TECHNOCULTURE

Film archiving and restoration

Episode 24

Full transcript

Guest: Giovanna Fossati [Giovanna]
Host: Federica Bressan [Federica]

[Federica]: Welcome to a new episode of Technoculture. I'm your host, Federica Bressan, and today my guest is Giovanna Fossati, Professor of Film Heritage and Digital Film Culture at the Department of Media Studies at the University of Amsterdam and Chief Curator at the Eye Filmmuseum in Amsterdam. She is the author of the book From Grain to Pixel: The Archival Life of Film in Transition, first published in 2009 and recently republished in its third edition in 2018. Welcome, Giovanna.

[Giovanna]: Thank you, Federica, very happy to be here.

[Federica]: Technoculture wants to look into how digital technology impacts our lives, our culture, our experiences, and it indeed impacts your field of expertise a great deal. You write in your book that digital technology has changed how films are made, distributed, archived, and even conceptualized. I would like to talk about a couple of those aspects with you, but to begin with, can you explain what we mean by film? Is it just historical films, or is it the movies we go and see at the movie theatre and movies on TV and now on Netflix? So what kind of film are we talking about here?

[Giovanna]: What is film? That's a perfect question to start with and a question that we won't be able to discuss in depth, in this session, I'm pretty sure, but we can start. Film can be many different things, and it very much depends on the perspective you are looking at the topic from and your theoretical approach, and it also depends very much on the language you speak. So film, literally speaking, refers to the original material properties of what we used since the late 1800s to capture moving images on, literally film, a thin layer of celluloid, at first

nitrate of cellulose, very flammable and dangerous, later on acetate of cellulose, and later on, it became plastic polyester. Recently, we don't use film any longer as such. We use data files to capture images on, but still we use 'film' as a term. And I think especially today, when film is becoming digital, I like to keep using that term 'film' that relates to its material origin, because in digital film today, we still see 120 years of analogue film, a tradition that continues in digital film today, and, as you said, it is the films we see on the big screen in the movie theater, but I believe it's also the films we see on Netflix, and really also YouTube films, for instance. Of course, when we start discussing film heritage and the mission of different archives in terms of what they archive, select, preserve, restore, then you can define 'film' in different ways, but as a general term, I think that 'film' refers to moving image captured on some kind of support being analogue or digital.

[Federica]: And when we talk about film in an archival context or we talk about film restoration, do we narrow this definition down maybe to a certain epoch or a certain repertoire, or it's still all of it?

[Giovanna]: Yes. Most archives have a mission, or a policy at least, that defines what are the kind of films and film-related objects they archive, they collect, preserve, and present. National film archives usually define their scope in terms of films that have been produced within the country they are based in. Sometimes, many national film archives are also television archives, so in that sense, the distinction between a film that has been made for cinema and a film that has been made for television, it's still there in terms of technology and probably in terms of how the collection is subdivided, but it's collected by the same entity. There are other archives that have a much narrower focus. Think of Hollywood studios' archives. They only archive the film the studio produces or the film the studio holds copyright for, so they have a much more commercial mission to start with, and they limit their scope to their own productions. Then you have archives that are dedicated to, for instance, a single filmmaker. Think of the Wim Wenders Foundation. They only preserve, restore, and promote films made by Wim Wenders. So there are all kinds of archives with different policies in terms of defining what is they collect and present.

[Federica]: So if I understand correctly, an archive will, again, not acquire materials depending on a generic definition of what film is, but following its own policies, priorities. So film is not necessarily just the production of the great masters or the film [unclear 00:06:15] and YouTube and what we see on television, we don't care for. It's the same medium, but it's not worth preserving, somehow, as for cultivated experimental music and pop.

[Giovanna]: There are a couple of things we can consider addressing this point. First of all, we should realize that 'film heritage' as such is a pretty problematic and controversial term, because who has defined what is heritage and what needs to be preserved or not? So that's

a big question that all archiving institutions are facing today or should face today and reflect upon. But let's narrow down a little bit the scope. There are traditions. For instance, the international film archival community started around the '20s with the establishment of some big archives like the Bundesarchiv, the British Film Institute, and the film department at the Museum of Modern Art in New York. Later on, especially after World War II, many more national archives were established. So this archival movement started with some common ideas about what film was. One of the leading ideas was to establish film as an art, so they all focused very much on what they thought was art film, and that was very much related to avant-garde experimental cinema, so a very specific kind of filmmaking, and very often (not always) in contrast with more commercial filmmaking, especially Hollywood. That was still preserved, but it was mainly left to the commercial archives to preserve their products. Things, of course, evolved because at a certain point, archives realized, well, pretty early on, definitely after World War II, that a whole period of film history was about to disappear, and that was the silent era, so all the films that had been made before 1930 and before the establishment of big film archives around the globe. It is thought that about 70

[Federica]: I mentioned earlier that in your book you say that digital technology has impacted how film is made, distributed, archived and conceptualized. I'm really intrigued by this higher level of conceptualization. Can you talk about it? What do you mean by that? How has technology impacted that?

