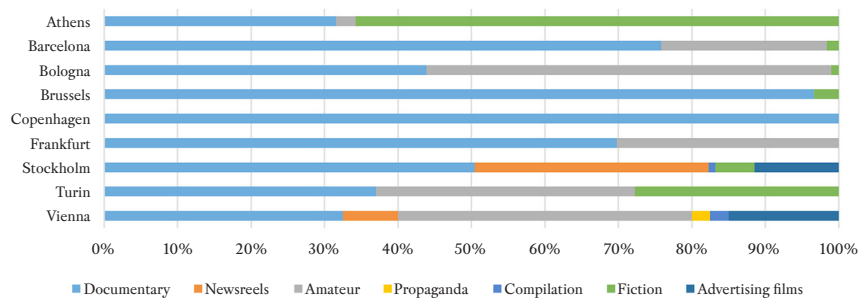
With the selection made, about 1,000 films dating from 1896 to 1992 are on the I-Media-Cities platform, representing almost a hundred years of cinema.



The years from 1920 to 1960 are clearly represented on the platform. Naturally, the fact that these periods are in the project has to do with the archives' film collections, as well as the legal situation of the works. We mentioned earlier the relative scarcity of films from the early years and that the more recent productions are, the more they are protected, and some will even continue to be exploited commercially by their producers or current rights-holders, which may be a hindrance to their use in heritage projects that involve public communication.

The genres present on the platform reflect the multiple forms of cinematic creation and consequently the variety of collections of the film archives that are responsible for conserving cinematic heritage (which is different from audio-visual heritage). Right from the start, cinema was heterogeneous, because of the diverse nature of filmmakers — well-known cameramen or directors working professionally, independent artists, illustrious and also anonymous amateurs, unknown makers — and the host of options that it offered: fiction films (comedies or dramas), outdoors scenes, documentaries, actualities, or family scenes; and different production environments: professional and domestic film formats, gauges (from 35 mm to 8 mm), emulsions (black and white, colour, positive, negative, reversible) and silent or sound films.⁸

As a consequence of the project's main theme, there are more documentary "city films" than fictional ones. But there are several types of productions in the documentary genre: professional (76%)

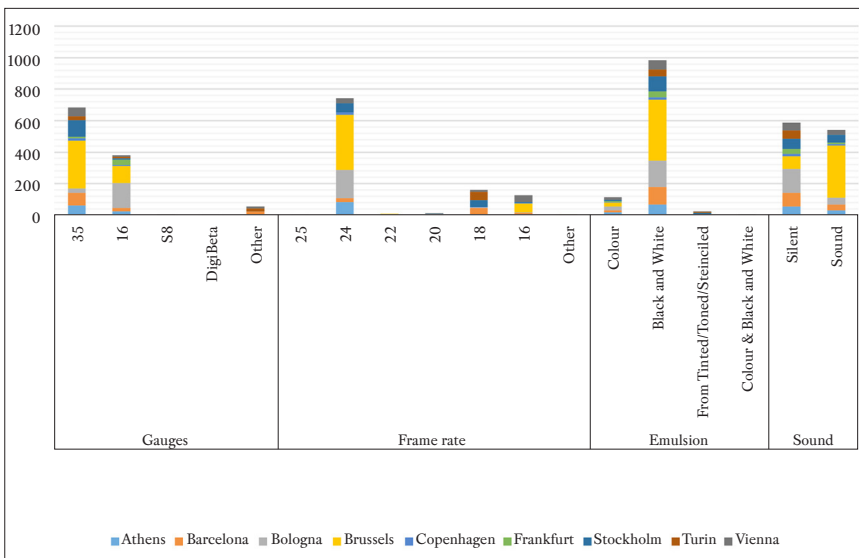


Main genres represented by film library.

⁸ The classification by genres varies according to the archives.

— documentaries, reportage and actualities — and amateur (18%). The latter are a specific corpus, given that their interests and techniques are very different to the films that are part of a structure pursuing financial and commercial gain. This differentiation is absolutely relevant for those who are studying these films, what we could call the point of view, to show who is behind the camera, through whose eyes we are seeing the cities.

The gauges of the materials are essential data for a historical and technical analysis of the works: 35 mm (60% of the materials on the platform) was generally used by professionals, to be shown in cinemas; 16 mm, also considered a professional format, was much used for documentaries and actualities (whereby a third of the materials in the project are in this format), while amateurs generally worked with small formats, which were cheaper and easier to handle, such as 9.5 mm, 8 mm or S-8 mm. It should also be pointed out that, almost incidentally, there are examples of digital video (Digi-Beta), the first example of a widespread video format that in the end supplanted film media. Therefore, the gauge of the materials is an important source for knowledge of the technological, cultural, aesthetic or industrial context of the creation of the films, and the re-



Technical characteristics of the film materials.

searchers must have access to this information when they study films, especially when they view works on a platform where the image depends more on the resolution of the digital archive than on the original film gauge.

Another important technical datum is frame rate. Depending on the filming system, rates vary between 25 FPS (frames per second) for the most modern videos, the common 24 FPS for sound cinema, or between 16 and 22 FPS for silent films. The frame rate of the works on film stock (generally identical to the speed of filming, except in the case of effects) is crucial in the viewing experience of the films. But this does not mean that the frame rate is easy to determine; it may even be considered to be subjective, given that it is rarely established on the basis of historical documents, but rather according to the judgment of experienced archivists.

The materials are almost exclusively in black and white (nine out of every ten films), very exceptionally in colour emulsion (10%), and there are some examples of films from the early days that have colours applied to the black and white emulsion (24 titles, just over 2%). The emulsions are also related to the genres and types of films present in the project. We saw earlier that works produced before the 1960s represent more than two-thirds of the project's collections, a period in which many films were shot in black and white, although the use of this kind of emulsion also predominated in the documentary genre, as budgets were usually lower.

Finally, with regard to the characteristics of the film materials, while silent and sound films are equally represented, it is important to point out that some silent films have musical accompaniment incorporated.

It is also necessary to say that some digitized materials are merely prints, and they therefore reflect the practices and the development of film preservation; for example, the formats (both the gauge and format of the image) are not always original. Some silent films duplicated over a decade ago may be in academic format (1:1.37) instead of their original silent format (1:1.33). And the materials chosen for digitization can be very varied, from an original negative to a copy made in the context of a restoration, even a conservation material (like a positive duplicate) or a copy from the period screened

many times, in other words, scratched, with jumps or degradation of the colour, to give some examples.

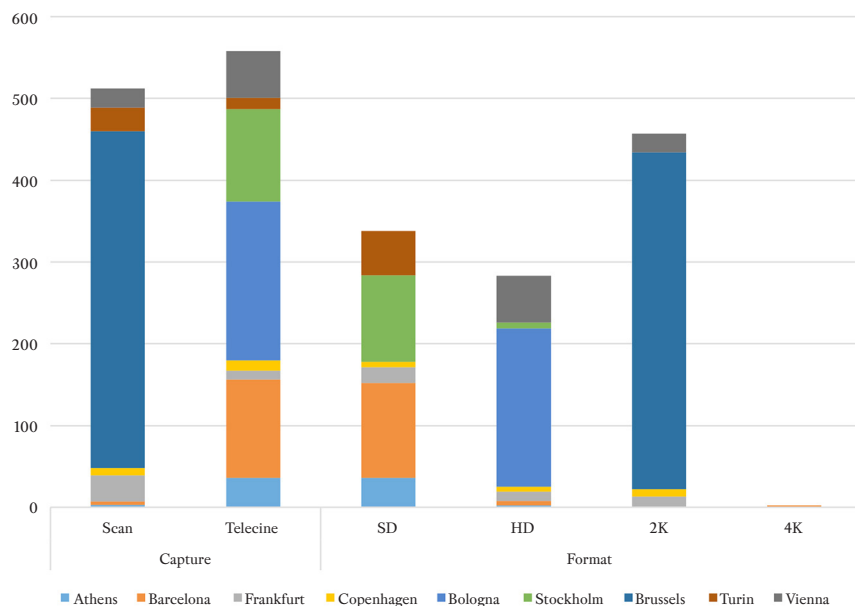
Treatment

Lastly, we come to the digitization of these titles to allow them to be viewed on the platform. The recent history of capturing film images emerges from these data. Thus, we find a range, from SD qualities – the professional standard used before the introduction of digital terrestrial television – which paved the way for high definition (HD), to MPEG-2 and MPEG-4 compression formats. They are systems designed to send a signal to every television and later to be adapted to any other kind of receiver: computers, mobile telephones, tablets, and so on.

Since the 1990s film archives have been digitizing their collections thanks to these new technologies, which make it possible to obtain copies for work and consultation, thus protecting the original film materials. Proof of this is the massive presence in this project of materials from earlier SD digitization (720×576), as opposed to the more recent and common HD (1920×1080) and the very rare 2K (2560×1440) and 4K (3840×2160).

Besides these, there are two capturing systems: Telecine, which converts image and sound into a 25 FPS video, whatever the original speed; and scanning, with a frame-by-frame image capture to which the sound must be added afterwards, if there is any, to finally adapt it to whatever is required – this system is more transparent with film, as it establishes an aspect ratio of 1:1, but it must be converted into video at the end of the process, whereby the original information is lost. This capturing process, a great help for the dissemination of film materials, involves a radical transformation of the original nature of films that standardizes them and turns them into altered and adapted digital versions, so that they can be seen through devices anywhere in the world.

This project presents us with the challenge of transmitting, while observing these strict standards, the singular nature of each film without betraying its nature, since, bound by the rules, the frame rate, format, aspect ratio or colours, may often be changed automatically.



Methods and resolution of digitization.

Conclusions

With the project having just ended and now that we are ready to launch the platform in the real world, it is legitimate to ask what we have managed to communicate about these heritage works, besides the content (a word very much in vogue), so that they can be studied by researchers or simply viewed by other audiences in digital format through a platform. At a time when many films are appearing on screens for which they were not conceived, what responsibility do archives have in the transmission of cinematic culture, one of the most popular in the last century? How do we share the heritage we conserve with new audiences (which we want to be larger) and through new media (which we think can be more democratic), with all its wealth, its history, and its diversity? These are the questions that point to one of the biggest challenges that film archives will have to face in the coming years.

CURATORIAL

Turin. The Museum, Films and the City

Claudia Gianetto

The National Museum of Cinema has been a partner of the I-Media-Cities project, presenting a selection of 500 photos and 54 films where Turin's environment is recognisable: feature-length and short films for distribution, silent comedies and clips from feature films of the 1910s, as well as *cinema verité* and small-gauge amateur films, and specifically films of the three Great Turin Exhibitions, Luis Boggino's documentaries, military parades, events, and home movies. The result can be best described as multiple views looking at the city and, in turn, the city seen through archive documents from the early twentieth century. The documents include the films presented here, an invitation to future platform viewers, outlining a journey across current and changing views.

There is a special bond between the National Museum of Cinema, its collection, and the city of Turin, one of the birth places of silent movies. Just like other large European cities, Turin experienced a complex growth pattern between the mid nineteenth and early twentieth centuries: in a matter of a few years, the pioneers of the car and of the film industries developed new projects that were to change the face and the life of the city.¹

The path of Turin's car industry was longer and further ranging, while film-making peaked in the 1910s, then conceded to Rome as from 1915. In the pre-war and pre-Hollywood era, Turin's silent movies towered over the Italian market and were seen in cinemas through-

¹ In 1899, Giovanni Agnelli established the Fabbrica Italiana Automobili Torino (FIAT) in Turin. See TOFFETTI, Sergio (1995). *Pastrone a Torino, ovvero l'opera lirica all'epoca dell'automobile*. In: TOFFETTI, Sergio (1995). *Il restauro di "Cabiria"*. Turin: Lindau – NMC, Lindau, p. 10.

out the world. They were often known by their studio names, Itala Film, Società Anonima Ambrosio and Pasquali & Co.² Probably Pas-trone's famous *Cabiria*,³ shot in 1914, and written by the famous Ga-briele D'Annunzio, is the movie that best symbolizes Italian silent movies and the materials in the NMC archives.

Between the establishment of the first studios, the Società Anoni-ma Ambrosio in 1908, and World War I, premises were built, appar-ently unstoppable: modern studios where movies sets could be as-ssembled, film processing laboratories, all have virtually disappeared since.⁴ A sad fate that more or less had a parallel in filmmaking, as fa-cilities and movies were cancelled, even though a number of people stood up in its defence. In the early 1940s, a cultural movement began that led to the birth of centres for the conservation of motion pictures and of the Fédération Internationale des Archives du Film, and Maria Adriana Prolo (1908-1991) started collecting materials to establish 'her' museum, the one she was to direct and manage for 40 years:

Il est né joyeusement d'une idée qui m'est venue le 8 juin 1941. Sur un petit agenda où j'écrivais mes rendez-vous avec les gens que j'avais be-soin de voir pour rédiger mon Histoire du cinéma italien muet on peut encore lire quelque part: "Pensato il Museo del Cinema". C'est tout.⁵

Prolo started off as an historian and archivist specialising in the Italian *Risorgimento* and in Piedmont's literature: her work led her to the main characters of Turin's early twentieth century silent movies. She abandoned her classical history studies and focused on something 'new', that is, the history of filmmaking. When working on her *Storia*

² RONDOLINO, Gianni (1980). *Torino come Hollywood. Capitale del cinema italiano 1896-1915*. Bologna: Cappelli, pp. 12-13; BRUNETTA, Gian Piero (1991). *Cent'anni di cinema italiano*. Bari: Laterza.

³ ALOVISIO, Silvio; BARBERA, Alberto (ed.) (2006). *Cabiria e Cabiria*. Turin / Milan: NMC, Il Castoro.

⁴ FRIEDEMANN, Alberto (2002). *Le case di vetro. Stabilimenti cinematografici e teatri di posa a Torino*. Turin: Associazione FERT.

⁵ PROLO, Maria Adriana (1954). "Naissance d'un Musée". *Cahiers du ciné-ma*, no. 33 (March). Also in: TOFFETTI, Sergio (ed.) (1992). *Le Dragon et l'Alouette. Correspondance 1948-1979*. Turin: Museo Nazionale del Cinema, Lindau.

del cinema muto italiano (“History of Italian silent movies”),⁶ she started collecting remnants of the pre-cinema era, photos and films, preferring documents to actual movies, but also collecting some of the latter. This is how it began and the collection soon grew with rare materials from the golden age of Turin filmmaking. In 1953, the Associazione Culturale Museo del Cinema was established and founding members included pioneer Mario Gromo, a journalist and film expert, Giovanni Pastrone, director and founder of Itala Film, as well as Augusto Ferraris (aka Arrigo Frusta), screenwriter for silent movies and director of Ufficio Soggetti della Società Anonima Ambrosio.

The wealth of films and other material bear witness to the many precious film and non-film bequeaths: the Pastrone collection, as well as the Ambrosio, Frusta, Chomón, and Omegna collections and many others entrusted to Prolo by the main figures of early twentieth century filmmaking.

Right from the onset the Turin films were its strong point of excellence and strength, not in terms of the size of the collection as much as the rarity of the items. Currently the materials constitute one of the most important silent movie collections worldwide. And the movies are only part of a vaster collection (including archive documents, photographs, advertising materials, instruments, journals of the time...) stored at the NMC, and a major re-inventorying, cataloguing and restoration are being completed and included in the book *Tracce. Documenti del cinema muto torinese nelle collezioni del Museo Nazionale del Cinema*.⁷ Some of the materials have been digitized and can currently be accessed through the Museum’s website in the section “Documenti del cinema muto torinese”.⁸

The Museum’s film collection is strongly rooted in its original founding relationship with the city of Turin, and in time it has taken on a multi-faceted organisation: about 30,000 prints — although the

⁶ PROLO, Maria Adriana (1951). *Storia del cinema muto italiano*. Milan: Poligono, vol. I.

⁷ CERESA, Carla; PESENTI CAMPAGNONI, Donata (ed.) (2007). *Tracce. Documenti del cinema muto torinese nelle collezioni del Museo Nazionale del Cinema*. Milan: Museo Nazionale del Cinema / Editrice Il Castoro.

⁸ www2.museocinema.it/collezioni/Muto.aspx.

number is constantly increasing due to acquisitions and restoration — that speak to the history of Italian and international films from the beginning to the present day, from nitrate to digital films. The NMC's collection of silent movies includes M. A. Prolo's items as well as those acquired later from private or foreign archives. Lastly, from the 1990s on, it also holds films that the NMC has restored in cooperation with other institutions.

The fiction films selected for I-Media-Cities offer the chance to visit Turin in the 1910s, diving into the magical creative world of artists, engineers, workers, and of the studios that turned the city of Turin into one of the foremost centres of International filmmaking.

Director and historian Marco Bertozzi identified how to read the imaginary city film landscapes straddling between the nineteenth and twentieth centuries, starting with materials from Itala Film:

The Lumière brothers' Turin was a city appeased in the name of old power dressed up as new, of unchangeable roles, of the values of internationalism that drew energy from walls being pulled down. It also established the prevalence of Western values by exporting them throughout the world, where the city of Itala Film stood out for its modern complexity albeit shyly. Its landscapes were the fault lines between the old city and unchangeable countryside, increasingly sprawling urban areas where industry, railway lines and new public housing estates grew alongside the houses of a middle class attracted by the idea of a detached house and garden. They littered a frayed territory, a major sign of the disappearance of the formal separation between city and countryside, between walled city and deep countryside.⁹

The images from the film *L'esposizione di Torino* of the Turin International world's fair (1911) are a document on the preparation and conclusion of the work required for the two architecturally outstanding buildings that were intended to house the *Esposizione Universale delle Industrie e del Lavoro*. The movie pans at length across the pavilions, which are mirrored in the water of the River Po. These images

⁹ BERTOZZI, Marco. *Cinegrafie di una capitale. L'Italia fra l'urbs e la metropoli*. In: BERTETTO, Paolo; RONDOLINO, Gianni (ed.) (1998). *Cabiria e il suo tempo*. Milan: Editrice Il Castoro, p. 371.

alternate with those of the rejoicing crowds in the streets and squares welcoming the sovereigns come to open the Expo. There were screening rooms in the various pavilions and an international film competition was also held. Louis Lumière was the president of the jury, as if to legitimize cinema as a new art and a promising industry.

