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THE CINEMA OF EXTRACTIONS: FILM AS INFRASTRUCTURE FOR (ARTISTIC?) RESEARCH

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Drawing made by Christiane Büchner during the presentations session by Kristoffer Gansing.

Abstract

In contemporary discussions of film and artistic research, the historical undercurrent of film as an intense research and development activity, does not seem to be widely discussed. In contrast, film history and media archaeology has since long re-evaluated the status of early moving image technologies, which do not any longer denote pre-cinematic curiosities that simply predate the institution of cinema and its narrative forms but is rather seen as containing socio-technical trajectories and aesthetic regimes that can be studied in their own right. This essay performs a further modulation of the legacies of film history, one in which moving image technology is not seen as primarily a vehicle for film as cinema, but a continuously evolving technological and aesthetic infrastructure for film as research. This then becomes the starting point from which to reflect on artistic research in film, which today is being institutionalized as a form of practice-based research, arguably with the risk of loosing sight of an already long-established tradition of film, not only as research but also as artistic research.

With the aid of an accompanying desktop video essay, the article speculates on the changing contexts of film as research vis-à-vis film as artistic research, from early cinema and its connection to scientific discoveries and the advanced data-analysis of today's streaming platforms. Inspired by "The New Film History" and Tom Gunning's influential notion of "The Cinema of Attractions" which revised the view on early cinema and the development of a filmic avant-garde, the presentation eventually focuses on artistic responses to the contemporary "Cinema of Extractions", as a datafied infrastructure that now conditions what is knowable and sayable through the moving image.

Keywords: Artistic Research, Cinema of Attractions, Infrastructure, Netflix, Streaming Platforms, Transversality, Video Essays

Introduction

A current of research runs throughout the history of moving images, predating cinema as an institution and in turn transforming this institution up until its digital present. I'm referring here to the link between historical scientific contexts and the evolution of the film medium as intimately tied to the development and application of new technological innovations in optics, mechanics and photochemical reproductions, and moreover the observation and classification-based methods of 19th century empirical experiments. Numerous studies have already been devoted to describing and analyzing the importance of late 19th century scientific photographic experiments such as those carried out by the physiologist Étienne-Jules Marey or Edweard Muybridge (Ceram, 1960; Solnit, 2003; Tosi, 2006). In contemporary discussions of film and artistic research, this historical undercurrent of film as research, does not seem to be widely discussed. In contrast, film history and media archaeology has since long re-evaluated the status of early moving image technologies, which do not any longer denote pre-cinematic curiosities that simply predate the institution of cinema and its narrative forms, but is rather seen as containing socio-technical trajectories and aesthetic regimes that can be studied in their own right.

With this essay, I would like to perform a further modulation of the legacies of moving image history, one in which moving image technology is not primarily a vehicle for film as cinema, but a continuously evolving technological and aesthetic infrastructure for film as research. This then becomes the ground from which to reflect on artistic research in film, which is today being institutionalized as a form of practice-based research, arguably with the risk of loosing sight of an already long-established tradition of film, not only as research but

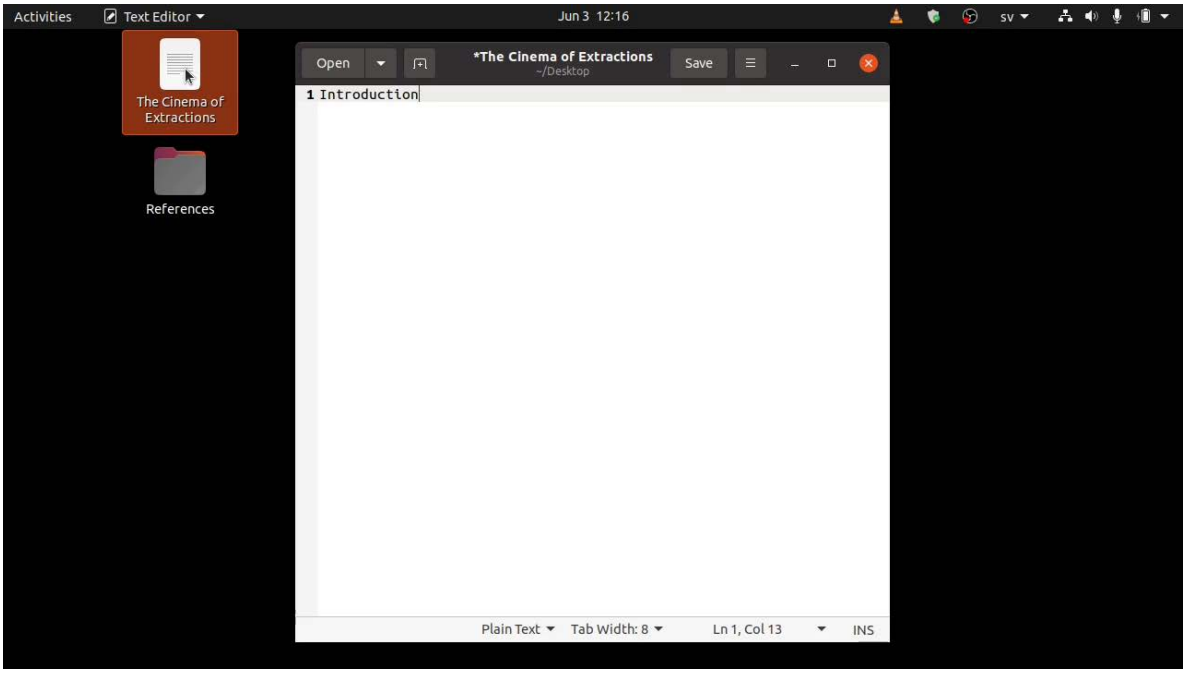

Fig. 1 The Cinema of Extractions (Gansing, 2021). Watch at https://vimeo.com/557803964