[Giovanna]: Let's see. There are a number of ways to tackle this question. I think... Well, first of all, I think what's important to realize is that the introduction of digital technology within film as a larger field, from production to distribution and access, has been introduced very slowly already from the 1980s, so now film has become almost 100

[Federica]: I'm a bit surprised by what you just said that YouTube gives an impression of abundance. I think that there's so much up there. Do you actually mean that what is scarce are the movies, you know, historical movies, complete movies? Because user-generated content just seems to be exploding day after day, so I don't see an impression of abundance there. Of course, if you're talking about quality material with good metadata and especially full films, then I may agree. So what do you mean by impression of abundance?

[Giovanna]: Yes, no, in that sense maybe 'abundance' is not the right term, because... Let's rephrase it that way. Because of the abundance of material available online, including a large number of historical documents (and I'm not only talking about film, but photos and archives that have been digitized), there is an expectation and a false impression that everything can be found there. And that's something I encounter definitely while talking with my students but also talking with funding entities, which is really scary, because we still need the money to digitize and make collections available.

[Federica]: I'm still a bit surprised because if there's something you actually don't find on

YouTube is full movies. Some, sure, but the rest is just clips and cat videos and whatnot, so I still don't see how someone may be tricked into thinking that there is a wealth of historical films on YouTube, but maybe I'm not getting something here. I'm sorry.

[Giovanna]: Well, I'm talking about YouTube as example of the many platforms that offer audiovisual content and also the place where most film archives have created channels, so Eye Filmmuseum in Amsterdam, where I work, has a YouTube channel. BFI in London has a YouTube channel. So because YouTube is so well-known and popular, it's also the place where most archives that set out to make their collection available, publish their films.

[Federica]: What can we find on the YouTube channel of the Eye Filmmuseum?

[Giovanna]: Several hundreds of silent films (these are mainly silent films that are in public domain, so the copyrights have expired), all kind of shorts and good number of experimental films. Yeah, that's about it.

[Federica]: If it's true that copyright prevents institution from opening up some of their materials, it's also true that on the other hand when the copyright has expired, the institutions that open up their content for free cannot make a profit or decide not to make a profit on the content that now they could dispose of as they wish. How does this work? Is this a conscious choice of archives, or some institutions actually make a profit on their content?

[Giovanna]: It is a choice, and it's a choice that nowadays is being made by most public archives, and it's a choice that usually derives from, well, first of all, the mission of most archives to make their collection available, freely available, but secondly, also because some of the business models that archives have experimented with in the past decade since they started digitizing their collection have failed. So the reason why archives started developing business models to monetize their collection in the first place was because that became a requirement from funding entities, mainly for public archives from the state funding archives, but it became clear very quickly that investment that was needed to create a platform on which films could be published and paid per view or seen on demand were not attracting really an audience, so they were not repaying themselves. So luckily, from my perspective, most archives gave up on that, although the problem is still what to do with all the films that are under copyright and where the archives could make the content available, but the right holder who want to earn money from that, in most, cases these are not films that Netflix is interested in or any kind of commercial platform like that. So there is a huge amount of film titles of any kind, features, documentaries, experimental, and you name it, that really don't have any access because there is no solution for the copyright, but also no suitable platform to make them available.

[Federica]: After a film has been digitized, it is often restored before it is publicly released,

but what does it mean, exactly, to restore a film? Is it the physical carrier, or is it just the film as the story, the moving images, and what kind of disturbances you remove, and how, and is coloration, for example, of all black-and-white movies a form of restoration or is something else? So what does it mean to restore a film?

[Giovanna]: Film restoration, as a practice and as a discipline, is relatively recent. Film archives used to create new copies of films they were holding in their collection already earlier on the last century, but we really started talking about restoration only in the 1980s, and before that and even throughout the '80s, the focus on restoration was mainly on what we tend to define today as reconstruction, so finding all the missing pieces of a film to recreate the text, so very much from a philological approach, as it used to be when it was originally shown to the audience. In the '80s and '90s a more round approach to restoration has started within the community, so it was not only a matter of reconstructing the film as it used to be in terms of finding all the missing scenes, etc., but also focusing on the material and technical aspects of the films, so looking for the most original elements, possibly the original camera negative if it was still around, or earlier generation copies of the film, and restore the material characteristic of the film in terms of color, in terms of contrast, in terms of light, in terms of sound, of course, and format. So all these aspects of the restoration discipline really became an issue in very recent times, in the '90s, especially, and in the early 2000.