Productions in the days of silent movies were often sumptuous reconstructions of past worlds as well as mirroring their time, filming social, economic and historical issues that marked and crossed society through performance and popular enjoyment. Social evils like child labour, in the melodrama *Gli spazzacamini della Val d'Aosta* (1914), take on a depth and an intensity that only movies can give. The silent comedies *L'auto di Robinet* (1911) and *Robinet chauffeur miope* (1914), played by the acrobatic Marcel Fabre, used shops, roads and flights of steps in Valentino Park as film sets to disrupt and destroy. In the movie *Per il babbo* (1913), the tragic story of a child is an excuse to enter the Pasquali & Co. studios and follow the company at work in Valentino Park; in *Cenerentola* (1913), the audition of a hopeful actress becomes the reason to show the studios of Società Anonima Ambrosio in full swing. In *Maciste* (1915), there is a clear relationship between imagination and reality in a meta-film dimension where the city acts as a background to emotional narration: the giant played by Bartolomeo Pagano (no longer the slave he was in *Cabiria*) is a movie star who defends and saves helpless girls, punishing the evil-minded in between shooting scenes on the set.

Here we have also several clips from the delicate *Addio giovinezza* (1918),¹⁰ which had not been seen for a long time. The story develops in Turin around student life, the simple joys of a small world of dressmakers and the appeal high society exerts. Passionate loves and escapism are described against this timeless background, the fleeting season of youth finishing with the end of university, while the war carved a deep furrow in the history of the early twentieth century. Pina Menichelli, a famous silent movie star, plays the main char-

¹⁰ The film was presented by the National Museum of Cinema and the Urban Center Metropolitano, in the context of the event *Proiezioni di Città* (2018), in a central square in the city, with live music by harpist Valeria Delmastro. The I-Media-Cities Project was also present that evening.

acter in *Il padrone delle ferriere* (1919), a very intense movie where Turin pretends to be Paris and the passionate intersects the world of work in unusual images: not just aristocrats and owners but also a rarely shown urban proletariat.

The I-Media-Cities portal offers documentaries and amateur movies from the 1920s and the post-war period with a very different perspective of the better and less known sides of the city: many images were outside the commercial film viewing circuit and offer an original, appealing and intimate view of Turin and its changes. A large number of them are by Luis Bogino, who worked in Turin. He was a photographer, and was recruited by the royal army as such in 1915 to document the movements of troops on the front. Alongside this job he was also active as an amateur filmmaker. In 1964, as well as his photos from World War I, the NMC also purchased the 16 mm films Bogino shot between the late 1920s and the early 1950s. He mainly shot scenes of everyday life in Turin with glimpses of traffic in the streets as well as city events, such as the 1928 Universal Exposition, wheat and flower festivals, and elegant fashion shows. In *Profili di Torino* ("Profiles of Turin"), a montage covering about 30 years, the images retrace the skyline of the hills and the city centre, panning over them and including very appealing aerial shots.

Lastly, let's compare silent movie images side by side with those of anonymous amateur photographers who tell the stories of normal families. This very particular type of production makes up the remaining section of the films selected for I-Media-Cities: most are the non-professional 9.5 mm films, then very common. During the Turin Festival *Archivissima* (June 2018), the National Museum of Cinema, the Association Museo Nazionale del Cinema, and the Archivio Superottimisti prepared a video installation with a montage of silent and amateur or home movies. It was shown on a double screen, with live sound by the chamber group of the National RAI (Italian Radio and Television) Symphony orchestra. The showing took place at the Mole Antonelliana, a monument which is also the symbol of the city and has been the home of the NMC since 2000.¹¹ An exchange of film images that can suggest different points of view on social, urban and

¹¹ This event was another opportunity to present I-Media-Cities.

cultural changes in the area, looking through two very different gazes, one of the dawn of 'official' filmmaking, the other of home movies. It is an opportunity to rethink cinema as a medium, as a language and, specifically, the meaning of archive material and how to reuse it. It means revisiting cinema with two very distant gazes, where the distance itself can become an added value as:

[...] the memory of distant things is here in renewed unaccustomed objects, kept at bay by time and by intervening forgetfulness thus triggering our imagination, especially as things remembered are new but mysteriously ours.¹²

¹² PAVESE, Cesare (1952). *Il mestiere di vivere. Diario 1935-1950*. Turin: Einaudi, p. 257.

FILM COLLECTIONS

Two Collections of Ephemeral City Films from Vienna

Raoul Schmidt, Jakob Zenzmaier

Of the 80 city films which were selected for the I-Media-Cities project, half originate from the collection of the Austrian Film Museum (Österreichisches Filmmuseum), and half from the media wien Film Archive (Filmarchiv der media wien), which is held within the Vienna Municipal and Provincial Archives (Wiener Stadt- und Landesarchiv). When selecting the films, care was taken to offer as broad a survey as possible of city films whereby the two individual collections perfectly complement each other.

Austrian Film Museum

The Austrian Film Museum has, for more than 50 years, preserved an ever-expanding collection of important international works from the history of film, as well as of historical film documents. Traditionally there has been an emphasis not only on artists' films, avant-garde, experimental and independent film, but also on so-called *ephemeral* film forms such as amateur film, actualities, and other factual film formats that emphasize the importance of film as a means of documenting reality. By February 2019 the collection had grown to a size of 30,184 works.

From the 1970s onwards, Austrian documentaries, newsreels, and industrial films within the collection have been identified, contextualized and interpreted by historians. Over the course of several joint-projects¹ between the Film Museum and the Ludwig Boltz-

¹ These include: *Film.Stadt.Wien. A Transdisciplinary Exploration of Vienna as a Cinematic City* (2009-2012). <http://stadtfilm-wien.at/>; and *Ephemeral Films: National Socialism in Austria* (2011-2016). <http://efilms.ushmm.org>.

mann Institute for History and Society (Ludwig Boltzmann Institut für Geschichte und Gesellschaft), the research and interpretation of the different modes of filmic representation of cities and of Vienna in particular has become a focus of research. Around 390 films existing in various analogue formats have a specific connection to Vienna. However, large parts of this very diverse collection were restricted in terms of their availability for research on conservation grounds. Through the I-Media-Cities project a significant number of these films were chosen based on curatorial selection criteria and on the availability of high resolution digital copies.

The selection emphasized a significant chapter in Austrian political history between the end of the monarchy and the end of the Second World War. An example of this is the foundation of the First Republic in 1918, as well as the era of Red Vienna (1919-1934), with its emphasis on urban planning and social housing. Also featured are the years of Austro Fascism (1934-1938), its political leaders and the paramilitary organizations of that particular dictatorship. Another focus is filmic records of the time of National Socialism (1938-1945), with an emphasis on the Nazi takeover in Austria and the so-called *Anschluss* of Austria to the German Reich, including personal observations recorded by various amateur filmmakers. Also represented are filmic records of the immediate post-war period up to 1980, in particular of the time of reconstruction, and of the development of Vienna's urban infrastructure, everyday life and leisure. The Film Museum's focus on so-called 'ephemeral films' was already evident in 1984 during the symposium *Die Bedeutung des nicht-industriellen Films in unserem kulturellen Erbe* ("The Significance of the Non-Industrial Film in our Cultural Heritage").² This conference, organized by the Film Museum during the FIAF Congress of that year, fostered a discussion on the preservation of these marginal film forms and encouraged FIAF archives to focus on non-industrial film genres and amateur film. Around 3,700 amateur films have so far been catalogued at the Film Museum, and are preserved and studied accord-

² See CANEPPELE, Paolo; SCHMIDT, Raoul (2014). "Die Bedeutung des nicht-industriellen Films in unserem kulturellen Erbe. Zum FIAF-Kongress 1984 in Wien". In: HORWATH, Alexander (ed.). *Das sichtbare Kino*. Vienna: SYNEMA.

ing to methodological principles. The catalogue includes estates and existing collections, such as the corporate archive of the Club of Film Amateurs Austria (das Archiv der Kinoamateure Österreichs), as well as amateur films by individuals, organizations and associations such as the Freie Österreichische Jugend (Free Austrian Youth). Parts of these various and varied collections were chosen for the I-Media-Cities project. The amateur films of Alfred Jilka provide one example, where he recorded the scenes of the day in May 1955 on which the Austrian Staatsvertrag (the Austrian State Treaty) was signed at Belvedere Castle. Another example would be the amateur recordings made by Max Bandera who, during the Anschluss in 1938, pointed his camera towards military formations as well as onto the city itself. And then there are the films of Friedrich Apfelthaler and his son Herbert who, for half a century from the mid 1930s onwards, were involved in Vienna's amateur film scene. In addition to those films that have a clear and recorded provenance are works where either the creator is unknown or the authorship ambiguous. A prominent example of this would be *Amateuraufnahmen Wien 1938* ("Amateur Shots of Vienna 1938"), a film that records various street scenes between the Nazi takeover of Vienna and the referendum on the Anschluss in early April 1938.

The Film Museum continues to actively pursue the acquisition, as well as the interpretation and dissemination of city-related amateur films and home movies. From 2014 to 2017 in *wien bewegt!* and from 2017 to the present in *am rand: die Stadt*, the collecting of films, their public display and subsequent engagement with the wider public provide the focus. The selection of films from the Film Museum collection which are now available on the I-Media-Cities platform, together with the selection from the media wien Film Archive, comprise a core collection of easily-accessible ephemeral city films from Vienna.

The media wien Film Archive

The media wien Film Archive, which is held at the Vienna Municipal and Provincial Archives (Wiener Stadt- und Landesarchiv), contains around 900 individual film works. Discounting duplicate copies, multi-

language versions and works produced on videotape, a collection numbering approximately 530 Vienna-centric films were encountered. This assemblage encompasses the years 1908 to 1996,³ though the films most relevant to the project were produced predominantly during the 1950s and 1960s.

One notable feature of this collection is that the majority of films are so-called sponsored films.⁴ By definition, this means that they were produced for a specific, concrete purpose and were distributed, but only with a limited release. Commissioned by the Vienna municipal government with the aim of informing the audience about news and developments in the city's administration, these films, purpose-made for the electorate, were mostly programmed as preshows in Viennese cinemas. Recurring themes include the city's achievements in the areas of urban planning, social housing, traffic regulation and the welfare and health system, as well as portraits of individual institutions or professions associated with the city government and administration.

The institutional history of the media wien Film Archive stretches back to the times of the First Republic. In 1924, the Lichtbildstelle des Unterrichtsministeriums⁵ (later renamed Österreichischer Lichtbild- und Filmdienst des Bundesministeriums für Unterricht – the Austrian Photographic and Film Commission of the Ministry for Education) was established with the purpose of producing and collecting films and photographic slideshows suitable for use in educational settings, and to provide schools and vocational colleges with those materials. As a consequence of the Anschluss in 1938 a significant restructuring occurred. The institute was renamed Landesbildstelle Ostmark (Municipal Film and Photography Service of Ostmark) and its remit changed to include the photographic and filmic documentation of the activities and accomplishments of the municipi-

³ Dr. Luegers Geburtstag in Lovrano (1908). WStLA, media wien Film Archive, 026B; *Ein Katzensprung* (1996). WStLA, media wien Film Archive, 548. Until 2005, film was used for some video productions (e.g., time-lapse photography). *(Es lebe der Zentralfriedhof)* (2005). WStLA, media wien Film Archive, 548).

⁴ PRELINGER, Rick (2006). *The Field Guide to Sponsored Films*. San Francisco: National Film Preservation Foundation.

⁵ www.geschichtewiki.wien.gv.at/Landesbildstelle (Consulted: 7-2-2019).

pal government.⁶ In 1940, the institution was renamed again (Landesbildstelle Wien-Niederdonau) and its operations transferred from the federal to the local government.⁷ After 1945 the name changed once more, this time to Landesbildstelle.⁸ This was integrated into the cultural affairs department. In 2000, it was ultimately branded media wien⁹ and, from 2002, its scope extended to include the operation of a centralized film and video archive for the city government.¹⁰

In 2007 the department was dissolved, prompting the transfer of the photographic collection and, in 2011, the film and video collection to the Wiener Stadt- und Landesarchiv¹¹ (Vienna Municipal and Provincial Archives). That same year a project was launched in cooperation with the Verein für Geschichte der Stadt Wien (The Historical Society of Vienna) and the Ludwig Boltzmann Institute for History and Society to make the media wien Film Archive accessible.

Between 2011 and 2017 a total of 400 of the most historically relevant films were catalogued in-depth and published, in excerpts, via the online platform mediawien-film.at.¹² Although a random selection of films had been transferred to video to broadcast standard as far back as the 1980s, this project allowed for the digital transfer of films according to contemporary technical standards. Currently, around 99% of the films are available in digital format, most of them as digital scans in the DPX file format and in full HD resolution and stored for long term preservation on a dedicated file server of the Vienna city government (Stadt Wien).¹³ The Vienna Municipal and

⁶ Die Gemeinde-Verwaltung des Reichsgaues Wien 1940-1945, pp. 92-94.

⁷ Die Gemeindeverwaltung des Reichsgaues Wien 1939, p. 193.

⁸ After the end of the Second World War, the Landesbildstelle Wien-Niederdonau became the Landesbildstelle for Vienna, Lower Austria and Burgenland. Lower Austria demerged in 1956, and Burgenland followed in 1977. In 1979 the institution moved from Municipal Department 7 (MA7) to MA 13, which was newly created that same year.

⁹ City of Vienna Annual Report 2000, p. 125.

¹⁰ City of Vienna Annual Report 2002, p. 118.

¹¹ City of Vienna Annual Report 2007, p. 19; City of Vienna Science Report 2012, p. 100.

¹² <http://mediawien-film.at>.

¹³ Municipal Department 01 – Vienna Digital.

Provincial Archives hold the original materials, including films on legacy video formats such as U-matic, Betacam-SP and Digital Betacam and digital access copies in the compressed QuickTime ProRes 422 HQ format.

For the I-Media-Cities project a representative selection of material was made with the aims of both illustrating its breadth and complementing the Film Museum component. The 40 films selected include early cinema actualities,¹⁴ industrial films from the Red Vienna period,¹⁵ Austro Fascist¹⁶ and Nazi¹⁷ propaganda, films of post-war reconstruction¹⁸ and the subsequent Fordist restructure and extension of the city,¹⁹ tourism films,²⁰ portraits of professions associated with the city government,²¹ and advertisements for various leisure activities in Vienna.²²

¹⁴ *Gänsehäufel* (1911) (WStLA, media wien Film Archive, 145).

¹⁵ *Aus einer Werkzeugmaschinenfabrik* (1922) (WStLA, media wien Film Archive, 074).

¹⁶ *Österreich hört seine Führer* (1934) (WStLA, media wien Film Archive, 022).

¹⁷ *Bürgermeister Dr. Ing. Hermann Neubacher spricht zur Schuljugend Wiens*, (1939) (WStLA, media wien Film Archive, 008).

¹⁸ *Brückenbauer* (1946) (WStLA, media wien Film Archive, 036).

¹⁹ *Soziales Bauen in Wien* (1959) (Filmdokument VI) (WStLA, media wien Film Archive, 133B1-2).

²⁰ *Kommt nach Wien* (1956) (WStLA, media wien Film Archive, 212A-C).

²¹ *Ein Tag mit: Othmar Weihnacht. Plakatanschläger in Wien* (1970) (WStLA, media wien Film Archive, 328D).

²² *Freizeit in Wien* (1981) (WStLA, media wien Film Archive, 039).

RE-USE

How Might we Unlock and (Re-)Use what the European Film Archives Hold?

Thomas C. Christensen

While much of European film heritage still needs to be digitized to allow any form of access, I-Media-Cities explores how this heritage can be accessed and processed by different users (academics, archives, and general audiences) to create added value in the form of metadata and the application of automated digital tools. The project addresses not only how the films themselves can be analysed for content, but also applies tools (clip analysis and auto-content detection), which can bring similarities and differences in films out in quantifiable analyses, to support and bring new insights compared to classical human qualitative analyses.

The European film archives hold an invaluable trove of moving images from the past 100 years. These collections hold not only classical theatrical films, but a wide range of audio-visual recordings of human exploration, daily life, important events, and virtually any conceivable aspect of human life. While there is not always coherence in digitization efforts, much of this cultural heritage has been or is being digitized. These efforts are typically driven by national priorities, but their international relevance can be supported by a pan-European effort such as I-Media-Cities.

There are immaterial and material obstacles to the films not being made as widely available and useful as possible. Copyright is an obstacle, especially for films that hold no direct commercial value, since the cost of digitizing and making them available is often higher than any potential sales value. Many films cannot be accessed and studied, except locally at the holding archive. The Forward project supported efforts to create a practical approach to film heritage, following up on the EU Orphan Works Directive. I-Media-Cities explores the educa-

tional and research exception in European copyright, by providing a shared access point between academics and film archives, where films can be individually accessed using the research exception, without the need for researchers to travel physically to the collection-holding archive. I-Media-Cities also brings together film archives, academics and technical partners to investigate how one might approach new ways of accessing and applying digital tools to classical and innovative uses of the film heritage held in film archives across Europe. An academic entry point allowing individual academic research into films under the in situ exception, is of great value to the archives holding collections and to academics wishing to access content held in geographically widespread collections. Even this simple screening room service is not available elsewhere in a coordinated effort today. The back-end tools, with shot segmentation and auto-recognition of image elements, support not only current quantitative analyses using average shot length, but also greatly reduce the efforts required to index content. Even though the autodetection tool is not 100% accurate, it greatly facilitates the work of researchers and indexers with its suggested keywords. In developing the tools, the technical partners have been exposed to historical content, which behaves quite differently compared with the new colour films usually addressed.

Different user groups have different needs of and approaches to archival materials, which unfortunately often leads to historical online collections being useful only to a certain extent for most users. Since there is no one-size-fits-all, two different strands of thinking tend to dominate. Public portals often tend to be dominated by a thinking that curates highlights, a representative approach. Academic collection portals aim to be more exhaustive and comprehensive, which typically sacrifices the general appetite for enjoyment of the content. I-Media-Cities has adopted a dual approach, by having an internal/professional back-end and a public front-end for general audiences. Most attention has gone into developing automated technical tools to facilitate the back-end users, since this is where the need for technological innovation is greatest. The front-end mainly requires editorial effort to ensure that relevant content is presented in an attractive and logical way. For a front-end to be and remain relevant and useful, ongoing editorial and promotional effort is essential.

This can be very difficult to maintain beyond the lifespan of project funding. Focusing on back-end tools and innovation for professional user groups has been very useful in a learning process for the Consortium, though it has sacrificed the public appeal to general users.

The actual audio-visual content itself is naturally essential to the usability of the platform. While the content selection for I-Media-Cities has been relatively open, most of the content relates directly to the nine partner cities. Other guiding principles have been architecture, daily life, and means of transport. Much of the content is from the period 1900-1950, not least to limit the impact of copyright. As there is also a focus on geographically located documentary content, the main access is by geotagging and keywords.

The keyword approach has been strongly assisted by automated content identification, which delivers a multitude of suggested keywords. While the results are sometimes messy, as described elsewhere, the approach means that researchers will get many more hits than a manual tagging effort could ever deliver. So what the tool may lack in precision, it does gain in its usefulness by automated application to large numbers of complete films.