also as artistic research. The motivation behind my argument is not primarily to instill greater awareness of historical contexts; instead, I am interested in a non-linear, transversal application of this infrastructural perspective on film as research that has a bearing on knowledge production through the moving image today, in the light of streaming culture, where film has become datafied and part of the platform economy. In this transversal analysis, I perform a transformation of Tom Gunning's famous argument on "The Cinema of Attractions" (2006) to what I today call "The Cinema of Extractions" and reflect on what implications this concept might have for artistic research in and through film.

Following this premise, I am not preoccupied with rehabilitating early film (already a film studies staple), but, as stated above, I will use my argument on the historical emergence of film as an infrastructure for research as a starting point from which to rethink the contemporary discussion of film as *artistic* research. What is the relation between film as research in general terms and artistic research as a contemporary branch of practiced-based research in the arts? Standard definitions of research are usually about advancing new knowledge in and of a given domain and there is today ample discussion of what this could mean within artistic research. As many critics as well as supporters of the field alike have pointed out, artistic research does not necessarily comply with conventional, procedures of knowledge creation, such as neutrality of the observer, reproducibility or even methodological transparency. As Kathrin Busch maintains, artistic research is rather aligned with a poetics of knowledge where the researcher is always situated, producing a form of post-positivist "other knowledge" (Busch, 2010; 2016), which is commenting on and sometimes performatively intervening into or even reforming established knowledge fields. Following my thesis of film as research then, I would like to propose that we can view artistic research in film as a form of countermovement to the dominant film as research current, both adopting and transforming moving image infrastructure for the advancement of artistic knowledge (in all its ambiguity). In order to substantiate this argument, I will trace some historical permutations of film as research and the role of artistic research within it. The central concern is however a contemporary one, asking how such artistic research can unfold in relation to how film today is being constituted as research in a media landscape dominated by the datafied streaming infrastructures of big-tech. Here, I ultimately argue for an infrastructural turn in artistic research in and through film.

The Desktop Essay as Intervention-based Methodology

The above arguments are further explored throughout this article, which originally took the form of an audiovisual "Desktop Essay" video and which thus has its genesis in a form which itself occupies an ambiguous territory between art and research. This form evolved as a response to the GEECT conference *Transversal Entanglements: Artistic Research in Film* which took place online in June 2021, organized by the Konrad Wolf Film University in Babelsberg, Potsdam. Having by then already experienced a seemingly endless stream of Zoom-based events, I wanted my presentation to itself reflect on the medium of delivery, which for a majority of participants would most likely be the situation of a desktop computer with a graphical operating system. In the following section, I will briefly elaborate on the format of the Desktop Video essay since it is an important part of the research methodology behind this article, and which could perhaps itself be regarded as a form of artistic research.

The Desktop Essay is a particular branch of the video essay, which mainly combines three different types of filmmaking: artistic essay films, online video essays and desktop-based video tutorials. In her essay "Aesthetics of Resistance – Artistic Research as Discipline and Conflict" (2010), visual artist Hito Steyerl includes essayistic filmmaking in her expanded take on artistic research as a transversal component of the aesthetic investigations into perception, truth and social struggles that the historical avant-garde undertook already

more than a hundred years ago (pp. 32-33). Besides citing the Soviet avant-garde, Steyerl highlights Chris Marker's and Alain Resnais' *Les statues meurent aussi* (1953) as an example of an essay film concerned with anti-colonialism as well as Theodor Adorno's mid-1950s text "The Essay as Form", in which he, in Steyerl's reading, is demonstrating how the essay entails a "reshuffling of the realms of the aesthetic and the epistemological" (p.32). As we may deduce from Steyerl's article as well as studies of the artistic essay film (Rascaroli, 2014; Papazian & Eades, 2016; Fletcher, 2018), the long tradition of the essay form in film predates contemporary discussions of artistic research and is a discursively oriented form of experimental, artistic and documentary filmmaking that is often preoccupied with epistemological dilemmas of what is sayable and knowable through the moving image, an inquiry which happens in close dialogue with the technological and political conditions of its time.

In recent years, Video Essays have exploded as a new form of online essay films that are directed towards scholarly analysis of films and filmmakers themselves, supported by audiovisual materials. In her article "Video Essays: Curating and Transforming Film Education through Artistic Research" (2020), Estrella Sendra describes the video essay methodology as a recursive process that is "artistic research about/for/through/nearby art" (2020, p. 73) and that "creates audiovisual knowledge through the audiovisual medium" (2020, p. 74). In my own approach to the video essay, I have more specifically chosen to adopt it to the form of the Desktop Video, in which the author solely utilizes the capacities of the operating system to produce the video, with no external recording and close to no editing or other post-production happening. The Desktop Essay thus closely resembles online video tutorials such as the type you can find on YouTube, introducing a particular software or game with a voice-over and instructional sequences.