[Federica]: With digital technology.

[Giovanna]: Well, that's an interesting remark because it was around the same time as digital tools became available for restoration. So the first digital restorations date from the early 1990s.

[Federica]: Excuse me. Is restoration of film with analogue tools possible at all?

[Giovanna]: Yes, so... And not only film restoration using analogue or photochemical tools is possible, but is still done, so many, many restorations done today are what I define hybrid restoration. So there is often a part of the process that is done with analogue tools. So back to the restoration practice. Restoration as a practice has evolved in the last thirty years at the same time as new tools, often digital tools, became available, but also in terms of photochemical tools. It is in the past 30 years that film laboratories, as well as archives, have specialized in film restoration, modifying existing analogue, later digital, tools to the end of restoring films. One thing that should be stressed and made clear from the start is that film, differently than many other arts, it's a medium of reproduction, so when you restore a film, you always make a new copy, so it's not, you don't intervene on your original object as you do with a painting or a sculpture. You use the most original elements that have survived from the time when the film was made and originally shown as your source material to make a new film, and the new film is the result of your restoration process, and that's what you can show to a new audience,

and the final result can be analogue or digital. Another important thing to stress is that all the original elements are preserved even after restoration. This is true in all collections, in all kind of archives and all kind of archived objects, and it's very true with film also because any new restoration will go back to the most original element to start with.

[Federica]: Except when you have to clean the physical carrier, because I believe that that happens. In the audio field, there is such thing as carrier restoration, which I really think should be distinguished from audio restoration. I rather call it carrier optimization. You're just trying to restore the physical properties of the carrier as much as possible to optimize signal extraction. Then, when you have your signal in the digital domain, you keep a copy and then you can make as many copies for restoration as you wish. So even with film, I believe that at some point or sometimes you have to put your hands on the carrier, and there you can do damage.

[Giovanna]: What you are saying with regard to audio is very true with film as well. Usually the physical intervention on the original film object is referred to as mechanical repair, and it's very much limited to repairing tears, or replacing old splices, or replacing missing perforations. It's done using as little as possible additional material, so the new splices are made when it's really necessary, and using material that it's not chemically active. So mechanical repair is limited to the minimum necessary in order to run a film through a printer to make a new copy or through a scanner to digitize the images. Once the duplication has been done or the film has been digitized, the original material goes back to the vault where it's kept at very low temperature, possibly below zero, and very low relative humidity.

[Federica]: When we, as audience, are presented a film that has been restored (and that is normally something that is advertised very much) and we have some sort of expectation, I don't think that we still have the critical tools to assess a restoration, but we know very little about how restoration actually happens. Is it just one process, how many people are involved, and what happens first? Do you remove the scratches and the dust, or do you take care of brightness and contrast? So how does, actually, film restoration happen?

[Giovanna]: Well, first of all, let's talk... Before we talk a little bit about the process of restoration and how differently can be tackled and what are the steps and what are the results of the different steps, let's talk a little bit about what we mean with film restoration. It's quite interesting to point out that for a young discipline such as film restoration nowadays is carried out by many different instances, from film archives, public film archives, to private studio archives, from film laboratories to online distribution platforms. And I argue — well, I pretty much argue in my book that there are very different theoretical frameworks from which the idea of film restoration can be conceptualized. Film restoration can be tackled in many different ways. First of all, you need to establish what you want to restore. Each film archive,

public or private, has a slightly different idea of what a film restoration is. In many cases, also a quite different idea of what the original film to be restored is. It can be the film as it was intended by the filmmaker, the film as it was shown to its first audience, but also the film as it has survived many years later within the archival vault. Once you decide what is the film you want to restore, then you set up a restoration strategy, deciding, for instance, that... If you want to proceed with photochemical restoration, a digital restoration, a hybrid restoration, it very much depends on the means you have — technological means, but also financial means to pay for the restoration, how much time you can spend on it. Many archives nowadays aim for what's referred to as a pristine restoration. Because digital restoration tools are so effective, archives that have the means to pursue all-round digital restoration tend to aim cleaning up all signs of deterioration on the film image, clean up the soundtrack, the audio as much as possible, and very often they also make some concessions to the original feel and look and sound of the film, translating the film into current sound systems, for instance, making a audio film into a stereo or a 5.1 film or...