Geotagging films is still a manual process, even if the I-Media-Cities platform has been developed to segment the films, so geotagging individual sequences is greatly facilitated. Especially for audiences with a local interest there is an immediate pleasure in getting access to historical images from a place with a personal connection. Maps invite users to explore and browse. No doubt the map functionality in I-Media-Cities will be popular with general users of the public platform, as an enjoyable way to see well known locations. For tourist applications there are exciting possibilities in being able to show past views of current locations, and augmented reality is also a future development, which has not yet come to full fruition, despite being long talked about in developers' circles.

There is still work to be done in applying methodology that connects films across the archives and different cities. These connections are exactly what the platform is designed to facilitate, for academics and researchers to create. Imagine, for instance, that one could explore how cities change during wartime. How did cities in nations that were at war in 1939-1945 look before, during, and after

the war? Were there similarities across nations? Did cities in countries not at war also put blinds on their windows? How did war or no war affect transportation? And how did a lack of fuel, for example, change the cityscapes? Or a lack of certain foods? Many explorative research activities can be imagined, and facilitated by the platform and access to films across the rich collections.

There are many challenges to creating coherence with films from different locations, archive types and collection focuses. I-Media-Cities points to a direction that facilitates a multitude of potential uses and users, by creating an internal sandbox of different film types and images, and setting researchers, technology partners and archivists loose on the content; the purpose being to let the different approaches enrich the films and create a space for development and exploration.

I-Media-Cities has been quite ambitious in its goals to address a number of different user cases and approaches to film analysis, which over-arch not only different user groups, but different academic fields and a multitude of cinematographic genres. The broad-based approach involving film archives, academics and technology professionals has been quite ambitious and innovative in its foundation, even if the concrete tools for automated film analysis necessarily are relatively simple in their specific implementation. In a sense, these tools are testaments to both the challenges of working with diverse and often damaged films, as well as pointers to the great potential in applying artificial intelligence to audio-visual heritage films.

Where many digitization projects aim to deliver on volume of content, and getting the films to a general audience, I-Media-Cities has also taken a more holistic, or “machine room”-centric approach. The aim has thus been less to unlock heritage just by bringing it online, and more to explore how different professional approaches and machine reading and analysis might enrich the content, and make not just the films, but analyses of the filmic structures accessible for more professional research and study. I-Media-Cities has shown that there is great potential for the use of artificial intelligence and quantitative analysis of audio-visual material. In its bringing together a wider range of professionals from different fields to define the field of innovative exploration, the project has furthermore attempted to unlock new conceptual ways of addressing historical films.

LEGACY

Legacy and Heritage: Connecting Past and Present

Gian Luca Farinelli

Among the treasures left behind by Renzo Renzi's legacy, the one I consider to be more precious than all others is the fact that he was a visionary; that, and his stubbornness in overseeing the realisation of innovative and often maverick projects. He envisioned the Cineteca as it would then become: "The palace of sounds and images".

Even back in the early 1970s, in describing the "palace" he imagined its consultation rooms and its laboratories for young people, where they would handle film itself ("film is to be dismembered, reels unwound, thrown into baskets, where they meet an appropriate and demythologizing end". Indeed, the Cineteca is preservation and restoration, but also — and most importantly — it is the taking of ownership of film and images!

And that's not all. Even though born elsewhere, Renzo Renzi developed an emotional attachment to the city of Bologna. In the early 1970s he strongly supported, as part of the work carried out by the Film Commission, the development of collections dedicated to local history (books, photographs, documentaries and films shot in Bologna).

Thanks to this legacy, the Cineteca, in addition to the preservation and promotion of cinematographic heritage, has the task of collecting and making accessible visual heritage (still and moving) related to the city. Renzi strongly believed in the study and research of sources as a means of creating awareness, and was convinced that historical fact contains answers to the present:

The palace must become a temple of critical consciousness, where one learns not to be so easily enchanted (as happened to us). The watchful eye, but also the ear. And not only for cinema, but also new forms of media such as video-tapes, etc. (*La sala buia: diario di un disamore*, 1978).

It wasn't by chance that Renzi chose to donate his personal archives and collections, including thousands of photographs of Bologna, and in so doing created the initial nucleus of an institution that is open to everyone, a place dedicated to study and research. Over the last fifty years, the Cineteca has collected more than two million photographs (dating from 1870 to 2000) and thousands of hours of footage depicting the city.

With such a legacy, we could not have but participated in a project such as I-Media-Cities, which focuses on new ways of studying and researching the history and urban development of European cities.

In this initial phase, through the project portal, Cineteca has shared more than 8,000 photographs (mostly unpublished) and almost two hundred hours of footage of Bologna, dating from 1900 to the 1990s.

Given the wealth of preserved heritage available, identifying the most representative images from each decade wasn't easy, but without doubt we were greatly helped by the research work carried out as part of the *Bologna Photographed* exhibition, an experience that allowed us to journey through three centuries of our city's history through the medium of photography.

Choosing to publish or exhibit images from the past forces us to undertake a process of analysis and reconstruction of the historical context in which the images were produced. And it is precisely this act that we must teach to others. Unfortunately today, making sources available is not sufficient in itself, as (ever increasingly distracted) visitors must be accompanied and made to pause for the time required to reflect: how, when and why was this event recorded?

Never before have we had such access to sources, documents and images from the past. We therefore find ourselves in an incredibly privileged position compared to previous generations. Yet, paradoxically, now as never before we are experiencing a loss of identity. We are completely unaware of where we come from and the steps, in social, political and cultural terms, that brought us to where we now stand. This is the most serious problem facing us today.

There is an urgent necessity for us to unearth and reclaim our origins, those roots that have nourished us, starting out from local history. However, that's no easy feat in an era when those who carry out

research through the internet are simply considered “users”, and communicators teach us that only information packaged in captivating imagery is visible: the shorter a video clip, the more chance it has of capturing the attention of the distracted user.

That’s why a platform such as I-Media-Cities, which allows the time necessary for analysis and research, means going against the grain (something our founding father would have appreciated!).

Through the new I-Media-Cities platform, archivists can choose from selected research pathways, but what is interesting is the fact that they can receive replies and annotations from those who access the portal, and what is even more interesting is that their research can be extended to include collections from the archives of different European cities.

Thanks to the network of European film archives and to continually growing partnerships, we have now developed methods and means that allow us to share collections and lay the foundations for increasingly far-reaching projects, taking us in the direction of a genuine Europe-wide archive portal.

The transnational nature of heritage is one of the strengths of the I-Media-Cities project. This is the result of the participation of eight other European archives, in conjunction with universities and research institutes that contribute to the analysis and contextualisation of the documentation. Thanks to this cooperation between European partners, some common themes have emerged, such as the expansion of cities, the fate of city suburbs, the erosion of countryside life, the evolution of industrial and commercial activities, and the development of means of communication.

The portal’s advanced research tools (developed by Cineca and our colleagues at Fraunhofer), will enhance analysis activities and — through the comparative study of results — new scenarios will emerge giving life to new knowledge.

A Look at Some of the Selected Material

Thanks to photographic collections it has been possible to reconstruct the most important events that transformed the city’s urban structure. The portal contains all the phases of the demolition of the city’s medi-

eval walls, which began — amidst controversy — in January 1902. Those who opposed the demolition included Alfonso Rubbiani and Giosuè Carducci, however, the will of the municipal administration prevailed, giving work to almost five hundred unemployed citizens.

Other wonderful images from the beginning of the century depict the transformation of Piazza Maggiore from marketplace to seat of secular and religious ceremonies, the official visit of King Vittorio Emanuele III, and moving photographs of a Christmas lunch for chimney sweeps in Sala Borsa in December 1907.

The historic Camera photography studio, active from the end of the nineteenth century until 1986, is an important source in the reconstruction of the main historical events of the city, in particular with regard to the decades spanning 1920 to 1940.

Likewise, photojournalists Aldo Ferrari and Nino Comaschi are two of the main interpreters of the post-World War II years, whose work consists of far more than simply reporting the news; their photographs, in large part unpublished, document everyday life in Bologna.

In the footage we have chosen to make available we have obviously included the oldest documents in our collection: in addition to well-known footage of the city from 1911, the portal contains the *Primo giro ciclistico d'Italia*, depicting the arrival of a race stage of the very first Giro d'Italia bicycle race into a crowded Bologna in 1909.

Those were the years in which the use of cinematographic apparatus spread throughout the city, and not by chance either, as photography could never replicate the movement and speed of those days, as highlighted by the aforementioned cycling race. Another little gem, which we are presenting for the first time in this context, is footage from the late 1920s of a *Velocino* race — a sort of bicycle with the saddle positioned on the rear wheel and backwards facing handlebars, invented in 1928 by Bolognese engineer Ernesto Pettazzoni. In addition to unpublished glimpses of the city, some still to be identified, part of the fascination of the footage lies in the orange colouration of the film (a common tinting technique used in those years). As regards the process of identifying streets and monuments and the precise historical context of material, our collaboration with the IBC (Istituto per i Beni Culturali) will be invaluable.

It is no coincidence that many European collections possess similar material; that is, related to modern means of transportation. From this moment in time, there is a focus on the evolution of movement and traffic, and at the same time the transformation of urban structures.

Moving forward in time, we find images that present us with unpublished views of well-known facts, such as Mussolini's visit to Bologna in 1926 (of which ample photographic testimony exists). There is also no shortage of Italian Communist Party propaganda from the post-war period, an era in which the party was engaged in the campaign for nuclear disarmament and strongly opposed the placement of Polaris missiles. These are the years of the Cold War and the nightmare of atomic weapons.

The selection of material has not failed to highlight and document national politics, including the campaign for greater autonomy of local authorities, the condemnation of building speculation, the battle against the high cost of living, the need for scholastic reforms and, of course, the struggle against Christian Democratic Party censorship.

Of great interest is the footage shot by the Police Headquarters of Bologna, a unique witness to the years of terrorism. One example: on 9 August 1974, the funerals of the victims of the Italicus train massacre were held in Bologna. Piazza Maggiore is overflowing. The funeral hearses arrive at the Basilica of San Petronio. Enrico Berlinguer and Amintore Fanfani are among those present. The President of the Republic, Giovanni Leone, arrives by aeroplane.

Also worth mentioning is footage shot by Giorgio Manoni for a film that ultimately, during the editing process, would never be completed. It depicts the traumatic days that followed the bombing of Bologna train station on 2 August 1980: the packed main square shot from a window of the municipal buildings, the crowd applauding, a man raising his fist. Renato Zangheri giving a speech in front of the church; next to him, President Sandro Pertini. Emotional faces in the crowd.

There are also three hours of unpublished footage of the construction site of the Kenzo Towers, depicting all the phases of construction and the development of the "Trade Fair" area of Bologna, from 1980

to 1982. A unique document for anyone carrying out research in the field of architecture or urban planning.

Expectations

Given the potential of the project, we expect and hope that I-Media-Cities will be a starting point for further experimentation in a variety of directions. It certainly has the potential to be an important base from which new educational initiatives aimed at schools and young people can be developed.

However, as already mentioned, the expectation is that this project will give birth to a future portal of European archives, conceived as an instrument of knowledge and new awareness, also political in nature, precisely because its roots are immersed in the concreteness of the places themselves (cities) and their histories, while its offshoots (study and research) should lead to new ways of seeing and understanding Europe.

TECHNOLOGY, TOOLS AND APPLICATIONS

PLATFORM AND PROJECT-SPECIFIC DEVELOPMENTS

I-Media-Cities: A Research Framework for Moving Images

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Platform Design

For the design and implementation of the I-Media-Cities (IMC) platform, an Agile-development methodology has been adopted.¹ The Agile methodology implies an iterative approach, with several phases of development: check, correction, check and development.

At the start of the project, all partners were asked to list their ultimate visions itemizing them as user stories, that is, textual descriptions of what they wanted the system to be able to achieve and which functionalities were most desired for the entire platform. Using a consolidated list of 135 user stories, the technical partners (Cineca and Fraunhofer) together with the coordinator determined the functionalities (*is it useful for the project?*) of every contribution and their feasibility (*is it achievable?*). Some stories were deemed totally or partially non-feasible in terms of time and effort, which meant that these would not be developed within the project.

Some 57 user stories were considered immediately functional as well as feasible, out of 135, and were used to construct close to 60 use cases.

As the user stories indicated, there were many levels of information that the IMC platform had to show. The necessity of a geographic point of access to the information had to match with the linearity

¹ COHEN, D. et al. (2004). "An Introduction to Agile methods". In: *Advances in Computers*, vol. 62, no. 66, pp. 1-66. doi:10.1016/S0065-2458(03)62001-2.

of the audio-visual language, such as in a timeline. To respect the needs of the IMC portal user, before and during the development of the public portal and researchers' portal, a living document was established to study the number and nature of visual interfaces that can show information about digital cultural heritage on the web in four dimensions (the three spatial dimensions, plus time), as well as web based annotation and metadatation tools.

The main functions that the IMC public portal and researchers' interface provides to users can be summarized as:

- Data visualization in space and time for video content, meaning the possibility of locating the audio-visual content on a map, and in time.
- The possibility of selecting a region, or a time lapse to redirect specific searches.
- The possibility for end-users to tag, to identify unidentified locations, to bring in memories and the social history of the place, to comment and share content in the most common social network.
- The possibility for the system to define video sequences (automatic shot detection) and recognize details of interest (camera movements, object detection, building recognition) in shots and in photos.
- The possibility for researchers (private environment with login and password) to study, browse and annotate the content and to correct the automatic shot detection.

The platform is based on a service-oriented architecture and uses a multi-layered design composed of three main levels.² The top-most level of the application is the presentation layer (or user interface layer), including interface elements and components that allow users to interact with the underlying system and resources. The second level is the business layer, responsible for the coordination of the

² CARACENI, S. et al. (2017). "I-Media-Cities, a searchable platform on moving images with automatic and manual annotations". In: *23rd International Conference on Virtual System and Multimedia*, VSMM. Dublin: IEEE. doi:10.1109/VSMM.2017.8346274.

application, the execution of commands and data processing. It includes the ingestion, annotation and accounting functionalities as well as the automatic analysis pipeline. The lowest level is the data access layer, responsible for data persistence mechanisms as well as the definition of the domain models, and includes the metadata repository and the content storage. Here the information is stored and retrieved from both database and file system. The core of the platform consists of a set of REST APIs described by adopting Swagger specifications (<https://swagger.io>) and implemented with the Python programming language.

Metadata Model and Search Tool

A graph database has been adopted because I-Media-Cities data model is, in fact, a highly connected graph in which a target node may have several annotations which, in turn, may have one or more annotations attached. Annotations may also refer to segments/shots and all together represent the enriched information and ‘added value’ of the digital content on the IMC platform. All of this motivated the choice to adopt a graph database: a storage system that uses a graph structure (nodes and arcs) to represent and store data in a semantic way.

The search tool in the IMC user interface, using information stored in a graph database, allows users to retrieve content through metadata: coming from different sources (original archive database or entered manually or automatically in IMC); annotated at different levels of content detail (the whole content or single segments/shots).

A filter menu allows the user to refine the search by: Keywords (by title, description and keywords, and by place and time); Content Type (videos, images); Terms annotated using IMC controlled vocabulary, where it is possible to enter the term or navigate the classification tree; City; Production Date; Right Status. It allows users to visualize the results in terms of content items, also displaying the annotations at segment level.

Upload and Analysis Pipeline

Beside the IMC front-end for the public, the IMC platform provides API and user interfaces used by the IMC partners to upload their contents. After the upload and a first data-integrity check, the platform performs a series of automated tasks on the given content, such as:

1. Content transcoding: to ensure all data is in an homogeneous format, suitable for subsequent analysis and online streaming.
2. Quality measurement.
3. Automatic segmentation of movies into shots and camera motion estimation: creating a sort of reverse-engineered movie storyboard, and providing users the possibility of searching for movie fragments and annotating them individually.
4. Extraction of thumbnails from movies and movie shots.
5. Object recognition: specialized AI algorithms are employed to analyze each movie frame, and the results are filtered by reliability, aggregated by shot, and stored as ‘automatic annotation’.
6. Building recognition: employing a custom AI algorithm specifically for buildings.

The algorithms implementing steps 2 to 6 were provided by Fraunhofer, while Cineca provided the orchestration of the various steps, dedicated hardware to run the whole pipeline, the storage to collect movies and images, and the analysis results from ingestion that include the mapping and transformation of the automatic tags from low to high level in the data model.

User Experience and Visual Interface

Following the Agile methodology, the public and private portal provides researchers and citizens with interactive visualization solutions displaying the digital content in different ways depending on the users’ choices (e.g., on the map of a city, on a timeline, or on a ‘time-lined map’ that changes with the changing of the periods).

In order to foster the user experience, a precise co-design workflow has been followed for two selected and strategic use cases: man-

ual annotation, and video player tools, which have to fulfill many complex requirements from the researchers' point of view.³

The co-designed activity foresaw the following steps:

- *Definition of the problem* — quantitative and qualitative analysis of users.
- *User persona building* — definition of hypothetical users of the system.
- *Information architecture definition* — analysis of each user story in terms of the steps needed to reach them (definition of the Use Case), in order to identify all the functional elements that the system has to present.
- *Wireframe* and interaction prototypes creation (User Experience) — exploring the different design approaches through paper drawings (Lo-Fi) and their adaptation towards a shared solution (wireframing).

Main Functionalities

The interface of the IMC platform presents the following functionalities available to users, researchers and archivists, as well as to the general public:

- Catalogue page, with several filters for searching and different ways of displaying results (Grid view; List view; Map, and Timeline view). Using Map view a user can visualize on the map the markers for each geo-localized annotation in an aggregate form and in a dynamic way (zoom-in/zoom-out). Under the map a grid with geotagged videos is displayed.
- Content Item page, including for each single Content:
 - video player, with several tools for displaying videos and images;
 - list of the automatic shot segmentation;
 - viewing all descriptive metadata, both at the level of the entire content and at the level of the individual shots: information

³ KRUG, S. (2014). *Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability*. New Riders.

from archives, annotations manually added by researchers and the public, automatic tags;

– map displaying geo-localized annotations.

- Manual Annotations tool.
- Shot Revision tool, available only for authorized users: possibility to edit (join, delete, move) the automatic cuts between the shots.

Analysis Results

The automatic and manual activity of content enrichment can be considered as one of the relevant outputs of the project. With a total of 9,472 items processed up to now and a computing time of 14,208 hours, the process has added to the content 190,862 automatic tags; 52,537 manual annotations, and 3,522 free texts. The ten most manually annotated terms are: public (2,813 times); outdoor (2,673); straight on angle (1,654); long shot (LS) (1,232); city center (1,229); leisure (802); square (707); suburb (705); parade (685), and street (647). None of these tags is among the ten automatic most annotated terms, which are: single person (165,983); car (4,436); horse (3,086); tie (2,263); bicycle (1,766); chair (1,563); motorcycle (889); bus, omnibus (795); truck/lorry (770), and bird (769). “Car”, the manually most annotated tag in this group, registers 385 manual annotations.