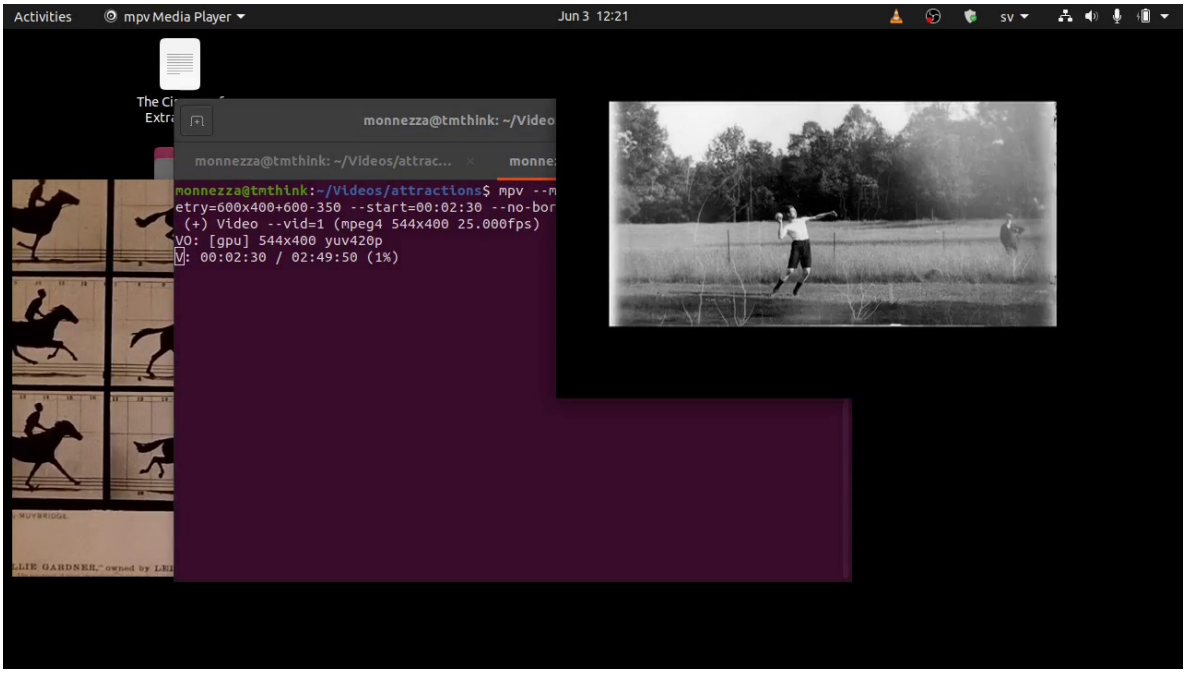

Fig. 2 Still from *The Cinema of Extractions* (Kristoffer Gansing, 2021). Public Domain.

Desktop videos are not yet consistently theorized but as the Italian researcher Albert Figurt has explored in his workshops on the subject (Figurt & Institute of Network Cultures, 2020), they are a hybrid form that spans the desktop horror cinema of Timur Bekmambetov, software tutorials, video as well as internet art. In the latter context, we can especially turn to the "post-internet" generation of artists, for example the work of Rosa Menkman, Camille Henriot or Louis Henderson (cf. Magno, 2019).

The desktop format as native to the digital environment has been important to me in conducting this research, because I am ultimately concerned with what artistic research in film can do in the current techno-cultural paradigm of datafied streaming culture. The aforementioned conference on Artistic Research in Film in which this research was initially presented took place through Zoom, and my presentation aimed at intervening and playfully performing its argument within the limitations of the desktop interface of such software applications and at the same time at disrupting the conformity of presentations that such standardized live-streaming environments bring with them. As I will further explore in what follows, I am arguing that, in the age of streaming, we have reached a new stage of film as infrastructure for research, where extraction rather than representation is the central activity. I'm here drawing a lineage from early film as a vehicle for positivist tinged empirical research to the motor of extraction and data analysis inherent to contemporary moving image streams, and with this I would like to ask the question of how artistic research can respond to film as research in the "Netflix era", considering the considerable challenges it poses to its epistemological capacities. Although I'm well aware that my Desktop Essay is rather site-specific to the aforementioned conference and that it does not by any means disrupt or intervene in this bigger infrastructural context, I still stress it for the reader as an important guide to my argument, which through the video essay form also engaged in a process of aesthetic and not only argumentative speculation. Some of the associative threads of this essay might therefore be better grasped through also watching the Desktop Essay, the link to which is provided in the bibliography (see Gansing, 2021).