[Federica]: 5.1, just like colors, sometimes are things that were not there in the beginning, so are they still restoration? Recently there has been a controversy around the movie by Peter Jackson, the so-called documentary on World War I They Shall Not Grow Old, because it's been called a documentary and some archivists had a problem with that in that colorization and other techniques added something to the original footage that was not there. What's your take on this? Can we still call it restoration, and is it a problem to call such work documentary, or it's a work of fiction?

[Giovanna]: Well, it's very interesting because... Well, first of all, I think all archivists would agree that a colorization and also changing a sound system and also making this big change in how the film used to look like originally cannot be called restoration. On the other hand, I think — and this relates to the discussion we were having earlier about the importance of access — I think most archivists will agree that making films available to a large audience and kind of finding ways to reuse archival films is also very important. So there is a bigger tolerance about what you can do with archival material to make it appealing for contemporary audiences. Which is, again, not a form of restoration. It's a form of access, and it is accepted as long as the original film is being preserved for the longer term without changing it and some kind of restoration has been done or a restored version exists that it's closer to the original film. If that is the case, then I think most archivists who won't have a problem with a filmmaker reusing the material and creating a new film, and, to be honest, I don't think there is a huge difference conceptually from what Peter Jackson has done with this material to what found-footage filmmakers do when they create a new film using archival material or any news item that uses archival material. So the important thing, in my view, is that we call it by its name, if when it's a restoration, even, as we said, restorations can differ largely, but when we talk about restoration, the general idea should be, we restore a film to how it used to look like. Now, again, can

be how the maker wanted it to look like, how the audience saw it, how it is preserved today, but still there is a general aim of restoring something that has existed rather than creating a new product. When you make a new film using archival material, that's reuse, and you create a new version of the film, or not even a new version. You create a new film using archival material.

[Federica]: You carry out restorations here at the Eye Filmmuseum. Has it ever happened that you've worked with someone that someone commissioned a restoration to you and that explicitly asked for a specific type of restoration that maybe you didn't agree with, or how does that happen, then? Who decides?

[Giovanna]: Definitely it depends very much on the material you start from, but also the people you work with. So many restorations come about because there is maybe an international desire to restore a film that exists in complete copies at several archives, and these archives team together to restore the film. Then all archives have a say in how to restore it, so it's really a important phase of the restoration for all participating archive to establish together a strategy, what we are restoring, how, etc., but there are times when archives restore films made by filmmakers that are still alive, and maybe the director of photography is still around, and maybe the sound mixer or film editor. In those cases, of course, the film restorer will try to work with them because they can offer very precious help in trying to reconstruct what the colors looked like. Very often, we start a restoration from color faded films, and without their reference, you really need to rely on memory of the filmmakers or similar films made with the same technology at the same time that have faded less and so forth. When we work with makers, often — not always, but very often — the filmmaker will tend to project his memory of the film or what he or she would have liked it to look like at the time and that's really a complex situation. So it's very important when you start this collaboration with filmmakers that you make clear from the start that as a film archive, your aim is to restore the film as it was and not improve it or compensate what the technology couldn't do at the time but now it's possible. So you really need to kind of set some of the general rules of what a restoration is. You can also have a situation (and at Eye Filmmuseum, we've had situations like those) when you work with filmmakers and producers that are also the copyright owner of a film, so they are happy to work with you and restore the film, but they also want to make a new version for a DVD release, or a television release, or even a new theatrical release. In those cases, often you do some of the work together, but then there are two paths. The film archive produces the restored version, and the filmmakers uses some of the digitized images or some of the work that has been done in the restoration work to create a new version of the film.

[Federica]: Do you just have enough time and resources to carry out the restoration of your own films, or you provide this service also for third parties?

[Giovanna]: No, we don't restore films for third parties, and we don't even, as an archive,

we don't even own films. We hold collections, so the films that are with the collections are either donated or deposited with the archive. So the way we select films for restoration is very much based on a collection policy that defines some areas. For instance, the material decay can be a reason why you want to restore a film, why a film is restored. It's put on a priority list because if you wait much longer, the film won't be there to be restored in the first place, but, of course, being a Dutch film institute, we focus very much on films that have been produced in the Netherlands because there are no other archives focusing on that. However, our collection is very international. About 50

[Federica]: Since a digital-to-digital copy is supposed to be lossless, is it true that born-digital films will not require restoration ever?