From State of the Art Virtual Galleries to a First Implementation of the IMC Virtual Collection

Archives and researchers can publish search results in a 3D Web online modular virtual environment, simulating an exhibition.

The development of the Virtual Collection Creator was based on a state of the art document on virtual 3D interactive visualization environments.

The individual dashboard for researchers and archives enables the sorting and management of search results in order to transform them into the items of a personalized exhibition. Depending on the number of items selected, a cross-shaped modular 3D environment is automatically created and set up with all the selected contents.

The virtual environment is characterized by a neutral and abstract look, with just some pieces of furniture in order to give the perception of its proportions. The movement is bound to numbered circles on the floor, in order to give the visitor the possibility of freely roaming in front of the elements of the collection, resuming at any time the curator's original presentation order without too much trouble. Some metadata related to each content are visible.

The development of the Virtual Collection Creator application is based on an Open Source pipeline using Blender for the creation of the 3D models and Blend4Web framework to export and manage the content in a WebGL-based 3D visualization. The modular 3D environment is created at runtime in Blender through a Python script using input data in .JSON format coming from the researcher's or archive's individual dashboard. Once the 3D models are created, they are exported by Blend4Web addon as a pair of .JSON and .BIN format files. 3D Web visualization and application interactions are developed using Blend4Web's JavaScript libraries.

Conclusions

From a technical perspective, the IMC project aims at building an effective framework for scholars, allowing access to and the enrichment of digital cultural resources by means of tools enabling new research and study and, hopefully, leading to new questions being answered. The IMC platform has been designed as a flexible framework, and this is a mandatory feature for a digital cultural ecosystem.

A digital ecosystem can be defined as a distributed, adaptive, open socio-technical system with properties of self-organization, scalability, and sustainability inspired by natural ecosystems. We think that this paradigm can be effectively applied to IMC. DCEs (digital cultural ecosystems) can facilitate and foster the processes of the democratization and dissemination of knowledge.

These systems can bring cultural content to different audiences in innovative ways and include the public in the process of content enrichment. According to the Horizon 2020 ViMM project (www.vimm.eu/) in its draft manifesto, with respect to digital cultural herit-

age, the general public should be more than consumers.⁴ The IMC project, with its huge results coming from the automatic process, increases the possibility of searching and exploiting a large collection of audio-visual content and, at the same time, by involving the general public not only as users of the platform but as active contributors, tagging and further enriching the digital content delivered by the platform, opens up possibilities for active participation and user-oriented perspectives.

⁴ APOLLONIO, F. I. et al. (2017). "Sacher: Smart architecture for cultural heritage in Emilia Romagna". In: GRANA C.; BARALDI L. (eds.). *Digital Libraries and Archives*. Modena: Springer International Publishing, pp. 142-156; PANEVA-MARINOVA, D. et al. (2017). "Approach for analysis and improved usage of digital cultural assets for learning purposes". *Cybernetics and Information Technologies*, vol. 17, no. 3, pp. 140-151. doi:10.1515/cait-2017-0035.

METADATA

The I-Media-Cities Data Model: A Hybrid Approach

Davy Hanegreefs, Julia Welter

The basis for being able to make films and photos searchable and, more importantly, allowing them to be annotated online, was for IMC to create one database that would be able to store filmographic, user-generated as well as computer-generated metadata.

One of the main challenges of modeling such a database for IMC, therefore, was that it needed to bring together and store different types of metadata from different sources, namely from archives, researchers, and the general public on the one hand, and metadata generated by automatic video analysis tools on the other. The data model therefore had to be designed to bring the data from these different sources (humans and machines) together, make the information interoperable and the contributors trackable. Also, the fact that metadata from these different sources would be created and added to the database at different times, made it necessary to keep track of the source of the respective information.

The project designed an approach where the metadata enrichment process foresaw the upload of filmographic and descriptive metadata provided by the partner archives belonging to the digitized films and photos used for the project. The project's research partners would then start annotating the objects focusing on their specific research themes, simultaneously or at a later stage the general public would be able to tag and/or geotag the films and photos.

To account for the above-mentioned needs, the metadata schema was designed from several interconnected components meeting the requirements of the various metadata sources. First, the model allows the consolidation of the data coming from the various heterogeneous source databases of the IMC partner archives into a common format. Second, it enables subsequent data enrichment both by

automatic annotation as well as by manual enrichment tools, and third, it manages access rights to the objects accounting for IPR issues. This means that the IMC database consists of three different models that now form the basis of the IMC metadata repository: a resource descriptive model, a resource annotation model, and a resource usage model. The resource descriptive model defines elements for storing data provided by the archives, such as technical and descriptive metadata as well as metadata on persons and companies involved in the creation of a film or photo. This metadata describes the entire object as provided by the respective archive. In contrast, researchers and general public users as well as automatic tools annotate films on frame or shot level. Annotation metadata is stored in the resource annotation model, which offers a higher level of granularity and also holds information on who made an annotation and when. Since copyright restrictions apply to many of the films, it was important to be able to apply measures for access control based upon particular metadata elements that are stored in the resource usage model.

Metadata coming from the different sources have specific structures and requirements regarding elements and storage. The archives' metadata model is based on a relational data model¹ that is mapped to a linked data model,² while annotations from users and automatic tools are created as linked data in the first place. It was also one of the main aims of IMC to make use of controlled vocabularies and Linked Data Services in order to best interlink the IMC data with other projects on the Semantic Web. Controlled vocabularies, thesauri and the Wikidata service were employed to answer project specific challenges, such as multilingualism.

¹ The relational data model used to list the metadata coming from archives was mainly based on the CEN standard EN19507, as well as the European Film Gateway metadata model.

² The linked data model was designed after the W3C Web Annotation Data Model, which provides an extensible, interoperable framework for expressing annotations in such a way that they can easily be shared between platforms. A second source of information for the design of this annotation model is the MICO system, which is WADM compliant.

The IMC Resource Descriptive Model and Metadata Contributed by Archives

The data model, as described in the first chapter, is the backbone of the platform infrastructure and the basis for any kind of presentation of, interaction with, or research on the content in the project. When the model was first designed, the partners involved evaluated relevant pre-existing data models and adapted them for the needs of the IMC project. In the case of the resource descriptive model, the project drew mainly on the European Film Gateway data schema,³ which was developed in 2009 and in turn is based on a number of different concepts and standards, most notably the CEN standard EN19507⁴ for the description of metadata related to film works, Functional Requirements for Bibliographic Records (FRBR)⁵ for non-audio-visual objects, Encoded Archival Context-Corporate Bodies,

³ The complete documentation of the EFG metadata schema is available at http://efgproject.eu/guidelines_and_standards.php. The EFG portal is available at www.europeanfilmgateway.eu and was created in the EFG - European Film Gateway project (2009-2011) with the participation of 21 European film archives. The EFG project was followed by the EFG1914 project (2012-2014) that focused on the digitization and online publication of films from the First World War. The European Film Gateway is a web portal giving access to hundreds of thousands film historical documents as preserved in numerous European film archives and cinémathèques. Users can find photos, posters, programmes, costume and set drawings, periodicals, censorship documents, rare feature and documentary films, newsreels and other materials. While the metadata is stored centrally, the digital objects remain on the diverse online platforms of the contributing archives. EFG provides a single access point to domain-specific heritage that is dispersed across different online platforms in Europe. The portal functions furthermore as a domain aggregator for film related content for European, and online platform for European digitized cultural heritage objects. By January 2019, EFG provided access to 39 European film institutions.

⁴ The CEN standard EN 15907 provides a comprehensive set of metadata intended for describing cinematographic works and the various embodiments they can take on during their life cycle. Further information: *prEN 15907, Film identification – Enhancing interoperability of metadata – Elements sets and structures* EN_15907_2009-12-14-1 STD Version 2.3; www.filmstandards.org.

⁵ www.ifla.org/publications/functional-requirements-for-bibliographic-records.

Persons, and Families (EAC-CPF)⁶ for persons and companies, as well as the ESE Europeana Semantic Elements specifications⁷ used to describe the digital object pointing to the digital file held in the source repository.

For over a decade now, film heritage institutions have been collaborating in various pan-European projects focusing on making their catalogues and collections more easily accessible to a wider public and interoperable with external initiatives. After the MIDAS project in 2006 had focused on creating a unified catalogue of the analogue film holdings⁸ of 18 European film archives (accessible at filmarchives-online.eu), in 2009 the EFG (European Film Gateway) project started to build an online portal (accessible at europeanfilmgateway.eu) that would not only give access to catalogue information of film institutions, but also allow users to view digitized material from the archives' collections online.

While films certainly were the central focus of the IMC project, archives also contributed photos, which made it necessary to create the IMC model in a way similar to the EFG model, so that it could handle not only metadata related to films, but also to photos. As many of the films in IMC, however, are amateur films, documentaries, or newsreels, and filmographic information on them is usually less detailed and complex than for fiction films, it was decided to avoid unnecessary complexity of the model for archive metadata and to follow the No hierarchy model of description as developed in the FIAF Moving Image Cataloguing Manual.⁹ This makes for one of the main differences between the IMC and the EFG model, which distinguishes between three levels of description of objects: Crea-

⁶ *Beta Version 2004*. <http://jefferson.village.virginia.edu/eac/>.

⁷ *Version 3.2 (07.08.2009)*. Further information: <http://pro.europeana.eu/page/ese-documentation>, http://efgproject.eu/downloads/Europeana_Semantic_Elements_Specifications_v3_2_1_2009-11-06-1.pdf.

⁸ www.filmarchives-online.eu, created in the MIDAS project (2006-2009) funded by the media+ program with 18 European film archives delivering catalogue information about their analogue holdings.

⁹ FIAF Cataloguing and Documentation Commission (CDC) (ed.). *The FIAF Moving Image Cataloguing Manual, 2016*, www.fiafnet.org/pages/E-Resources/Cataloguing-Manual.html.

tion, Manifestation, and Item, while the IMC resource descriptive model distinguishes between two levels: Entity, and Item. In total, the resource descriptive model comprises four entities — AVEntity, NonAVEntity, Agent Entity, and Item Entity — which are connected by a defined set of relationships. Both the IMC descriptive resource model and the EFG schema share that they are entity relationship models, although they apply some parts from a Resource Description Framework (RDF) logic, namely semantically defined types for relationships.

Consolidating Metadata from Different Archives: European Film Gateway as Aggregator for IMC

Until today, even though EN 15907 as a common film standard has been implemented in a growing number of local databases, there is still a lack of standardization in the film archive domain and archives are not able to extract data from their local databases in a common format. Back in 2009, EFG circumvented this problem by creating mappings between the source exports and the EFG schema that would transcode the data provided by archives during ingest in the EFG database and direct the information in the source elements to the correct EFG element. During the ingestion process, EFG would also match local values to common EFG vocabularies¹⁰ so that the metadata would appear in a consolidated way on the European Film Gateway portal. Like EFG, IMC could not rely on the archives being

¹⁰ The EFG vocabularies are largely based on FIAF Glossary of Filmographic Terms, Wikipedia List of film formats, ISO 3166-2 (country names), ISO 639-1:2002 (language names). The main reason why common vocabularies are necessary in projects like EFG or IMC are the high number of different expressions used in the content providers' archives databases, for example for the description of properties such as sound, colour, language or category of an object. This is mostly owed to the fact that the participating archives come from various European countries and usually store information in their native language, but also not all archives necessarily populate database fields through fixed vocabularies but offer free-text fields that can contain typos or different expressions describing the same thing. The diverse values used locally are therefore matched to a common set of values to allow for a coherent display online.

able to extract their metadata in the IMC format and it also had the need for metadata to be able to present it in a coherent way online. As all IMC partner archives were also connected to EFG, it was therefore decided to use EFG as an aggregator for IMC by making use of the existing mappings, ingesting the archives' data first into the EFG system and then harvesting it from there in a common format into IMC. This way the creation of new mappings could be avoided, saving time and money both on the side of the archives as well as on the side of the technical partners of IMC.

The Resource Annotation Model and the Use of Linked Descriptive Metadata

Tagging, geotagging, commenting on and referencing content are major user functionalities within the IMC platform. The already existing source metadata of any content item, coming from the databases of the archives, is enriched by a manifold of manual annotation processes. On top of that several automated processes, analyzing all content, also generate specific metadata attached to the films and photographs. Recent advances in the field of computer vision and machine learning enable such tools to extract interesting information and metadata from images and videos faster than any human could, which is especially important with the increasing amount of digital or digitized content available. It was therefore expected that the part of the IMC data model storing annotations (IMC Resource Annotation Model) had to be designed to represent the enriched metadata in the form of 'annotations' pointing to the referenced assets in the storage. Moreover, there are several major requirements the chosen type of metadata and its model have to adhere to:

1. Both types of enrichments, automatic and manual, need to be able to be easily stored and be quickly available to front-end users, and editable by verified users that access back-office system features.
2. In the case of films, the entire item is not the smallest level that can be manually annotated, but it is also possible to annotate on frame and shot level. The data model must be able to store annotations in combination to a specific timecode of a film.

3. Annotations can be added to the data store from different sources, and the number of these sources and of the generated annotations they might generate cannot easily be predicted, but it must be assumed that it is extensive and will continually grow and evolve. The data model will have to have a solution that takes provenance into account.
4. As one of the project goals is to create a platform that can provide multilingual solutions, the metadata model should aim at creating a basis that will allow annotations to be stored in different languages.

As each of the requirements in and of itself could complicate matters, the complexity of all four of them combined was exponentially bigger. The main task, therefore, was to find a model that would be able to fulfil all these requirements without itself becoming too complex.

Linked Data and the Data Model

In this Semantic Web age where internet services allow for ever increasing user interaction, annotating and creating links and associations between different entities online has become so standardized that it was necessary to devise a common approach to express, store and handle these annotations. Furthermore, not only does the Semantic Web need access to data, but relationships among data should be made available, too, to create a Web of Data (as opposed to a sheer collection of datasets). This collection of interrelated datasets on the web can also be referred to as Linked Data.¹¹

Based upon this general evolution and the inherent capabilities and possibilities that lie within Linked Data, it quickly became apparent that the best choice for the main reference standard for the design of IMC's annotation metadata model was the W3C Web Annotation Data Model (WADM).

¹¹ www.w3.org/standards/semanticweb/data.

Benefits of Linked data and Answering the Requirements of the Project

One of the biggest benefits of the WADM is that it has a proven track record with automatic annotations, since especially these provide specific challenges to the project, viz. they usually annotate on a lower semantic level and — especially in the case of videos — produce a lot of data (for each single frame, changing data could be generated). As a result, the metadata generated by these tools cannot be used directly by the users of the platform. Therefore, for the automatic annotations to be useful for the project their semantic level needed to be significantly enhanced for them to be visualized in a human readable form on the interface. Such a ‘translation’ had been done before by the technical partners, in other projects, such as the MICO project,¹² which only underlined the validity of the choice for this metadata model.

Furthermore, because of the large number of manual and automatic metadata-generating sources, it would be, in the context of IMC, important to distinguish between annotations that were created by an automatic tool and annotations created manually by a researcher or by an end user. The simplicity with which this provenance can be stored in a linked data model, and in WADMs specifically, helped build the case for choosing the WADM.

A further issue noted in the metadata requirements of the project, was the fact that in the case of films, the entire item is not the smallest level that can be annotated, but it is necessary to be able to annotate segments of the item. For the sake of limiting the complexity of the data model, it was decided that generated annotations would reference parts of the items/resources by using IRIs with a fragment component. This practice can be easily implemented in the WADM.

To the final requirement of multilingualism, Linked Data and more specifically Linked Open Datasets (LOD) offered a basis for potential solutions to overcome multilingual roadblocks. Multilingual aspects influence the metadata model predominantly on the level of

¹² www.mico-project.eu/.

tags, in and outside of controlled vocabularies. The project therefore applied the following strategy:

1. Controlled vocabularies were created specifically to address certain urban research enrichment, as well as to guide end-users in their annotation efforts. These controlled vocabularies had been generated by the partners of the project, before they were linked to a Linked Open Dataset, in this case Wikidata.¹³
2. End users are also allowed to add tags to the content by directly searching them in an LOD source, through an embedded search field on the platform. Similar to the vocabularies, all values chosen from these search results to be added as annotations, are in fact stored IRI's from Wikidata.
3. Wikidata, similar to other large LOD's, has translations for the labels of almost all concepts it lists. These translations are stored on the webpage linked to the IRI of the concept. Therefore, by storing the tags as IRI's in the project database, these translations become accessible and can be activated for visualization on the interface. It would be ideal to store the actual translations in the I-Media-Cities database, where the language of the user, which can be ascertained through his/her user profile or through an automatic determination of the language used in their browser, would determine the language of the label displayed on the interface.

¹³ www.wikidata.org/wiki/Wikidata:Main_Page.

ARTIFICIAL INTELLIGENCE TOOLS IN SUPPORT OF RESEARCH

Automatic Content Analysis Tools as Support to Researchers in I-Media-Cities

Alexander Loos, Christian Weigel

Introduction

The amount of digital media collected in I-Media-Cities demands technical tools that support research on those items. Established algorithms of signal analysis as well as recent advances in Machine Learning (Deep Learning) allow generating additional metadata based on the content of the material. This metadata adds temporal and/or spatial information to the media. Researchers can exploit it in order to structure their findings, to find previously unknown topics or concepts in a film or to search for specific topics and retrieve images or films matching that topic along with temporal information for films.

In I-Media-Cities the technical team researched, developed and integrated three tools for automatic analysis of images and films. The most basic one is the shot detection tool, which aims to find edits in a film. The object detection tool was developed to detect specific concepts in an image or video and provide information about their spatial as well as temporal occurrence. Finally the building recognition tool was developed and trained for the recognition of selected buildings from the cities of IMC.

Automatic Content Analysis Tools used within I-Media-Cities

The Shot Detection Tool

Seen from a computer vision research perspective, the shot detection tool is a rather simple tool. The problem is considered to be solved for modern, digitally produced content. Nonetheless, it is very important for IMC since it creates the structural foundation of annotations that are usually done ‘per shot’. Early experiments in IMC showed that the quality of the digitized films significantly decreases the accuracy of the automatic detection of shots. The quality issues included but are not limited to destroyed short parts of analogue film that create unwanted cuts within the same original shot, bad lighting, shaky camera work, or digitization of film parts outside the image area (sprocket holes, sound on film). The figure shows two example frames. While the detection precision (the amount of correctly identified shots among all detected shots) remained relatively high at above 90%, the recall (the amount of detected shots compared with all existing) shots dropped by about 30% down to 60% compared to the usual performance with today’s media. In fairness it has to be mentioned that the test set that was used for the evaluation contained some of the most difficult items within the IMC project (ephemeral films from the 1930s from the Film Museum in Vienna).