1. Film as Research

In her 2006 paper, "Microcinematography and the History of Science and Film", Johanna Landecker opens with the following telling quote from the 1936 article "Scientific Film" by the pioneer maker of experimental science films, Jean Painlevé: "It never would have occurred to the pioneers of cinema to dissociate research *on* film from research *by means* of film." (Painlevé, as cited in Landecker, p.121). In the early experiments with moving photographic images, the emerging film medium is so intertwined with research that we might as well talk about Film as Research in this era, just as the quote from Jean Painlevé is hinting at. In the later half of the 19h century, the work of Eadweard Muybridge in capturing animal and later human movement, his so called locomotion studies, as well as Étienne-Jules Marey's "chronophotographie" are perhaps the two most historically canonized examples of film as research, of this still mainly scientific phase of the medium. As film scholars such as Richard Abel (2007, 2010), Thomas Elsaesser (1995) and Wanda Strauven (2006) have pointed to, early cinema, especially from the 1980's onward, became a hotbed for a film studies rethinking of the development of film in a non-linear way that distanced itself from the idea of early cinema as primitive pre-cinema. Even the so called New Film History (more on this below), however, does not engage in depth with the scientific genesis of the moving image, an engagement which I believe could open for a re-reading of early film's relation to research and epistemology. This would mean acknowledging the role that experimental empiricist science plays in the making of early moving images, a paradigm obsessed with capturing reality in order to classify and categorise the "natural" world and extract new objective knowledge about it through technical means. Such research paradigms have repercussions also today, perhaps even increasingly so, in the face of platform capitalism and digital research methodologies across both the "hard sciences" and the humanities

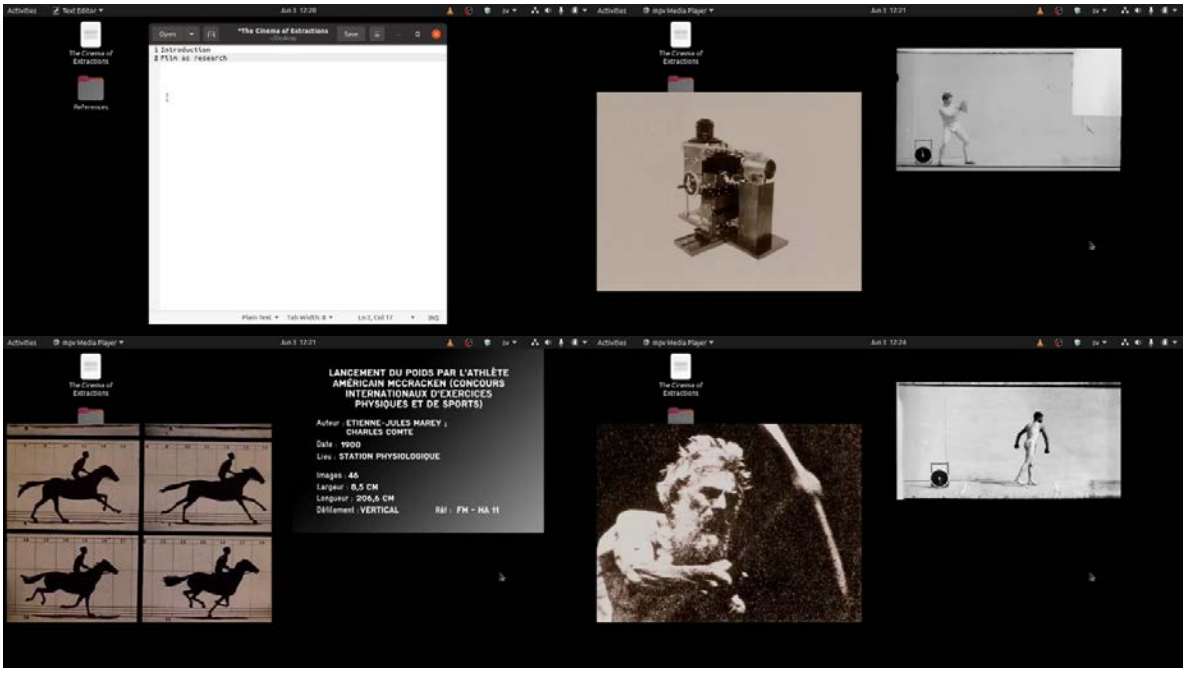

Fig. 3-6 Stills from *The Cinema of Extractions* (Kristoffer Gansing, 2021). Public Domain.

that indicate a strong contemporary (re-)manifestation of such positivist stances, now being operationalised through "datafication".

Thus the main use of my argument on film as research, may not primarily serve the purpose of deconstructing the history of cinema, but rather rewiring how we see the film medium's connection to research in a way that speaks to our contemporary moment of images as part of networks of data extraction, analysis and optimisation. In other words, this perspective of film as research only intensifies with the experience of the convergence of the computational and the audiovisual with its dynamic interplay of statistical and cybernetic science. Today, different forms of image-making have expanded into essential infrastructural resources of research in a way that recasts early cinema's scientific preoccupation as a production of proto-*operative* images, to borrow an influential concept from filmmaker-theorist Harun Farocki, who developed a theory and analysis of operative images, in his film cycle *Eye/Machine I-III* (2000-2003). Here, images are analysed as instruments in processes of techno-scientific interpretation, fulfilling some function of extracting, ordering and constructing knowledge about the world rather than purely documentational or illusionist purposes.