[Giovanna]: Well, first of all, digital copying being lossless, there are two things to point out about that. First of all, if the digital copy derives from a film-born film (so the film has been made on film and then has been digitized), the loss happens at that point, when you digitize the film and it can be in terms of resolution, can be in terms of bit depth, but can also be in terms of what we digitize. Until now, there has been very much a focus on digitizing the image content, not losing details of what's in the image, but there has not been much focus on the material properties of a film, and for instance, the differences that there is between a nitrate film, an acetate film, a polyester film, all the characteristic of the film base outside the image. But these are, of course, also part of the film life and how the film used to look like when projected. So I wouldn't be surprised in if, in 10 years from now, we digitize more than only the image and go back to maybe not all the films, but some of the film, to digitize the perforation, to digitize the, to do 3D scans of some of the films from the past. So, the loss. Once you are in the digital domain or the film is born-digital, then the problem is digital preservation. So theoretically, if you copy all the bits and bytes or all the zeros and ones, you don't lose anything. In practice, there are many challenges to preserve in digital. First of all, the challenge of obsolescence, obsolescence of formats, of software. The safest carriers to store digital data is considered to be, today, tapes, which is interesting enough, much more than hard disks, and much more than any network or cloud, as you want to call it. So every couple of years, there is a new version of digital tapes, and if you don't keep copying your data from an older version to a new one, you will come to a point that you have all your digital data on tapes that nobody is capable to read. The whole copying workflow can be flawed, so you need backups. Best practice is to have at least three backups of all your data. So there are numbers of challenges. That said, I think that when you have a good migration strategy in place, you know, to copy all your data every four or five years, that you have a good quality control in place and all your backups, I think we have a good chance that we will be able to store our data for the long term. And hopefully, a born-digital film, as you said, made today and kept in all its zeros and ones, will be there without any need of being restored in 100 years from now.

[Federica]: Besides being the Chief Curator at the Eye Filmmuseum, you're also a professor

at the University of Amsterdam, so you're involved with research and the new developments in this field. What is, according to you, one exciting thing that is going on right now, an interesting frontier in this field?

[Giovanna]: What I find very exciting today is, on the one hand, the revival of large formats with new films being made on 70-millimeter. Think of Christopher Nolan's Dunkirk, Interstellar or Quentin Tarantino, The Hateful Eight, a few years ago. There is really an audience who wants to go and see a movie that's projected on analog 70-millimeter film on a large screen, and I find this a very interesting development because all of a sudden we are in a position to talk about film technology in the past of film and different formats at a time when analogue film projection is a rarity and you don't find it anyplace. So I find that a very interesting development that gives film heritage institutions a chance to talk about the history of the collection they preserve and show, and also focusing on film projection technology. At the same time, and really the other side of the same coin, what I find also very interesting is all the new technology being researched and developed today to make a collection accessible in new alternative ways where you not only search for films in terms of the title, the year of production, the filmmaker, but can use digital tools for object recognition, you can find colors. So there are new tools that are really in the early stages of being developed that will provide us with ways to discover parts of our film heritage that are really forgotten because film history books don't talk about those films, film archivists don't even know that those films exist. And once they are digitized, they can be explored using new digital tools.

[Federica]: Whether a director chooses a format over another to shoot the movie or to have it projected, it's just a matter of how it looks, you know, texture, and I don't know what other parameters to mention because I'm not an expert, but it boils down to how it looks, because one format looks different from another.

[Giovanna]:: Yes. The format defines very much the resolution or definition of the image, so the richness of details the image contains, and 70 millimeter or even IMAX 70, which is even a larger format than 70, is still superior than any digital format available, so that's one aspect But it's not only that. I mean, there is a very basic difference between how image is formed in analogue film by grain and how it is formed in a digital environment by pixel.

[Federica]: One last question. Is there a video on the YouTube channel of the Eye Filmmuseum or someplace else where our listeners can actually see some things that we have been discussing, some examples of restoration, for example, or some notable case of a film that's in the holding of the film museum?

[Giovanna]: There are a number. On the Eye Filmmuseum YouTube channels, there are a couple of short videos. Two I can think of now is the restoration of the film Shoes and the

restoration of the film Beyond the Rocks, so if you google these titles and Eye Filmmuseum, you'll find the short documentaries a few minutes telling you a little bit about the restoration process for these two titles.

[Federica]: Great. We will provide the link to the YouTube channel and also embed these two videos in the description of this episode on the podcast website. Thank you so much for being on Technoculture.

[Giovanna]: Thank you very much.

[Federica]: Thank you for listening to Technoculture. Check out more episodes at technoculture-podcast.com, or visit our Facebook page @technoculturepodcast and our Twitter account, hashtag Technoculturepodcast.