Due to that observation the IMC tech team decided to look for alternatives to the shot detection approach. First experiments based on a neural network architecture showed promising results, increas-

Example frames from
difficult films for shot
detection.
Left: Low exposure.
Right: Digitized sound-
on-film.



ing the recall by 10% without sacrificing precision. Considering that the model used in this first evaluation was not trained on the ‘problematic’ data, the approach seems very promising and there is still room for improvement. However, since these experiments were conducted very late in the project, due to its prototype character and to avoid delays in the platform development this new approach could not be integrated into the IMC platform.

The Object Detection Tool

The object detection tool is based on state of the art algorithms for detection and classification of specific regions in images or frames of a video. In contrast to algorithms that assign a single label/concept to the whole image/frame, the object detection tool is able to detect multiple rectangular regions with different labels within one image/frame. The detector used in IMC uses YOLOv2, a Convolutional Neural Network (CNN) that is specifically modified in order to detect multiple regions in just one classification step (YOLO – You only Look Once).¹ Modern GPU speeds make it possible to process not only an image but also frames of a video within an acceptable time. For technical details about YOLO the original paper is a good source. At the beginning of the IMC the tech team considered training a new object model for IMC, but due to the lack of appropriately annotated data (regions in images) as well as the fact that the 80 labels of the Microsoft Coco database contain a number of concepts useful to IMC it was finally decided to use two existing models that had been trained on the Pascal VOC image database² (12 object types/concepts) and the Microsoft Coco database³ (80 object types/concepts).

¹ REDMON, J.; FARHADI, A. (2017). “YOLO9000: Better, Faster, Stronger”. In: *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 6517-6525.

² EVERINGHAM, M.; ESLAMI, S. M. A.; VAN Gool, L.; WILLIAMS, C. K. I.; WINN, J. and ZISSERMAN, A. (2015). “The PASCAL Visual Object Classes Challenge: A Retrospective”. In: *International Journal of Computer Vision*, no. 111(1), pp. 98-136.

³ LIN T-Y et al. (2014). “Microsoft COCO: Common Objects in Context”. In: FLEET, D.; PAJDLA, T.; SCHIELE, B. and TUYTELAARS T. (eds.). *Computer Vision –*

The object detector was developed to be used on images. For videos this basically means that regions would be detected for each frame independently. To keep track of a region (object) over time, we added a Kalman Filter-based tracking algorithm for each object. Now, once an object has been detected, it keeps the same ID over time as long it is traceable. The raw detection results at frame level are refined in a post processing step and accumulated per shot. Detected concepts can be visualized in the video player and searched. This makes it easier to work with the data. One of the drawbacks of using standard models is the (false) detection of concepts that do not fit the period in which an image or film was produced, for example, the detection of a smart phone in a film from the 1950s. It is not possible to remove those concepts from the model since they might be useful in more recent films and images. Individual models are also not an option since this would increase the complexity of the user interface and framework back-end. Therefore, in IMC a filtering based on time stamp seemed to be a reasonable approach, provided that the time at which a film or image was taken is known. Currently, the user might do this manually by setting the search terms accordingly and exclude specific concepts.

The Building Recognition Tool

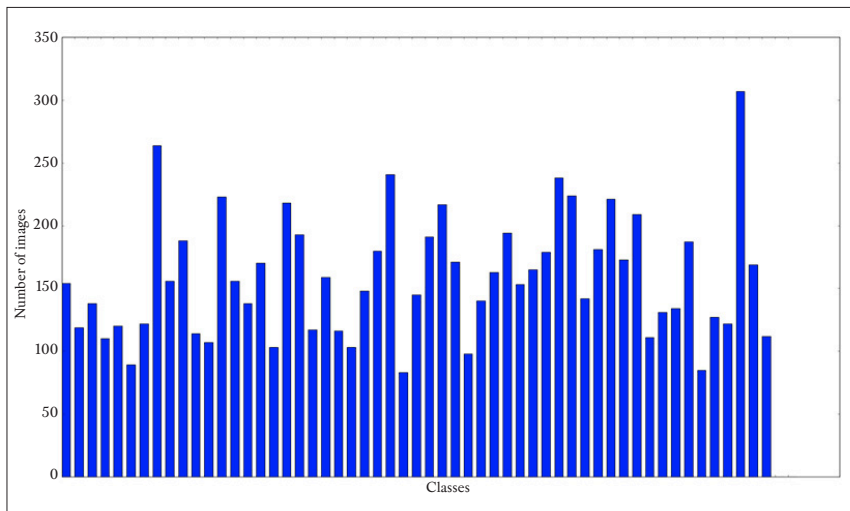
A key task for I-Media-Cities is the automatic recognition and classification of buildings in images and videos. For this task we fine-tuned and evaluated various state-of-the-art deep Convolutional Neural Networks (CNN) to classify different buildings in still images. In order to quickly gather training and test data, we first implemented methods to automatically search and download images based on keywords using Bing, Flickr, and Google Image Search. Because automatically downloading images will irrevocably lead to some falsely categorized images, we first manually analysed and categorized each downloaded image. Furthermore, we developed a simple tool which automatically searches the image database for

near-duplicates to ensure a multi-variant dataset we can develop and evaluate deep-learning algorithms on.

For duplicate detection we used a simple algorithm called dhash, which is implemented in the Python library ImageHash 4.0.⁴ We generated a hash of each image in the database and then tested every picture against all hashes. The dhash algorithm works on the difference between adjacent pixels which identifies the relative gradient direction of pixels. In order to find near-duplicates we set the maximum distance between two hashes to be 10.

All found duplicate candidates were subsequently analysed manually again and, if necessary, were deleted later on. By repeating this whole semi-automatic data gathering process we established a building dataset consisting of 8718 images which were used in all experiments which are subsequently described in detail.

Our building database consists of 8718 images of 55 different classes, ranging from the Acropolis in Athens to the Vienna State Opera. Naturally, the dataset is relatively imbalanced, i.e., the number of samples per class is different for every building in the dataset. This figure illustrates the sample distribution over the classes.



Distribution of samples per class. It can clearly be seen that the dataset is extremely imbalanced.

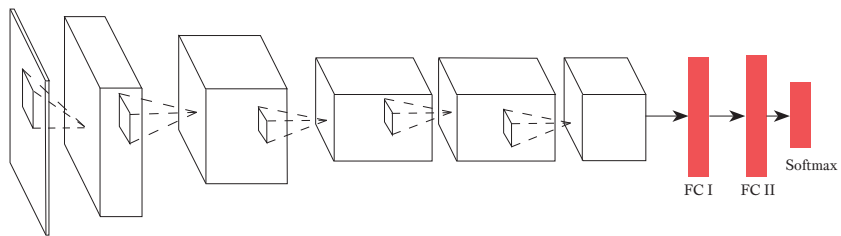
⁴ <https://pypi.python.org/pypi/ImageHash>, last visited 30 January 2019.

An imbalanced dataset can be challenging for automatic learning procedures, since during training classification is often drawn to the classes with the most samples. In order to cope with this issue we enable class weights during training, which penalizes mistakes in samples of class i , with the class weight of i instead of one, thus higher class-weights means that the algorithm puts more emphasis on a particular class.

For these experiments we fine-tuned various state-of-the-art deep learning networks which were pre-trained on IMAGENET.⁵ For all experiments we used the deep learning library Keras⁶ with Tensorflow⁷ back-end. All networks were trained and tested on an NVIDIA GTX 1080i GPU with 12GB VRAM. We split the whole image database into training, development, and test dataset by randomly selecting 80% of the images for each class for training and 20% for testing. A fraction of the training dataset (10% for each class) was held out for validation in order to monitor the loss and the overall accuracy to prevent overfitting. To validate the results we used a 3-fold Monte-Carlo cross validation, i.e., we randomly split the whole database into training set, development set, and test set, repeating it three times.

In our experiments we compared eight state-of-the-art deep CNN architectures:

A schematic representation of the deep neural networks we used for building recognition. Note that the white layers represent one of the pre-trained network architectures explained below (see bullet points), while the red layers represent our custom net.



⁵ www.image-net.org, last visited 30 January 2019.

⁶ <https://keras.io/>, last visited 30 January 2019.

⁷ www.tensorflow.org/, last visited 30 January 2019.

- InceptionV3⁸
- XCception
- Inception_ResNet_v2⁹
- ResNet50¹⁰
- VGG16 and VGG19¹¹
- DenseNet121
- DenseNet169¹²

For details about the CNN architectures, the reader is referred to the according reference. Usually CNN networks consist of multiple convolutional layers followed by a few fully connected layers. The last layer is a softmax layer with the number of units equal to the number of classes of the pre-trained dataset. Thus, we dropped all fully connected layers including the final softmax layer of all networks and replaced those layers with our custom network. The figure in page 149 illustrates a possible configuration of the final network. The white boxes represent one of the CNN networks listed above; the red bars indicate the custom network we used for classification.

We first added a global average pooling layer after the final convolutional block and added various configurations of fully connected layers, and a final softmax layer consisting of 55 units, one for each class in our dataset. Table 1 summarizes all configurations.

As recommended for transfer learning in the literature, we follow a two-step learning paradigm. First, we only trained our custom network with a learning rate of 10^{-5} for 100 epochs with a batch size of 32 and froze the parameters of the original (fully) convolutional network. In the second phase, we reduced the learning rate by a factor

⁸ SZEGEDY, C. et al. (2015). “Rethinking the Inception Architecture for Computer Vision”. *CoRR, arXiv:abs/1512.00567*.

⁹ SZEGEDY, C. et al. (2016). “Inception-v4, Inception-Resnet and the Impact of Residual Connections on Learning”. *CoRR, arXiv:abs/1602.07261*.

¹⁰ HE, K. et al. (2015). “Deep Residual Learning for Image Recognition”. *CoRR, arXiv:abs/1512.03385*.

¹¹ SIMONYAN, K.; ZISSERMAN, A. (2014). “Very Deep Convolutional Networks for Large-Scale Image Recognition”. *CoRR, arXiv:abs/1409.1556*.

¹² HUANG, G. et al. (2016). “Denseley Connected Convolutional Networks”. *CoRR, arXiv:abs/1608.06993*.

Table 1. Configurations of our custom network added to pre-trained CNN networks.

Configu- ration	Number of units Fully connected layer I	Number of units Fully connected layer II	Number of units Softmax layer
I	–	–	55
II	64	–	55
III	128	–	55
IV	128	64	55

of 10 and trained again for 100 epochs. However, this time we unfroze all parameters of the entire network in order to adjust the weights to the task at hand. We also experimented with only unfreezing the parameters of the last convolutional block as well as our custom network in the second phase. However, we found that updating all network parameters in the second learning phase does not lead to overfitting but instead leads to better overall performance of the system. Therefore, we conclude that for reliable classification of buildings, features extracted in earlier layers of the network need to be adapted. Note that in order to prevent overfitting we add a dropout layer between each custom layer with random switches of connections with a probability of 50% during training. Furthermore, for each custom layer (except the dropout layers) we apply L2 regularization with a factor of 0.0005. We also make heavy use of data augmentation techniques including random rotation, shearing, zooming, and horizontal flipping during training. Another technique we used to prevent overfitting is called early stopping, i.e., we monitor the accuracy of the network on the validation set and stop training when the validation accuracy does not change or decreases for more than two epochs.

We divide our evaluation into two main categories: open set evaluation and closed set evaluation.

Closed set classification:

For closed set classification it is guaranteed that every test image belongs to one of the classes represented in the dataset. Thus, the system just has to report which class the test image belongs to. Because we used a softmax output at the end of our network, the predicted class is determined by the unit of the softmax layer with the highest probability.

In order to address the fact that our dataset is highly imbalanced (see figure in page 149), instead of using plain accuracy (the fraction of images correctly classified) we report performance statistics using a measure called mean-class accuracy, i.e., for each class the accuracy is calculated separately and is subsequently averaged across classes.

Table 2 summarizes the results for the closed-set classification case. As can be seen, the best results on the test and development set are obtained for configuration I (no hidden layers after global average pooling). When hidden layers are added between global average pooling and softmax output, the variance of the model (i.e., the accuracy difference between training and development sets) increases significantly, which makes the models more prone to overfitting. Consequently, the accuracy of the models decreased for the test case. The best results on the test set are achieved by the DenseNet models, while the DenseNet121 network slightly outperforms the deeper DenseNet169 version.

Whenever deep neural networks are applied in a classification task it is hard to predict why the model categorizes an input image to a certain class. We therefore apply a method called Grad-CAM/CAM,¹³

Network	I			II			III			IV		
MCA [%]	train	dev	test	train	dev	test	train	dev	test	train	dev	test
InceptionV3	99.87	96.74	97.39	99.36	95.94	96.6	99.54	96.13	97.00	98.91	96.02	96.69
Xception	99.84	97.21	97.36	99.93	96.75	96.87	99.95	96.80	97.05	99.22	95.82	96.75
Inception ResNetV	99.94	97.28	97.48	–	–	–	–	–	–	–	–	–
ResNet50	99.93	95.72	96.33	99.85	96.07	96.73	99.67	95.66	96.73	98.80	94.82	95.76
VGG16	99.31	92.23	92.86	98.71	94.26	95.02	97.92	94.25	94.45	93.23	89.49	90.55
VGG19	99.47	92.94	93.56	98.43	93.50	95.15	97.89	94.21	94.55	91.15	87.25	88.56
DenseNet121	99.96	97.27	97.87	–	–	–	–	–	–	–	–	–
DenseNet169	100.00	98.45	98.46	–	–	–	–	–	–	–	–	–

Table 2. Summary of the results for the closed-set classification.

¹³ SERVATAJU, R. R. et al. (2016). “Grad-CAM: Why did you say that? Visual Explanations from Deep Networks via Gradient-based Localization”. *CoRR*, *arXiv: abs/1610.02391*.

Heat maps for some images in our dataset: Frankfurt's Eiserner Steg, Athens' Acropolis, Barcelona's Arc de Triomf and Columbus Monument.



which visualizes the filter coefficients of the last convolutional layer of a network as a heat map. This figure shows some resulting heat maps for images from our dataset for VGG16.

Open set classification:

In contrast to a closed-set classification, in an open-set classification the system not only has to report the class a test image belongs to, it additionally has to reject images which do not belong to any class in the training set. To classify images as ‘unknown’, we use the highest class probability of the final softmax layer and apply a threshold. This acceptance-rejection-threshold controls the minimum highest class probability the system needs to accept a test image as known and subsequently predict the actual class the test image belongs to. Apart from misclassification, in an open-set environment the system can erroneously accept unknown images or reject images belonging to one of the training classes. Therefore, we have to introduce other evaluation measures than those used in a closed-set scenario:

- *False Acceptance Rate (FAR)*: The fraction of images belonging to class ‘unknown’ but are falsely accepted as one of the known classes we trained our system on.
- *False Rejection Rate (FRR)*: The fraction of images belonging to one of the known classes but falsely rejected by the system as unknown.
- *Correct Classification Rate (CCR)*: The fraction of images belonging to one of the known classes and which were correctly classified by the system as this class.
- *False Classification Rate (FCR)*: The fraction of images belonging

to one of the known classes which were correctly accepted as known but subsequently misclassified.

In order to evaluate the networks in an open-set fashion, we established a set of 1992 images which either contain landscapes or buildings and which are not among the 55 classes we used for training.

All the abovementioned evaluation measures are dependent on the acceptance-rejection threshold. By iteratively changing this threshold we are able to plot the CCR vs. FAR in a diagram known as Receiver-Operating-Characteristic curve (ROC).

Table 3 summarizes the results obtained for the open set classification. Again, the DenseNet models perform best among all networks. Because both DenseNet models perform similarly but DenseNet121 contains significantly less parameters than DenseNet169 and is thus significantly faster, we chose to go with DenseNet121. This time, however, the errors caused by false classification and false rejection are highlighted in blue and red, respectively.

We chose to set the acceptance-rejection threshold to 0.75, which results in a Correct Classification Rate (CCR) of 94.7%, a False Rejection Rate (FRR) of 4.7%, a False Acceptance Rate (FAR) of 17.1%, and a False Classification Rate (FCR) of 0.6%.

Network	Equal Error Rate (EER)	Area Under ROC curve (AUC)
InceptionV3	0.085	0.95
XCception	0.09	0.95
InceptionResnetV2	0.09	0.94
ResNet50	0.09	0.94
VGG16	0.13	0.89
VGG19	0.11	0.91
DenseNet121	0.07	0.96
Densenet169	0.07	0.96

Table 3. Classification results for open-set classification for all networks of configuration I.

Conclusion

The I-Media-Cities approach to enriching the metadata of cultural heritage images and films uses state-of-the-art signal analysis and machine learning technologies in order to make the content more accessible. It supports researchers as well as the public in gathering new insights into historical film and image data about the cities of Europe. The tools developed in the project already master some of the challenges that this specific kind of content poses. Yet we also identified a number of properties of digitized image and film material that still demand more research and new approaches in the fields of computer vision and machine learning.

The lessons learned from IMC are that despite the progress in deep learning algorithms and AI, an in-depth interpretation of and insight into historic content can only be achieved by human researchers. The project also shows that the usage tools for automatic metadata enrichment can and will support these tasks in a meaningful manner. Many AI technologies are just in their beginning, and recent research shows impressive results that will increase their value in the future, making digital humanities more and more important. Ignoring or rejecting these technologies would be a fundamental error. The amount of digitized and digitally produced media will significantly increase. Today's trillion hours of digital video will be the historical data of the future.

SUSTAINABILITY

Profiting from Archives: Value Models of Pan-European For- and Non-Profit Audio-Visual Archives

Olivier Braet, Koen Vervoort, Heritiana Ranaivoson

Introduction

As more content from national European film archives is moving from offline to online platforms, the technical question of how the separate national film archives could create a unified interface towards possible users is accompanied by the economic question of how this can be achieved in an economically sustainable way while simultaneously upholding the inherent public role these institutions play. This article aims to analyse to what extent a viable business model can be created for a pan-European platform of such archive content. It describes the degree in which for-fee services can be introduced in services directed towards three customer groups (non-profit institutions, for-profit institutions, and retail consumers), without undercutting the distinct public role these archives want to fulfil towards non-paying citizens. Because the archives will want to retain a non-profit role for citizens, the restricted business case rationale has to be accompanied by a broader definition of value which allows narrow financial profit motives to exist alongside public-value motivations.

As archives increasingly enrich their collections they create potential value by readying content for possible re-use in commercial settings such as media production and publishing, touristic applications, other museums or exhibitions, educational purposes, academic research and development, and information and communication technology-related services. The archives will want to control the ways in which content is repurposed for commercial reasons, not only to create a sustainable model for themselves, but also to safeguard author rights issues. Simultaneously, archives will want to avoid

undermining their public role by introducing an overly commercial model that blocks public access.