The operative dimension of image-making as identified by Farocki, and further theorised in new media theory and media archaeology (cf. Hoel, 2018), is key to challenging the teleological idea of narrative cinema as being that eventual development of the medium that took it out of the field of scientific or sensationalist curiosity. In the next section, I will explore how the ground work for this argument was already laid by the historians and theorists of the so called New Film History, because they set themselves the task to reinterpret the status

of the artistic in early film, in the immediate aftermath of the early scientific experiments. Retracing this development also leads on to the role that artistic research in film might play in relation to film as research.

2. The New Film History: Setting the stage for Film as Artistic Research

> *For five days in October 1977 and two days in January 1978, a small group of film historians met to view all the surviving fiction films in North America from the period 1900-1906.* - Eileen Bowser, late Curator of the (Museum of Modern Art Film Department, 1982)

In 1978, the fiaf – The International Federation of Film Archives, organized their annual symposium in Brighton under the heading of *Cinema 1900-1906*. This was to become a legendary event, notable for launching what has been dubbed as "The New Film History" which, much thanks to the "American contribution" brought with it a revision of the dominant perspective on early fiction cinema. These New Film Historians, wanted to move away from the idea of early cinema as a form of primitive proto-narrative Cinema and instead emphasized its idiosyncratic creativity born out of specific techniques and contexts of production as well as sites of perception.

From this well-documented event, we learn of early cinema's intimate connection to non-fiction. As Eileen Bowser states in the conference proceedings of *Cinema 1900-1906* (1982), non-fiction film was the dominant form, and so predictably, all fiction film mainly took its inspiration from non-fiction forms. In retrospect, the *Cinema 1900-1906* symposium is particularly notable for being an event where the fiction/non-fiction binary framing onto the audiovisual realm productively brushes up against its limits.

> (…) what we did see of the nonfiction film led us to think that many of the developments that led to the rise of the narrative came from the non-fiction film, and from efforts of the filmmakers to recreate real events in fiction films. (Bowser, 1982, p. 4)

No wonder then that "Fiction is very difficult to define in this period." as Bowser continues (p. 4), a statement which rather than simply practical, also takes on an epistemological dimension when the researchers deliberate on how to define film material that seems to occupy an unresolved territory.

> (…) how does one define the films which are essentially the recordings of a vaudeville act? We included these as fiction films too, because of the impossibility of setting limits when almost all films (including the non-fiction) made for showing within the vaudeville program, at least through 1904. (Ibidem, p. 4).

In other words, the fiaf associated researchers decided to include into the category of fiction what was clearly not intended as fiction in the way we understand the term today. At the same time as this labeling might seem reductive, the sheer inclusion of these curious cinematic artefacts made it possible to call to attention other aspects of the footage than conventional narrative or proto-narrative stylistics. As Bowser explains, "(…) the key word for the films we saw is 'novelty'. Like the live vaudeville acts with which the films were shown, a new idea or a gimmick was always in demand." (p.5). Herein lies an important innovation of the New Film History, which was to suggest a different path in the historical development of film, one that did not see early cinema as sub-par narrative but as an artistic form in its own right, relying on sensation, spectacle and novelty. Film historian Tom Gunning, presented his concept for theorising this in his presentation at the 1978 fiaf symposium wherein he introduced the influential concept of "The Cinema of Attractions". This concept related to how films of this era sought to create different forms of novel effects and affective environments through the restaging of distant real events such as disasters or crimes, trick films, explosion films and facial expression films.

(…) The cinema of attractions directly solicits spectator attention, inciting visual curiosity, and supplying pleasure through an exciting spectacle - a unique event, whether fictional or documentary, that is of interest in itself. (…) It is the direct address of the audience, in which an attraction is offered to the spectator by a cinema showman, that defines this approach to filmmaking. (…) The cinema of attractions expends little energy on creating characters with psychological motivations or individual personality. Making use of both fiction and non-fictional attractions, its energy moves outward towards an acknowledged spectator rather than inward towards the character-based-situations essential to classical narrative (Gunning, 2016, p. 384).

But even though the New Film History was pivotal in rejuvenating the study of early cinema – it was arguably still confined to positioning its findings mainly in relation to narrative forms or at least within the fiction/non-fiction binary. Following my thesis of film as research however, I would like to suggest that this perspective is too limiting and that the archive materials excavated by The New Film History should also be considered in relation to research and development as a dominant drive of this era's filmmakers. The sensation and novelty oriented films rediscovered by The New Film History and its Cinema of Attractions might then be considered a form of *vernacular* research through the moving image, taking place in between science, technology, journalism as well as illusion, magic and different artistic disciplines.