This article is part of a broader research task that also produced a descriptive analysis of business models of other archives in the media industry, and a much broader survey about a range of technical and end-user requirements. This article only offers the analysis resulting in possible revenue models that could be employed, if and when archives would decide to employ them commercially towards certain user categories. It also offers insight into where the price range for these revenue models should lie. The revenue models are inspired by a desk study of industry best practices in the for-profit media industry, and by interviews with various experts (archive professionals, media professionals, academic researchers, and members of the educational sector). This input was then streamlined in a quantitative survey for expert users where the acceptability of various revenue models and their associated acceptable price ranges were quantitatively assessed.

The next section of this article describes in general terms the possible value of archived content. The third section provides the business modelling framework and willingness-to-pay methodology, and the fourth analyses the possible revenue models and associated income streams according to the proposed methodology. A final section concludes on the viability and possible extensions of the revenue models.

The Value of Archives

Archives of film museums occupy a unique position in the landscape of content providers that offer video content to varying user groups, such as the general public, schools, researchers, and media and IT professionals, since they exist alongside the large archives from public and private broadcasters and the ever-expanding video content supplied by open internet platforms such as YouTube. Film museum archives have institutional aims rooted in a philosophy of public service. They also have a specific academic role to fulfil, in that their role has historically been to provide full physical archive access to the research community.

Because a pan-European online archive platform could have both potential public value and private value, the profits that can be reaped

from these platforms are also simultaneously public and private in character. Any revenue model scenarios proposed in the following sections have to keep in mind the possible tensions between the non-commercial aims of various visitors (research, education, and public engagement) and the commercial purposes other groups might have in mind (media, IT industry).

At the core level, the financial viability of a platform that unifies pan-European access to separate national film archives will depend on the willingness-to-pay of the user groups it aims to serve. For archives, four broad possible for-profit user groups can be distinguished: professional users, academic researchers, the educational sector, and retail consumers, all with a different willingness-to-pay.

Media and ICT professionals could exhibit the highest willingness-to-pay if they can re-use the archive content in profitable media services or software applications. If the content is commercially used, the archives will want to be able to control in what settings the content appears, and make sure the legal rights issues are cleared (if not by them, then by those actors wishing to re-use the content commercially).

If academic researchers use access to archives to conduct research and development that has scientific value (e.g., historical, cultural or software engineering value), the archives will want to open their collections as deeply as possible, but in exchange for a collective license fee paid by the academic institutions, unless another exchange of value can be agreed upon. For example, if R&D enriches the content, many archives could be willing to give free access to researchers, since they receive a more deeply enriched dataset in return. As information goods, media products are subject to the similar economies of scale and scope as science and research. Economies of scale are visible in the fact that the marginal costs of initially producing these goods is high, but these costs go down rapidly as the number of consumed articles grows. Economies of scope are visible in instances of multi-product and multi-format commercialization strategies.¹

¹ DOYLE, G. (2013). *Understanding Media Economics*. London: Second Edition. Sage, pp. 13-15.

Concerning customers from educational sectors, archives aim to fulfil a role of public knowledge dissemination, but if possible will want to be compensated for the effort of opening up their archives for educational purposes. Compensations demanded by the rights holders can force the archives to charge a cost to educational customers. The access of academia to enrolment fees and research funds could grant them an institutional willingness-to-pay that is relatively higher than primary or secondary education or retail consumers. Lower grade and high schools have budgets to acquire educational content, but these are relatively more restricted than the previous professional user groups.

When giving access to archives to the general public, the core reflex of public archives is to show their content free of charge, providing the legal rights holders allow this. Charging the general public for access is only usual if either the rights holders demand remuneration, or if the public funders granted them a mandate to roll out a for-profit model. Retail consumers can be particularly fickle in paying for access to audio-visual archives. This is caused by the fact that media are experience goods, “which implies that they can only be valued once they have been consumed” (Nelson, 1970). Because the utility of these goods manifests itself fully while consuming or experiencing the content, it is much harder for consumers to predict the value of consuming media content ex-ante and quantitatively, compared to purchasing physical goods such as food or energy. Media products are similar to how one also cannot easily predict the future financial value of investments in fundamental academic research or applied research and development.² Nevertheless, the archives can play an active role in furthering the knowledge among a broader audience of European movie content, which is valuable in itself for the local film industry.³

² BALLON, P. (2014). “Old and New Issues in Media Economics”. In: DON-
DERS, K.; PAUWELS, C.; LOISEN, J. (eds.). *The Palgrave Handbook of European Me-
dia Policy*. London: Palgrave Macmillan, p. 79.

³ DE VINCK, S.; PAUWELS, C. (2008). “Somewhere, over the (digital) rain-
bow? The cultural-economic prospects of the European film sector in a digital
environment and their consequences for European policy-making”. *Proceedings*

Methodology

Data on possible characteristics of revenue models was collected through three avenues. In the first phase, a desk study of non-profit and for-profit business models of international best practices – Beelden Geluid (Netherlands), INA (France), SONUMA (Belgium), and the BBC in association with Getty Images (United Kingdom), European Film Gateway (Germany), Ephemeral Films Project (Austria), Britain on Film (United Kingdom), and Het Archief (Belgium) – was conducted.

In the second phase, interviews were conducted with experts from eight European film archives located in seven countries that own a collection of professional audio-visual content and home movies filmed by citizens. The eight archives were the Greek Film Archive (Athens, Greece), Swedish Film Institute (Stockholm, Sweden), Danish Film Institute (Copenhagen, Denmark), Institut Català de les Empreses Culturals (Barcelona, Spain), Fondazione Cineteca di Bologna (Bologna, Italy), Austrian Film Museum (Vienna, Austria), National Museum of Cinema, (Turin, Italy), and the Royal Belgian Film Archive (Brussels, Belgium). During these first and second phases, realistic revenue model scenarios were identified.

In the third phase, the point of view of external expert users was translated to questionnaires sent out by participating archives to their expert contacts, and used in several co-creation sessions. The results of this survey estimate the willingness-to-pay for varying possible revenue model scenarios.

The survey questions that measure the adoption potential of various revenue models first ask which model each respondent would find preferable, and subsequently ask each respondent which price they would find expensive, cheap, too expensive, and too cheap. This results in four price points for each respondent, which can be mapped in a price graph for the entire respondent population.

Revenue Model Results

The revenue models for three distinct groups of users are considered in this section: non-profit institutions, for-profit actors, and individual consumers.

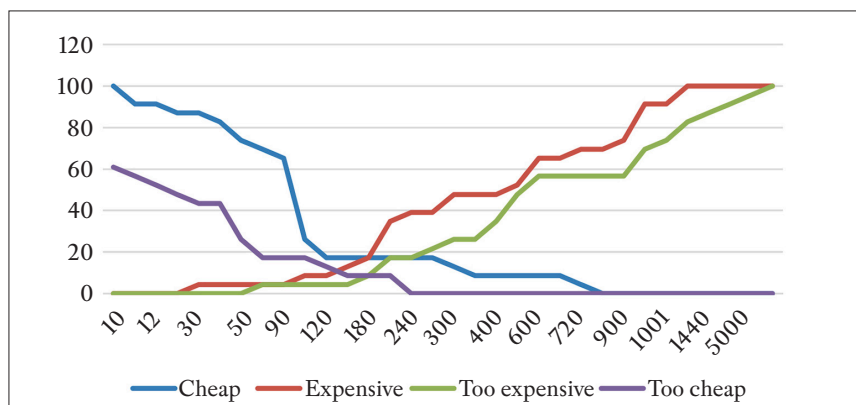
Concerning the non-profit institutions, respondents ranked the subscription and the user license model as the most preferred forms of revenue models. The volume license model was the least popular.

	Frequency	Percent	Valid Percent	Cumulative Percent
Subscription	23	15.2	45.1	64.7
User seats	11	7.3	21.6	100
Pay-per-item	10	6.6	19.6	19.6
Volume amount	7	4.6	13.7	78.4
Total	51	33.8	100	–
Missing	100	66.2	–	–
Total	151	100	–	–

Non-profit organization
payment preferences.

The acceptable price range for non-profit institutions paying a subscription fell between € 150 and € 180 for a one-year subscription.

The preferred revenue models for for-profit businesses were the pay-per-item and the subscription model. As was the case with



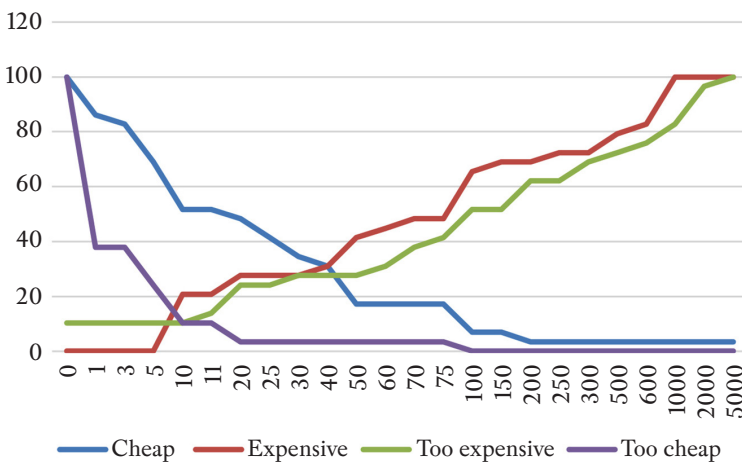
Non-profit institutions'
willingness-to-pay for
subscriptions.

the for-profit revenue model, the model where one charges a cost for having a number of user licenses or for using a certain volume of content items were the least popular formulas.

	Frequency	Percent	Valid Percent	Cumulative Percent
Pay-per-item	29	19.2	36.3	36.3
Time-based subscription	23	15.2	28.8	65
User-based license	19	12.6	23.8	100
Volume-based license	9	6	11.3	76.3
Total	80	53	100	–
Missing	System	71	47	–
Total	151	100	–	–

Preferred payment formula for for-profit organizations.

The pay-per-item model had an acceptable price range of between € 10 and € 40 per content item. Future research will have to further refine this range by confronting the respondents with a specific video clip of which the current market value item price is known, to see where the responses fall in terms of realized willingness-to-pay vis-à-vis existing examples.

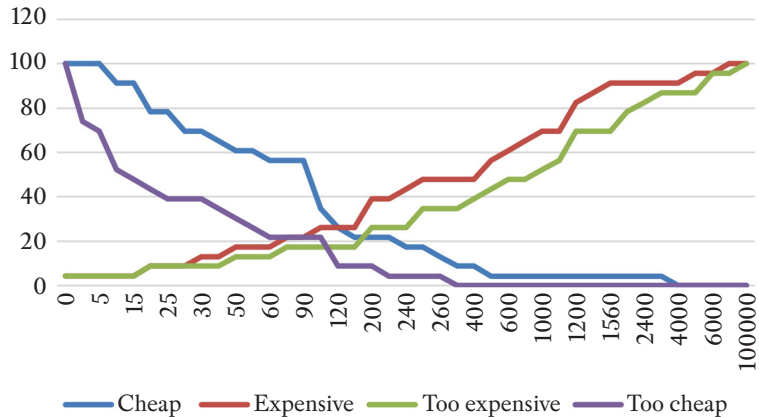


For-profit institutions' willingness-to-pay per item.

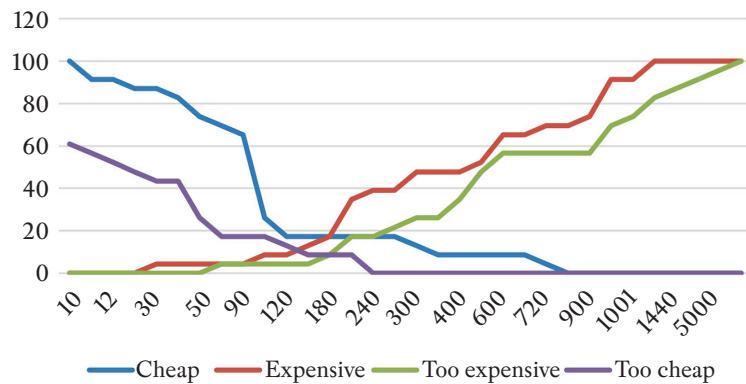
The acceptable price range for the second-most popular model of charging subscription fees falls between € 70 per year and € 120 for a year-long subscription (first figure).

Finally, for individual consumers, the most often chosen model was also the subscription model. The acceptable price range lies between € 5 and € 8.5 per month. Although this looks promising, since the general population is the largest possible group to acquire revenues from, this will require a platform that truly enjoys cross-European support by many archives, in order not to disappoint the visitors with the amount of content offered.

For-profit institutions'
willingness-to-pay for
subscriptions.



Retail consumers'
willingness-to-pay for
subscriptions.



Conclusion: Revenue Model Appraisal

Concerning the financial design of the proposed platform, all identified archives will depend on varying combinations of only four possible revenue streams. First, they can receive public subsidies, which can allow them to offer free access to the general public or the educational sector. Second, subscription-based access can be provided to academic institutions for research purposes, where lower subscription rates can be offered in return for the win-win exchange if these researchers enrich the content during their R&D efforts. Third, for-fee services that combine a subscription model with pay-per-item for specific items can be used by professionals from the media and information technology industries. These actors will want to re-use the content in a more commercial setting, and licensing rights. Fourth, some for-fee subscription fees could be charged to the general public, but the platform must keep in mind that this will lower the speed of adoption.

Subscription models are the most attractive because they generate recurring revenues which are absent in pay-per-item models. The pay-per-item model was the second most popular model among for-profit actors and individual consumers. In the case of retail consumers, the prices that are reported were so low (€ 1 to € 3 per item) that no viable business could be built on this model. In addition, if the archives want to create as much public value as possible with their (often already publicly available) content, they should not necessarily focus on introducing a revenue model that asks for payment from the general public. All theoretical considerations from the multi-sided market literature also point to the conclusion that not having a for-profit model towards citizens would be a more logical choice if one wants to create a stronger positive feedback loop with faster adoption rates on the user-side, allowing for higher chances of revenues on the corporate or institutional side.⁴

⁴ ANDERSON, C. (2009). *Free: The future of a radical price*. New York: Random House Business Books; HAGIU, A. and LEE, R. S. (2009). *Exclusivity and control*. Harvard Business School working paper no. 08-009, Harvard Business School Press. www.hbs.edu/faculty/Publication%20Files/08-009.pdf.

Besides the archives obtaining some new revenue streams from this initiative, there remains the issue of how the platform itself could be funded. The platform itself could use any combination of the following six revenue streams: company sponsorships, not-for-profit support (gifts), public-private partnerships for investments, non-profit in-kind support from professional companies, employment subsidies for certain job functions, and commissions on sales generated. Some of these income streams are limited in time and will only serve as a temporary stimulation subsidy for the development of the platform, so it is important to expand the sustainable streams to a sufficient level to provide for the platform as such.

EPILOGUE: HORIZON 2020

Enrica Serrani, Anna Fiaccarini

The importance of international research and development programmes — such as Horizon 2020 — is to allow institutions, such as archives and film libraries, and research bodies to experiment with new practices and ways of dealing with twentieth century heritage.

This ‘unending century’ of ours, only really brought to a close with the advent of the World Wide Web, sees the moving image as the main instrument for exploring, understanding, giving order to and disseminating history. Cinema, that machine of time and space, retains the ability to gift the audience the same look of awe and wonder that appeared on the faces of those who first watched moving images projected onto a screen.

Archivists and curators of the moving image are now the first to have to deal with the multitude of possibilities in reading this medium: cinema as art, cinema as historical document, as witness, as aesthetic object to be analysed, cinema as educational tool, cinema as language, cinema as cultural heritage, not to mention cinema as entertainment, industry, or even as a means of propaganda.

There exists no common shared approach at European policy level (as confirmed by the Horizon 2020 funding grants). Cinema as cultural heritage is subject to research, to stimulate cultural tourism and promote cohesion amongst disparate social groups; however, despite the results achieved in these areas through European funding, interventions aimed at supporting cinema heritage archivist and curator communities, allowing for the development of initiatives, activities and practices related to the use and dissemination of film heritage, have been few and far between.

The end of the I-Media-Cities project is therefore an excellent opportunity for reflection and to reopen the debate. Three years of work has seen continuous dialogue concerning the requirements of archi-

vists and researchers, and has led us to understand that there is still a long way to go before achieving shared practises and simple and economical access to film heritage.

The sustainability of these projects, once the financial support offered by the various programmes has terminated, is always problematic. We have too often witnessed the birth and demise of worthwhile initiatives, due to a variety of reasons: the rapid and inevitable obsolescence of the technology employed; the means of communication utilised (the internet and modern communication are unforgiving to those not capable of updating their products in an almost compulsive manner); the lack of sustainable business plans to ensure the survival of these tools over time.

And yet, never before have we been presented with such a possibility to digitize and make accessible the collections of European (better still, world-wide) film heritage to a vast and heterogeneous audience, and in so doing help stop the advance of populism and create a new awareness among European citizens in a globalised world.

The I-Media-Cities project, which holds the potential to make our entire film heritage available as an educational resource, is the perfect instrument to help encourage dialogue, firstly among the countless collections preserved by archives, but also among cultural researchers and promoters.

With a view to contributing to the development of a shared and accessible resource, for users at all levels as well as heritage preservationists working in poorly financed realities, and to the possibility of creating a European film heritage accessible to everyone, projects such as I-Media-Cities must also be supported by means other than funding grants. Only through stable, long-term financial support, and not being dependent on specific funding grants, will it be possible to invest in research and further experimentation.

Therefore, what future actions can a project such as this propose, after three years working on potential avenues of research and collections preserved by European archives? The most immediate answer is an increase in the number of participating archives, in order to include collections from other European cities. However, much more can also be hypothesised.

First of all, it is necessary to strengthen the exchange and dialogue between scholars and researchers from different fields of study. The already available content could be continually updated and enriched through the contribution of historians, anthropologists, sociologists and art historians, as well as those occupied with the changing nature of urban centres and territories (geographers, architects, town planners, etc).

The I-Media-Cities portal could become a reference tool for future researchers, not only providing direct access to sources, but also an overview of the state of research across different areas of interest. This would allow for the evaluation of the possibility of receiving funding from hypothetical beneficiaries, researchers, or — better still — universities and university research centres, which could become involved in the long-term support of the platform.

The range of opportunities available to I-Media-Cities could also be broadened by deepening the links between films and the territory in which they were shot. In this case, immediate advantages would be available to tourism and culture initiatives, and the platform in its present form allows for a range of further experimentation.

Indeed, thanks to the portal's contents, it would be possible to enrich a visit to a city: actual locations throughout the city and territory could be directly linked to historical footage and photography, as well as iconic images from cinema, thereby creating new experiences for public spaces and acting as both a means of and an incentive for urban regeneration.

The films should be viewed outside the limiting screens of tablets and smartphones, and be given the space and breath they deserve. The visitor would become both a spectator and an actor in a double show: the screening of a heritage film associated with a historical building, creating a spatial and temporal visual relationship. It is interesting to imagine city spaces capable of accommodating the invasion of projected images: squares, but also unused buildings, the facades of construction sites, etc.

Further along this avenue of thought, in addition to the necessary partnerships with a city's Culture and Tourism sectors, immersive projections and virtual tours between the past and the present could also be developed, supported by the most modern technologies. The

wealth of content available on the portal makes it possible to shift the focus onto the films themselves, and for them to be used — whether as standalone pieces or works remarkable for their documentary value — to deepen knowledge and awareness of the city.

At present, many realities are having success in developing ‘Cinema Tourism’ experiences. A portal to which advanced research models and cutting edge applications are linked, could find possible sources of future sustainability from a range of local bodies (Municipal and Regional).

Furthermore, the educational possibilities offered by the platform should not be underestimated. Thanks to content already on the portal, the project could and should become a research instrument to be presented in schools, allowing for a ‘visual’, multi-layered approach to school subjects, which would give substance and depth to a great many historical and cultural references from the twentieth century.

The architecture of the portal is extremely suited to allowing access to the best of European film heritage, presented to the public through a variety of image education pathways. The portal could become an authentic distribution channel for a wide-reaching audience, including young people and children, as well as specialised audiences (educators and instructors). To achieve this goal, the preparatory work for film archives will be to reach agreements with the film copyright holders, and obtain educational distribution rights for all European countries.

The network of film archives will also benefit from the results of previous international cooperation experiences, in particular AB-Cinema and FLICK — which over the years have not only strengthened the practical methodologies used in creating image education laboratory experiences for young people and children, but have also further explored the theoretical universe that is the basis for image education pathways.

A new portal designed for the teacher and educator community, but which also includes self-learning courses for young people, could obtain support from public bodies that normally support education and training.

Considering the many development possibilities inherent in the I-Media-Cities project, we hope that European archives and film li-

braries will create workgroups and develop cultural proposals. In this regard, the further promotion of exchange and discussion between partners, the collaboration of the Association of European Film Archives and Cinematheques, and open dialogue with those who finance and support the various projects in Europe will be of vital importance. Workgroups will be able to come up with ideas for projects and initiatives that aim to welcome and acknowledge the value of the plural nature of modern communities, cultivate conscious and informed citizens, create new reciprocal links, break down prejudices, offer opportunities and accessibility with regard to cultural heritage and creativity, and create more attentive and curious audiences of European cinematographic heritage.

CONTRIBUTORS

Austrian Film Museum (Vienna)

The Austrian Film Museum (OFM) is Austria's leading cinematheque and excellence center for the study and appreciation of film. Founded in 1964, the Film Museum collects, preserves, and presents film media in all of its diversity. Renowned for its screening series, educational programs and publications, since 2007 the Film Museum has been particularly active as a research partner in a number of international projects at the intersection of film and media studies, cultural history and digital humanities. This includes a number of collaborations with the Vienna-based Ludwig Boltzmann Institute for Digital History, most notably "Film. City. Vienna: A Transdisciplinary Exploration of Vienna as a Cinematic City" (2009-2011), and "Ephemeral Films: National Socialism in Austria" (2011-2016). The Austrian Film Museum is a not-for-profit organization financially supported by the Austrian government and the City of Vienna. It is a member of the International Association of Film Archives (FIAF) and the Association of European Film Archives and Cinematheques (ACE).

Raoul Schmidt graduated in photography at the Academy of Fine Arts, Vienna, in 2004. He is a film archivist at the Austrian Film Museum and associate staff member at the Ludwig Boltzmann Institute for Digital History, and participant in the FIAF Summer School on Film Restoration 2009. Currently a PhD candidate at the University of Arts and Industrial Design, Linz, Schmidt holds a scholarship from the Centre of Doctoral Studies at the Academy of Fine Arts, Vienna, and from the University of Arts and Industrial Design, Linz for his PhD thesis on the relations of amateur films and their archives. He is also a member of ICOM and INCCA.

Cineca. Consortium of Universities (Bologna)

Cineca is a not-for-profit consortium, made up of 67 Italian universities, nine Italian research institutions, and the Italian Ministry of Education. It is the national supercomputing facility, one of the largest in Europe, and operates in the technological transfer sector through high performance scientific computing, the management and development of networks and web-based services, and the development of complex information systems for processing large amounts of data. Cineca develops advanced information technology applications and services, serving as a bridge between the academic world, the sphere of pure research, and the world of industry and public administration. Moreover, Cineca has many years of experience in EU projects.

Simona Caraceni, PhD at Plymouth University in Aesthetics and Technology, is involved in projects for Museums and Virtual Heritage at the VisIT-Lab of the Department of Supercomputing, Applications and Innovation at Cineca. She is a member of ICOM, and a freelance journalist. She founded and coordinated the Commissione Audio-Visivi e Nuove Tecnologie of ICOM Italy from 2007 to 2016, and has been elected as a member of the Executive Board of AVI-COM from 2010 to 2019, holding the positions of general secretary and vice president.

Cinzia Caroli joined Cineca after completing her degree in Physics. She has been involved in various EU-funded projects related to metadata management, rights management, and persistent identifier technologies. Initially, she was involved in software development and maintenance, while recently her activity is more focused on requirements analysis.

Beatrice Chiavarini, master's degree in Architecture. Collaborator at Cineca since 2016. Activities: 3D modeling, 3D Web app developer, architectural design, animation. She worked at "MUVI — Virtual Museum of Daily Life, the 1930s section", "Lucio Saffaro Foundation, Dodecaedro Paolense", and on the "Lapidario di Santo Stefano" project.

Mattia D'Antonio, master's degree in Computer Science, PhD in Biochemistry, Molecular Biology and Bioinformatics. In CASPUR since 2007, he joined Cineca in 2015 in the 'Middleware team' of the HPC department. He is mainly involved in European projects for data management, the building of automatic analysis workflows, and development of web applications. Main expertise: Python, PHP, Java, MySQL, Neo4j, Docker.

Antonella Guidazzoli, master's degree in Electronic Engineering and also in History, cum laude. Since 2007, head of Cineca Visual Information Laboratory VisIT Lab. Her computer graphics activities have progressively covered different fields, ranging from scientific visualization to digital cultural heritage and virtual reality. She has published several papers presented at major conferences, such as ACM Siggraph. She was the WP leader in I-Media-Cities for the activities devoted to the visual design interface, and has been project manager of digital heritage projects, such as "Isabella d'Este Virtual Studiolo", "Experience Etruria", and the exhibition *Gli etruschi e L'aldilà* ("Ape the Etruscan"), awarded the FIAMP 2012 Gold Medium-Length Film Award.

Silvano Imboden, master's degree in Computer Science. In 2000 she joined Cineca. Activities: scientific visualization, forensic analysis, real-time rendering, offline rendering, movie production, virtual archaeology, seismic imaging, software design, user interface/interaction design and programming. Papers at Siggraph, Eurographics, Blender conference, etc. Currently a senior architect and developer; technical supervisor in CG movies, working on the I-Media-Cities Horizon 2020 EU project.

Maria Chiara Liguori, master's degree in Political Science and also in Contemporary History, cum laude; PhD in History and Computing. Research interests: History of Material Culture, Women's Studies, ICT for Digital Heritage. Papers at Siggraph, Digital Heritage, etc.. Head and coordinator of the MUVI project. At VisIT-Lab Cineca since 2012 as Virtual Heritage Coordinator. She worked on "Ape the Etruscan", the three "Ati" movies, "Isabella d'Este Virtual Studi-

olo, the video”, “Il piccolo Masaccio e le Terre Nuove”, and she is currently working on the I-Media-Cities Horizon 2020 EU project.

Margherita Montanari, degree in Sociology. She joined Cineca in 1990 in a team that worked in developing decision support systems for managing different knowledge domains. She has been involved in the extraction of concepts, preparing classifications and taxonomies. Now she is involved in activities of systems requirement analysis, metadata managing, and application functionality testing.

Gabriella Scipione, master’s degree in Physics and PhD in Physics. She currently leads the “Data and Metadata Management” team at the HPC department of Cineca, focusing on data and metadata management, persistent identifiers, rights management, digital archive, open data, and linked data. Since 2017, she is the PRACE (Partnership for Advanced Computing in Europe) council delegate for Italy. She has fulfilled the roles of principal researcher and project manager for different EC funded projects for the HPC department at Cineca, such as I-Media-Cities (under H2020) and “Mistral” (under the CEF framework). From 2002 to 2016, she was the technical coordinator of the multilingual European DOI Registration Agency (mEDRA) project.

Giuseppe Trotta, master’s degree in Computer Science, right before joining forces with mEDRA in 2008, where he is tasked with bringing enhancements to the existing metadata repository and the different web services built on it. He joined Cineca in 2016 as part of the ‘Metadata team’ of the HPC department. He is mainly involved in designing and developing metadata repository and semantic aware applications. Main expertise: Python, Java, SQL/NoSQL databases, Data Modelling, Semantic Web.

Cinematek. Royal Belgian Film Archive (Brussels)

The Royal Belgian Film Archive is one of the most important archives in Europe and in the world, due to its collections, its activities in exhibiting and distributing archival films across Europe, its role in in-

ternational associations of archives (FIAF, ACE), its technical staff who have a history of breakthrough research in film restoration, and its activity of research in a network of collaborations via many EU-funded projects over the past 20 years. The archive was also among the first to receive and process deposits of born-digital elements for long-term preservation. The activities of the archive include public access through its three theatres in Brussels (and facilities in central Brussels, also used for press events and previews), and other programmes in other towns as well; an active programme of film loans and film distribution serving a large number of theatres, archives, and universities in Belgium and in Europe.

Davy Hanegreefs, master's degree in Germanic Literature and Cultural Sciences (Free University of Brussels), has been working on digital projects for cultural institutions since 2005. After his work as e-commerce manager for a large Belgian media chain, he became the innovation manager of the Belgian Booksellers Federation, where he guided publishers, writers and bookstores through their digital innovation processes. At the Royal Belgian Film Archive, he is manager of Digital Engagement and Innovation and serves as the project manager for I-Media-Cities. Currently, he is involved in several European projects developing linked open data standards and artificial intelligence tools for archives and museums, and is a guest lecturer at the University of Antwerp on digital innovation and linked metadata.

Nicola Mazzanti, director of the Royal Belgian Film Archive, head of collections, preservation and digitization, has great experience in film preservation and film literacy. He is also a member of the FIAF technical commission, a professor of film preservation, and an active member of SMPTE and AMIA. He was project manager for the EU project "FIRST" and "FORWARD" and coordinated the Archive's efforts on the ICT project EDCINE and the EFG1914 project.

Cineteca di Bologna (Bologna)

Cineteca's contribution to I-Media-Cities started with the online publication of about 8,000 photographs (mostly unpublished) and nearly

200 hours of films of Bologna, from 1900 to the 1990s. The initial selection in itself was a curatorial act: the Cineteca preserves over two million photographs of Bologna (from 1870 to 2000). The number of films that show the city is much wider than the selected titles. It was not easy to find the most representative images of the various decades. Moreover, the strength of the project, through new ways of research and study into the history and urban development of European cities, lies precisely in the work of archivists and researchers capable not only of making the images available to the best technical standards, but also to describe the documents, re-inserting them into the context in which they were originally produced.

Gian Luca Farinelli has been the director of the Cineteca di Bologna since 2000. In 1986 he created the *Il Cinema Ritrovato* Festival, and in 1992 he oversaw the creation of the restoration lab *L'Immagine Ritrovata*. He oversaw more than 400 restorations and played a leading role in the creation of the Association of European Film Archives and Cinematheques (ACE). In 2014 he was awarded the Telluride festival's Silver Medal for his work in preserving and promoting film heritage.

Anna Fiaccarini. After a master's degree in History of Cinema (Paris 3, La Sorbonne Nouvelle) and professional training in Preservation and Restoration of Moving Images (Archimedia Project, 1996), Anna joined Cineteca di Bologna in 1998, working on events such as the *Il Cinema Ritrovato* Festival. From 1999 to 2004 she was appointed chief of Film Archives at Cineteca, taking care of preservation and cataloguing projects. From 2000 to 2001 she undertook the first developments of cataloguing and digitizing activities for Chaplin's paper collection. Tasks: supervising activities, knowledge of cataloguing standards and software. Since 2005, she holds the post of director of Library and Non-Film Archives at Cineteca di Bologna. She has published various essays and supervised publications, such as the catalogue *Cinema Ritrovato* (2000) and the book *Limelight*, published in the Chaplin Project Collection in 2002. As director of the Library she is also supporting and collaborating in educational activities and training, and has been involved in various projects supported by the

EU. (See EFG Project and EFG14, I-Media-Cities, etc.). Since 2001, she is a temporary lecturer at Bologna University (DAMS/Cinema Department) on Documentation of Cinema Heritage (including laboratory activities), and also fulfils teaching activities at the universities of Milan, Gorizia, and Urbino.

Enrica Serrani. After a degree in Cinema Studies, in 1999 she started her collaboration with the Cineteca di Bologna. Since 1999, she has been in charge of the organization of events and meetings for the Il Cinema Ritrovato Festival. Since 2001, she has been the coordinator of Ipotesi Cinema, Ermanno Olmi's film school, and has worked on the production of documentary films made by the school. From 2005 to 2012, she has been in charge of the Film Commission office in the Bologna Municipality, hosted by Cineteca di Bologna. Since 2012 she is responsible for European Projects and since 2015 is head of the Cineteca Professional Training Department.

Danish Film Institute (Copenhagen)

The Danish Film Institute (DFI) is the national agency responsible for supporting and encouraging film and cinema culture and for conserving these in the national interest. The Institute's operations extend from participation in the development and production of feature films, shorts and documentary films, over distribution and marketing, to managing the national film archive and the cinematheque. The archive and digitization department is responsible for film preservation, restoration and documentation. DFI is considered one of the leaders among film archives, when it comes to exploring digital possibilities. With a film industry at the cutting edge of technology, DFI is often faced with the challenge of using both experienced hindsight and having an eye on new opportunities. DFI has been partner in the European Film Gateway (EFG) and a number of other EU-projects.

Thomas C. Christensen (M.A. in Film Studies) is curator at the Danish Film Institute, where his main areas of responsibility are preservation, digitization and restoration of Danish cinema. He has super-

vised several full digital intermediate restorations and a series of DVD publications. He is a board member of the Association of European Film Archives and Cinematheques (ACE), and has been head of the FIAF Technical Commission, 2006-2011. He is currently involved in a project digitizing all surviving Danish silent cinema (400+ films).

Deutsches Filminstitut (Frankfurt)

Founded in 1949, Deutsches Filminstitut (DIF) is the oldest, and one of the largest, film heritage institutions in Germany. Since the incorporation of the Deutsches Filmmuseum, Frankfurt/Main in 2006, DIF has been able to provide an exceptional variety of services and expertise in film: from managing the archive with its numerous collections covering all aspects of cinema and cinematography, to scientific analysis of the material, and eventual public presentation in cinema screenings, festivals and exhibitions or via print or online publications. DIF also runs its own cinema, which was one of the first municipal cinemas in Germany.

Apart from its national and international collections, DIF holds film and photo collections related to the region of Hesse and the cities of Frankfurt and Wiesbaden.

Julia Welter has been working with Deutsches Filminstitut (DIF) as project manager for several EU-funded projects, such as “EFG1914” (2012-2014) and “EFG – The European Film Gateway” (2008-2011), where she coordinated the work of altogether 40 project partners. From 2006-2009, she was on the management team at DIF for the MEDIA Plus Pilot Project MIDAS. Julia Welter studied at the University of Marburg, Germany and the University of Portsmouth, England. She holds a master’s degree in German and English Literature and in Film Studies.

Filmoteca de Catalunya – ICEC (Barcelona)

Filmoteca de Catalunya is the public institution responsible for the conservation and diffusion of Catalan film heritage since 1981. It de-

depends on ICEC, the Catalan Institute for Cultural Companies, which is part of the Ministry of Culture of the Government of Catalonia's, the Generalitat de Catalunya. The head office with two theatres, library and exhibition spaces is in central Barcelona and has over 150,000 visitors per year. The conservation centre, specially designed to preserve Catalan film heritage, is in Terrassa, 40km from Barcelona. Filmoteca de Catalunya has the most important film collection in our country and this collection makes our cultural diversity visible; over 30,000 titles from 1896 till now; fiction, documentaries, commercials, cartoons, newsreel and amateur productions; in all types of media or system, photochemical, video and digital.

Mariona Bruzzo graduated in Art History at the University of Barcelona, and holds a M.A. in Museum Studies from the Universidad de Alcalá de Henares. Since 2003, she is head of the Film Conservation and Restoration Centre of the Filmoteca de Catalunya, whose mission is to recover, preserve, restore and disseminate the film collection; and is also project manager of the Filmoteca's DVD edition, three catalogues of the nitrate film collection and the restoration projects; member of the executive committee of ACE, Association of European Film Archives and Cinematheques; and a partner in an innovative European project, I-Media-Cities, founded by EU Horizon 2020, a platform for research on films using new digital tools. She has written articles on film and archival practice.

Fraunhofer Institute for Digital Media Technology IDMT (Ilmenau)

The Fraunhofer Institute for Digital Media Technology IDMT (Gesellschaft zur Förderung der angewandten Forschung e.V. - FhG) is Germany's leading non-profit research organisation consisting of currently 60 institutes for applied research. Fraunhofer IDMT, located in Ilmenau, Thuringia, conducts applied research in the field of digital media technologies. Its preferred business model is technology marketing of research results via licensing patents and software components to commercial customers for integration, or indirect technology marketing via integration partners. After being a subsidi-

ary of Fraunhofer IIS (“Home of MP3”), the Fraunhofer Institute for Digital Media Technology IDMT became an independent institute in January 2004. About 60 full-time employees along with the same number of students are working in various research fields, including acoustics and 3D audio, A/V signal analysis, media security and privacy, hearing and speech technology, children’s media, human-machine interaction, and bio-inspired auditory and visual models, for example.

The metadata department of Fraunhofer IDMT deals with research and development with respect to image and video analysis, MIR, automatic annotation and search, metadata management, content aggregation and distribution, copyright management, security and privacy.

Alexander Loos is a research engineer at the Audio-Visual Systems group of the Fraunhofer Institute for Digital Media Technology (IDMT), Ilmenau, Germany. He studied Computational Engineering at the Ilmenau University of Technology and completed his studies with a diploma thesis entitled “Erweiterung von Verfahren zur Transkription von Solo-Parts in Musikstücken”.