Concluding on how the cinema of attractions continued to influence later filmmakers, Gunning says that it has gone

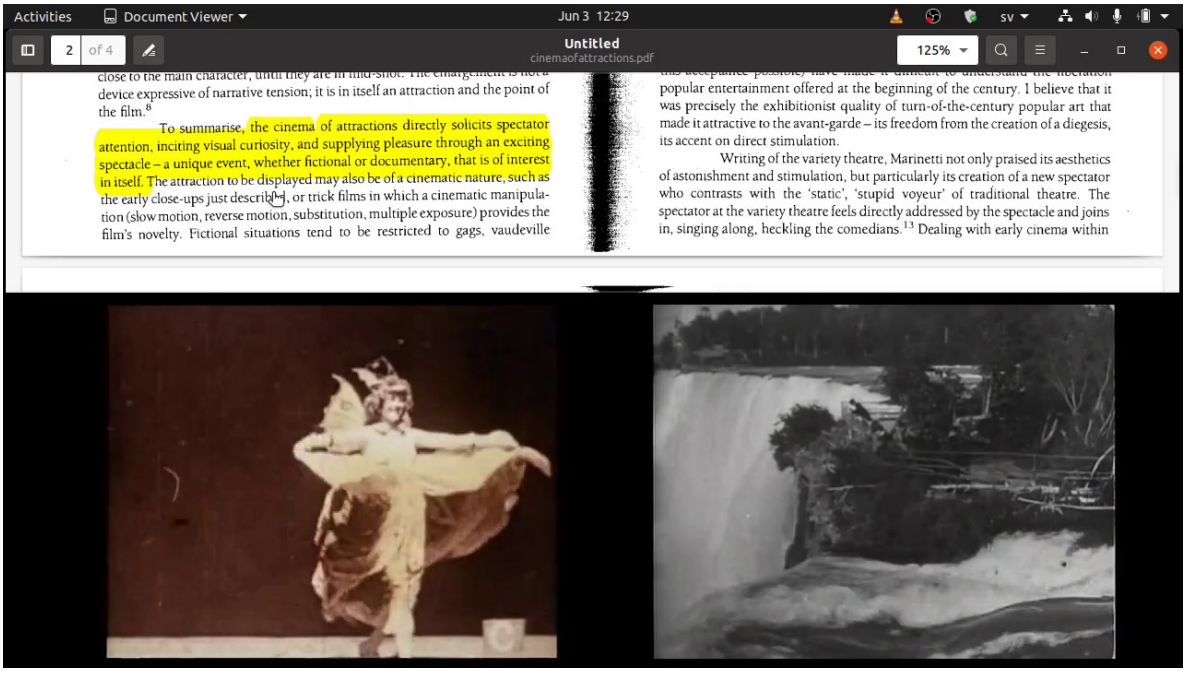

Fig. 7 Still from *The Cinema of Extractions* (Kristoffer Gansing, 2021). Public Domain.

underground, labeling it a "Coney Island of the avant-garde, whose never dominant but always sensed current can be traced from Mélies through Keaton, through *Un Chien andalou* (1928), and Jack Smith." (p.387) Notably, this further life of the cinema of attractions was driven by artists in contrast to the earlier, more scientifically motivated work. This suggests that the avant-garde film is not only existing in reaction to the institutionalization of the film medium as industrially produced narrative cinema, but also has a dialogue with the moving image as a medium of scientific inquiry and of gaining new knowledge about the world. Theorising The New Film History from a contemporary point-of-view that takes into account the interrelated development of film history, media art and new media theory, Wanda Strauven has also highlighted a connection between early cinema and later avant-garde filmmakers, writing that "it should be remembered that at the very origins of New Film History there was the (re) discovery of early cinema by avant-garde filmmakers such as Ken Jacobs, Stan Brakhage, and Noël Burch, and documentary film editor Dai Vaughan." (Strauven, 2013, p. 68).

Thus if film was born as research we could argue it was also almost immediately also born as artistic research and this was a form of research that did not confine itself to the bounds of narrative cinema. It is in these margins of cinema that we find image movements that were with time themselves canonized as its avant-garde: a veritable parade of co- and counter-formations to dominant scientific tropes and techno-cultural development, adding to or extending the Cinema of Attractions as an undercurrent of artistic research.

3. Artistic Countermovements: Rereading the Avant-garde as Artistic Research

If film as research emerged through a scientific agenda mainly influenced by a modern positivist paradigm, it seems logical that artist filmmakers should also enter into dialogue with this paradigm. At the same time, artists do not usually simply reproduce scientific paradigms, but form creative responses or even resistance to them, not necessarily of a reactionary kind, but through countermovements, interrogating, expanding and reformulating the methodological and epistemological scope of established science. It is already a well-established art historical trope that art has always developed in tandem with science and its technological innovations (cf. Strosberg, 2015). In the modern era, art theorists and historians have linked the emergence of impressionism with Auguste Comte's positivism (Tunali, 1963), and heatedly debated impressionism's merits as art or pure observation (Gavinson, 2017). Surrealism, even when seen as antithetical to modern science, can in its focus on the imaginary and the occult, also be said to highlight the blind spots of empiricism just as Dadaism defied its rationalism or Futurism hyper-accelerated its progressivist ethos. The earliest makers of experimental films, included