In 2009 he joined the institute as a PhD student in the Audio-Visual Systems group. He is author of a number of scientific publications and has worked on several industry projects and publicly funded research projects in the field of audio-visual fingerprinting, content-based image retrieval, object detection and classification, as well as face recognition. Since 2016 he is a postdoctoral researcher in the Audio-Visual Systems group at Fraunhofer IDMT. His main research interests are image and video analysis, pattern recognition, face recognition, multi-modal signal processing, and machine learning.

Christian Weigel has been an active researcher in the computer vision domain since 2004. Until 2012 he was with the Institute for Media Technology at the Ilmenau University of Technology. Since 2012 he is a senior researcher at Fraunhofer IDMT. Christian has been involved in several national and European projects, such as the 3DTV NoE and Mobile 3DTV. His fields of research cover topics of computer vision, stereo analysis and view synthesis, in which he earned

his PhD in 2014. He published several papers on 3D video processing, stereo matching and view synthesis for communication applications. His current research interests are video identification and classification.

iMinds-IMEC (Brussels)

IMEC (formerly known as iMinds) is an independent research institute founded by the Flemish government to stimulate ICT innovation. It brings together researchers from various scientific disciplines from the Flemish universities in fundamental and applied research projects. Within IMEC, the Living Labs team has access to a panel of more than 40,000 local users and is supported by over 15 full-time staff members. A range of Living Lab methodologies are used, varying from user research, business modelling, value network analysis, to knowledge-based collaborative innovation. This expertise is applied in a number of domains such as smart cities, health, manufacturing, media, and the broader Future Internet.

Olivier Braet is a senior researcher with IMEC-SMIT (IMEC - Centre for Studies on Media, Information and Technology), a research institute affiliated with Vrije Universiteit Brussel which specializes in user, policy and industry research. Within national and international research projects he focuses on the economical and industrial dimensions of new media, information and communication technologies, focusing on market opportunity and revenue models taking into account the regulatory and technological context.

Heritiana Ranaivoson obtained a PhD in Economics (Université Paris 1, Panthéon-Sorbonne) in 2008 on Cultural diversity in the recording industry. He also studied Economics and Management at Ecole Normale Supérieure de Cachan (France). He is particularly interested in the impact of digital technologies on the diversity of content in the cultural and media industries, what we do with such content diversity, and the policies that are needed in this new environment. He analyses these changes from a background in industrial economics and business modelling, with a particular interest in combining quantitative

and qualitative research (e.g., the quantification of qualitative aspects such as diversity or innovation).

Koen Vervoort is a senior Living Labs expert at City of Things (Antwerp, Belgium) and IMEC (Leuven, Belgium). He shares knowledge and experience with internal and external actors as a User Involvement Evangelist. He challenges these actors to constantly improve their ways of interacting, supporting and cooperating with (international) (large) panels of users and stakeholders in (complex) ecosystems. He manages several thematic data monitors (e.g., digimeter, Smart City Meter), and sets up cross-border co-operations between different Living Lab panels.

Institute for Cultural Heritage of the Emilia-Romagna Region (Bologna)

The Istituto Beni Culturali (IBC) of the Emilia-Romagna Region was founded in 1974 to support and advise the Regional Government in policy making and act as an advisory body to local authorities in the field of cultural heritage, including museums, libraries, archives, natural and built heritage.

It defines quality methods of preservation and promotion of cultural heritage, and management criteria and quality requirements of museums, libraries and archives. It also coordinates and participates in the design of museums, cultural institutions and parks, and is responsible for vocational and continuous training of in-field workers. IBC promotes and runs surveys on cultural, artistic and natural heritage, research, cataloguing, restoration, and digitization. It develops activities for census, recovery, qualification and requalification of buildings, as well as complex historical and contemporary architectural and archaeological sites, areas of industrial archaeology. It takes care of cultural enhancement, promotion and dissemination and develops services for cultural institutions and citizens, through exhibitions, publications and courses.

IBC is tasked to coordinate, foster and perform research, with a specific focus on the city of Bologna.

Silvia Ferrari holds a degree from the University of Bologna, DAMS (music, art and performing arts) in Semiology of Art. She is experienced in the field of MM communication and cataloguing of contemporary art and photography. She has been active for many years at the City Gallery of Modena in the organization and curation of several exhibitions, cultural events, catalogues and communications on contemporary art and photography. Since 2014, Silvia Ferrari has been working at IBC, where she has retrained in book material cataloguing and cultural heritage protection. At present, she is involved in projects for the enhancement of artworks and books, and for the upgrading of libraries. She collaborates on the editorial board and publication of the online magazine *Rivista IBC*.

Margherita Lanzi After her graduation from DAMS (music, art and performing arts), with a specialization in Criticism and History of Cinema, she graduated in Cinema, Television and Multimedia Production, in Bologna. From 2009, she became involved in the local cinema environment, specializing in organizational management and promotion. She collaborated with Doc/It (Associazione Documentaristi Italiani) on a digital library and international audio-visual market, and with the association D.E-R (Documentaristi Emilia Romagna). She has attended many training courses about digital film restoration and the conservation and enhancement of cinematographic heritage.

Stefano Pezzoli holds a degree in Law, and a diploma in Archival Studies and Palaeography. He worked at IBC from 1983 to 2016 and was in charge of the selection and acquisition of the sources relevant to the regional area historic town centres, countryside architecture and landscape. He has researched cartographic collections, archives and libraries, locally, in Italy and abroad. He has organised and classified the collected items at IBC and presided over databases relevant to cartography, aerial photography, and historic settlements in Emilia-Romagna. Several publications.

Pier Giacomo Sola holds a degree in Engineering from the University of Bologna. He has been working since 1988 in several national

and European projects in the field of IT for education, training and culture, and worked as an expert in several European Committees in this area. He has managed over 100 research projects and studies in culture and education, for EU-funded programmes (ErasmusPlus and Lifelong Learning, European Regional Development Fund, Framework Programmes and Horizon 2020, etc.), national and regional government bodies, cultural heritage institutions, foundations, NGOs, and private companies.

Priscilla Zucco holds a degree from the University of Bologna, DAMS (music, art and performing arts); a post-graduate diploma in IT for Humanities, Archive & Library Automation (Bologna University), and a diploma in Archival Studies and Palaeography (Modena). Self-employed, she developed her skills in cataloguing of photos to international standards, preservation and management of photographic archives. She entered IBC in 1993, where she is in charge of the photo library and takes care of cataloguing digitization and the enhancement of the photo collection.

Ludwig Boltzmann Institute for Digital History (Vienna)

The Ludwig Boltzmann Institute for Digital History (LBI) has a long-standing focus on visual history. Established in 1977, LBI has been housed at the Vienna Hofburg since 2010. Non-theatrical and other ephemeral films have played a key role in many of LBI's thematically linked joint projects with the Austrian Film Museum (OFM), such as "Film. City. Vienna: A Transdisciplinary Exploration of Vienna as a Cinematic City" (2009-2011), "Sponsored Films" (2010-2013), "Amateur Film Archeology: Excavations in Modern Visual Culture" (2011-2013), "Ephemeral Films: National Socialism in Austria" (2011-2016), and "I-Media-Cities" (2016-2019)". LBI is an institute of the Ludwig Boltzmann Gesellschaft (LBG), Austria's independent research incubator with a focus on the health sciences and the humanities.

Vrääth Öhner, born 1965, is a film and media theorist and has been working as a senior scientist at the Ludwig Boltzmann Institute for

Digital History in Vienna since 2018. From 2011 to 2017 he was a university assistant (PostDoc) at the Institute of Theater, Film and Media Studies at the University of Vienna. Between 2000 and 2011 he was a participant in several research projects, including the LBI projects “Film. City. Vienna: A Transdisciplinary Exploration of Vienna as a Cinematic City” (2009-2011), and “Amateur Film Archeology. Excavations in Modern Visual Culture” (2011-2013). His research interests include the theory, aesthetics and history of (documentary) film and television as well as of media and popular culture. His most recent publications include *Abenteuer Alltag. Zur Archäologie des Amateurfilms* (ed.), Vienna (2015), and *Sichtbarmachen. Politiken des Dokumentarfilms* (ed.), Berlin (2017).

Jakob Zenzmaier has been a research associate at LBI since 2011. He studied history at the University of Vienna. As a participant of the projects “Film. City. Vienna: A Transdisciplinary Exploration of Vienna as a Cinematic City” (2009-2011), “media wien” (2011-2016), and “Ephemeral Films: National Socialism in Austria” (2011-2016), he has gathered years of experience in metadata enrichment and become a top expert on manual film annotation.

National Museum of Cinema (Turin)

The National Museum of Cinema is located since July 2000 inside the Mole Antonelliana, a landmark monument and symbol of Turin. This ‘temple of cinema’ spirals upwards through several exhibition levels, creating a spectacular display of its extraordinary collections and retracing the history of cinema from its origins to the present time. The Museum’s rich heritage includes nearly 1.8 million works including films, archival documents, photographs, equipment and objects of art, posters, movie memorabilia, books and sound recordings.

Claudia Gianetto graduated in Film History and Criticism from the University of Turin’s Department of Humanities, and has worked at the National Cinema Museum since 1990. She is head of the Film Archive, managing film collections, preservation and restoration. She

collaborates with the Education Dept. on dissemination activities related to Italian silent cinema.

Stockholm University (Stockholm)

The Department of Media Studies at Stockholm University offers courses and conducts research in journalism, media, communication, fashion and cinema studies. The research profile of the Section for Cinema Studies comprises work on early Swedish and international film history, regarding both fiction features and documentaries, as well as television history and alternative film cultures such as avant garde film, educational film and pornographic film. In our publications, art meets with business, philosophy with fashion, and auteur icons with gender and queer studies. National film culture interacts with the transnational, the local with the global, and celebrities with postcolonial analyses. Affect studies co-exist with media convergence, aesthetics with technology, and the media-specific with intermediality. It is this successful framing of our field – thematically, theoretically, geographically and historically – that offers the rationale for the leading status of the research carried out within the Stockholm version of Cinema Studies.

Ingrid Stigsdotter is a Film Studies researcher interested in reception and representation. Her PhD research (University of Southampton, UK, 2008) dealt with European cinema in Britain, using empirical audience data to discuss the tendency for some films' and stories' ability to 'travel' and reach audiences across cultural, linguistic and national borders, while others remain a local concern. This has led to a continued interest in the relationship between the local, the national, the regional and the international, explored for example in BBC TV adaptations of Henning Mankell's *Wallander* books and in the I-Media-Cities project.

Stigsdotter's main research focus in the area of representation concerns the topic of women in Swedish film history, which she currently explores within the project "Representing Women: Gender Swedish Film Culture and Production" (2018-2020), funded by RJ, the Swedish Foundation for Humanities and Social Sciences. She

currently holds a position as Researcher in Cinema Studies at Stockholm University's Department for Media Studies.

Swedish Film Institute (Stockholm)

The Swedish Film Institute (SFI) is the major body in the film sector in Sweden. Its mission is to subsidize the production and distribution of new films, to preserve and give access to Swedish film heritage and to promote Swedish cinema in an international context. The Archival Film Collections of the Swedish Film Institute constitute one of the oldest film archives in the world. Our mission is to collect, catalogue, preserve and give access to Sweden's film heritage, by which we mean all Swedish and foreign films released in cinemas in Sweden: feature films, non-fiction films, animation, commercials, newsreels, etc. SFI has experience in EU-funded projects and is active at international level within FIAF (International Federation of Film Archives) and ACE (Association of European Film Archives and Cinematheques). At national level, it collaborates with the national platform to provide access to national film heritage filmarkivet.se.

Camille Blot-Wellens is a Historian, Researcher and Archivist, and currently project manager at the Swedish Film Institute. She has been an associate researcher and film restorer at the Filmoteca Española (Madrid, Spain, 2000-2007), head of Film Collections at the Cinémathèque française (Paris, France, 2007-2011) and an independent researcher (Stockholm, Sweden 2012-present) collaborating with European and International institutions. She is also a member of the FIAF Technical Commission, and teaches at Université Paris 8 (France) and the Université de Lausanne (Switzerland), author of two books and several articles in scientific journals, and recipient of the Jean Mitry Award and the Outstanding Achievement Award for Film Heritage (2018).

University of Barcelona, GRACMON (Barcelona)

On 3 November 1450 King Alphonse V unified all university education into the *Estudi General*, finally called Universitat de Barcelona, the University of Barcelona (UB).

The UB Faculty of Geography and History holds the Art History Department, and GRACMON is one of its research groups, with over 20 years of activity and including researchers in the departments of History of Art and Design and Image, and has been involved in many publications, funded projects, conferences, and other organized events and exhibitions. The group, in addition to doing research projects focused on outreach and knowledge transfer, in recent years has delved into the possibilities of e-research applied to Humanities. The main research has become a benchmark for the study of Modernism, Noucentisme, Design, and Cultural Studies on the city of Barcelona.

Teresa-M. Sala is professor of History of Modern and Contemporary Art (University of Barcelona). From 1991 she has taught at the Faculty of Fine Arts and the Faculty of Geography and History. She is currently the coordinator of the master's degree in Cultural Heritage Management and Museology. In her activity as a curator, she was invited by the Van Gogh Museum in Amsterdam for the exhibition *Barcelona 1900* (2007). She won the *Réseau Art Nouveau* competition to curate the exhibition *Art Nouveau & Nature* (2011-2013), a traveling exhibition for different European cities of Art Nouveau. She is also the director of GRACMON (Research Group on History of Contemporary Art and Design) at the UB. GRACMON was a pioneer in the use of tools for Digital Humanities. Most of her research has dealt with issues relating to Cultural Studies about art and society, image and representation of the city, cultural heritage and urban landscape, transfers and interartistic relationships. She is the director of the *Singularitats* collection, part of the editorial board of several scientific journals, and the main researcher on the project *Between cities: Cultural landscapes, scenes and identities (1888-1929)*, with a grant from the state Education Ministry. Part of the GRACMON team participate in I-Media-Cities as partners of the Filmoteca de Catalunya.

Irene Gras is a graduate in History of Art from the University of Barcelona, and completed doctoral studies in History of Art at the UB in 2010, with a thesis on Decadentism in Catalonia and the interrelations between art and literature around 1900. She teaches subjects related to the European art of the nineteenth and twentieth centuries at the University of Barcelona. Irene has participated in national and international conferences and has published several articles and book chapters on her areas of specialization: Modernisme, Symbolism and Decadence in the nineteenth century, sculpture and relations between Catalonia and America.

Isabel Fabregat holds a PhD in History of Art from the University of Barcelona. She is a member of the research group GRACMON and currently associate professor at the UB. Specialized in museology and 19th-century painting, she is interested in methods and tools of heritage dissemination in the network. She has had several research fellowships to undertake research in France and published articles about artistic production of the 1900s. She has worked as assistant curator at the Musée National d'Art Moderne — Centre Pompidou of Paris, and as curator at the Museu Nacional d'Art de Catalunya and CaixaForum.

Núria F. Rius holds a PhD in History of Art from the University of Barcelona, 2011 (Spain), recognized with the Extraordinary Doctorate Award. She currently works as associate professor at the University Pompeu Fabra and Escola Massana, Centre d'Art i Disseny. Specialized in the study of Spanish history of photography, she regularly collaborates with several cultural institutions in Catalonia, and has received several grants to research abroad (Université Sorbonne-Paris IV with Dr. Guillaume Le Gall; University of New York with Dr. Jordana Mendelson).

Enric Ciurans is an aggregate professor at the University of Barcelona, and academic secretary with the Department of Art History. He teaches subjects related to the Performing Arts, and is part of the consolidated research group GRACMON (Group of Research in History of the Art of Modernism and Noucentism) and various research projects funded outside of Catalonia. He collaborates with several periodic Catalan publications.

University of Athens, Laboratory of Visual Media (Athens)

The Laboratory of Audiovisual Media aims to provide both the students and the professors of the Department of Communication and Media Studies with a high-quality range of services. It supports a number of courses in Film and Cultural Studies, Documentary Production and TV and Radio Production. It equips students and researchers with all the necessary tools to analyze, produce and research the moving image.

Ioulia Mermigka, PhD in Cultural and Film Studies, Department of Communication and Media Studies, National and Kapodistrian University of Athens. She has collaborated with the Greek Film Archive as a documentation specialist and audio-visual archivist. She is currently an adjunct lecturer and researcher in Cultural and Film Studies with the Department of Communication and Media Studies at the University of Athens.

Anna Poupou, PhD in Film Studies from Université de Paris 3 – Sorbonne Nouvelle. She works as an adjunct lecturer at the Hellenic Open University and in the Theatre Studies Department of the National and Kapodistrian University of Athens. She has collaborated with the Greek Film Archive as a programmer.

Urban Center Metropolitano (Turin)

Urban Center Metropolitano (UCM), also known as Urban Lab, is an independent association set up to inform and spread knowledge about urban problem-setting, policy-making and planning processes in Turin and its metropolitan area. It is a tool for communication, research and promotion, as well as a place for debate and information for local residents, experts in the field and local businesses. Urban Lab coordinates, fosters and performs research with a specific focus on the city of Turin and its metropolitan area. Thanks to its unique mandate and structure, UCM can coordinate research activities in various fields, networking and involving local stakeholders as well as

supporting and organising dissemination activities thanks to its national and international network.

Giulietta Fassino is the cultural project manager at Urban Lab in Turin. Architect and PhD in History of Architecture and Urbanism, she has been researching the contemporary city with a special focus on the history of public spaces, their uses and representations since 2002, and working as an editor and author in architectural publishing. She has been a member of the editorial staff of the monthly magazine *Il Giornale dell'Architettura* for ten years, writing articles and coordinating many reports on urban change. She cooperates with several EU programmes for networking cities, organizations, experts in the field and stakeholders in the field of urban regeneration and adaptive re-use. She coordinates Urban Lab's research in the H2020 I-Media-Cities project. She has a particular interest and expertise in public history, curating workshops, publications, exhibitions, guided tours, and endorsing a systemic and interdisciplinary approach to cultural production.

I-Media-Cities. Innovative e-Environment for Research on Cities and the Media presents the results of an innovative project undertaken by the film archives of Athens, Barcelona, Bologna, Brussels, Copenhagen, Stockholm, Frankfurt, Turin and Vienna, in conjunction with several leading research centres and technological innovators. Together they have developed a digital platform for viewing a wide range of images and motion pictures.

More than 1,000 films dating from 1890 to 1989 have been incorporated in the platform, expressly selected to give the project coherence and meaning. Each city is represented both singularly and generally, revealing similarities and differences between them. The producers, actors, directors, places, people, and historical, social and political events are listed to facilitate analysis in areas such as sociology, urban anthropology, town planning, and architectural history, among others.

The objective is to propose a new way of disseminating film collections, bringing them to a wider public, and stimulating research into cities in the fields of the humanities.