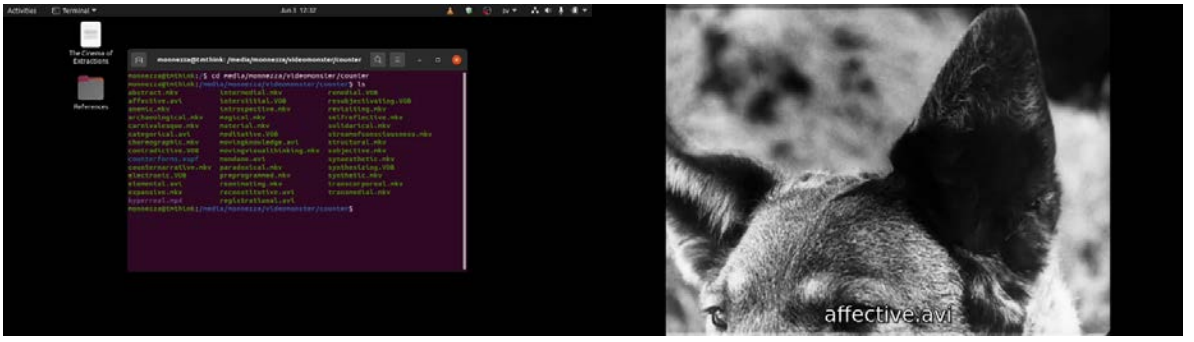

Fig. 8 and 9 Stills from *The Cinema of Extractions* (Kristoffer Gansing, 2021). Public Domain.

artists such as Fernand Léger, Man Ray and Hans Richter who were themselves active protagonists of these modern art movements and continued its dialogue with modern science in their film works. In the film medium, this for example entails the devising of alternative imaginaries of how moving image technology might be used for other epistemological gains than what is dictated by the observational, positivist paradigm with its strict subject-object divisions.

Recalling Gunning's Cinema of Attractions, it is clear that experimental filmmakers have since long consistently worked with foregrounding the effective/affective dimension of the film medium. However, going beyond the carnivalesque and novelty focused discourse of vaudeville cinema's lasting influence, other techniques and approaches also stand out. The canonic example of the cinema of attractions is arguably the magician of cinema Georges Mélies whose filmmaking was driven by an innovative research and development on the technological, narrative and illusionist means of the emerging medium, but which also notably expanded modern science's speculative reach through its imaginative proto-science-fiction. By contrast, the 1924 film *Diagonal Symphony* by Viking Eggeling and Erna Niemeier has become influential because of its radically abstract and reductivist graphical style, which is an investigation into the interconnectedness of sound and vision that searches for a universal and transmedial symbolical language. Here we are far from the spectacle of the cinema of attractions, yet the search for new knowledge as characteristic of science lies at the heart of the artistic inquiry.

To these very different examples, one could add a long list of avant-garde artists whose practices enacted an artistic research in film: from Maya Deren's choreographic space-time conflations to Stan Brakhage's "visual moving thinking". Such inquiries can be seen as part of an avant-garde countermovement to the dominant institution of narrative cinema, but is just as much a countermovement of artistic research, exploring the communicative, sensuous, perceptive, affective and bodily capacities of the moving image. It is outside the scope of this article to provide a full historical analysis of artistic research in film from this point of view of countermovements with and in reaction to scientific tropes,

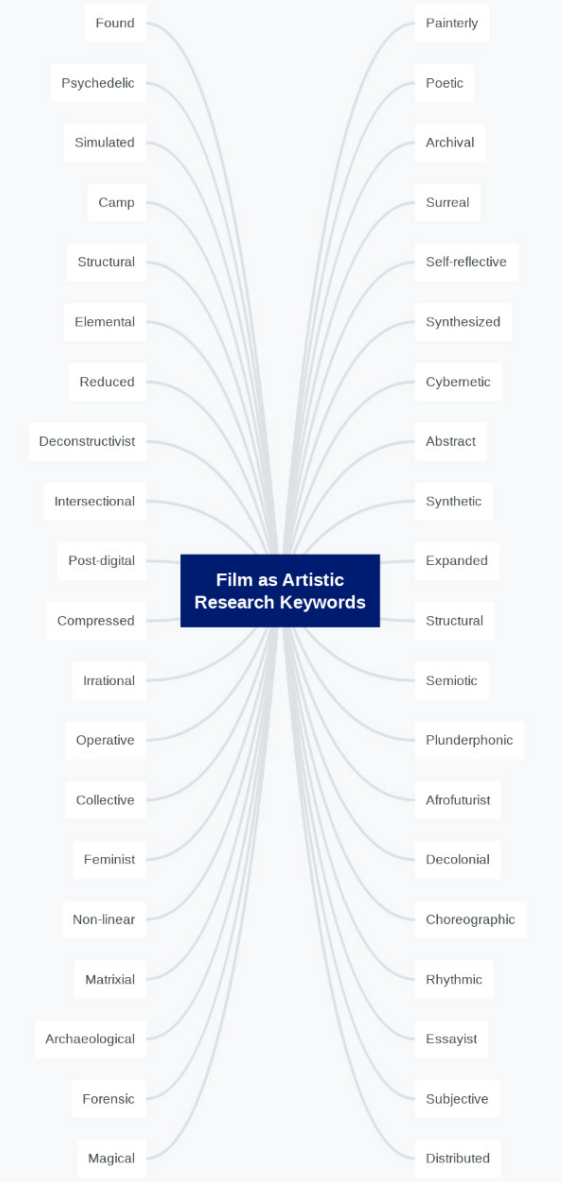

Fig. 10 AR in Film Keywords Mindmap.

but in the accompanying video essay, I have tried to address this in a suggestive way, combining aesthetic and discursive associations to bind filmic techniques together. In the video essay, keywords representing such techniques are matched with film sequences and played through a simple script that randomizes the playlist order. Figure 10 is a simple mindmap which lists these keywords, without any particular hierarchy. In the video, some of these are matched with sequences from the history of early and avant-garde cinema as well as video art, chosen in an associative manner and randomized in terms of playback order.

4. The Cinema of *Extractions*

Writing in 2001, excited about re-imagining Dziga Vertov's *Man with a Movie Camera* through computer-based media, Lev Manovich tried to define something of the radical possibilities of digital cinema. The starting point for the ex-patriated Russian media-theorist's influential book, *The Language of New Media* (2001) was a discussion of how certain techniques of the cinematic avant-garde predated what had later become commonplace in computer graphics and human-computer interface design.

> One general effect of the digital revolution is that the avant-garde aesthetic strategies came to be embedded in the commands and interface metaphors of computer software. In short, the avant-garde became materialized in a computer. Digital cinema technology is a case in point. The avant-garde strategy of collage reemerged as the "cut-and-paste" command, the most basic operation one can perform on digital data. The idea of painting on film became embedded in paint functions of film-editing-software. The avant-garde move to combine animation, printed texts, and live-action footage is repated in the

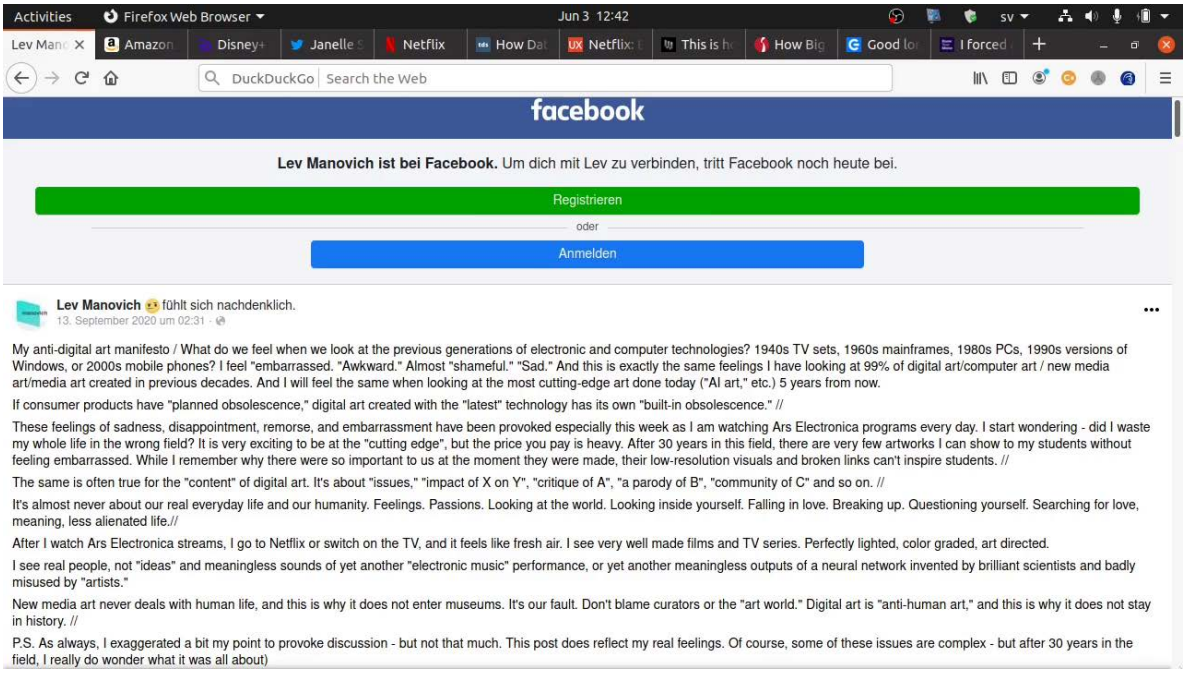

Fig. 11 Still from *The Cinema of Extractions* (Kristoffer Gansing, 2021). Public Domain.

> convergence of animation, title generation, paint, compositing, and editing systems into all-in-one packages (Manovich, 2001, p. xxxi).

Continuing, Manovich contends that with time, as digital image resolutions increase and "the limitations of bandwidth disappear", cinema will in turn come to adopt the language of new media, resulting in a form of "*broadband* or *macrocinema*" that adds "multiple windows to its language" (p. xxxv). Zoom to the future: 20 years later, on September 13th 2020, Manovich is on Facebook "feeling thoughtful" and consequently posts an "anti-digital art Manifesto":

> What do we feel when we look at the previous generations of electronic and computer technologies? 1940s TV sets, 1960s mainframes, 1980s PCs, 1990s versions of Windows, or 2000s mobile phones? I feel "embarrassed. "Awkward." Almost "shameful." "Sad." And this is exactly the same feelings I have looking at 99% of digital art/computer art / new media art/media art created in previous decades. And I will feel the same when looking at the most cutting-edge art done today ("AI art," etc.) 5 years from now. (Manovich, 2020, n.p.)

The sad and awkward feelings expressed by Manovich here, are apparently a result of what he has seen on the live conference stream of the Austrian media art festival Ars Electronica. Turned off by this, the one-time champion of new media art, instead turns on Netflix. To see what?

> (…) very well made films and TV series. Perfectly lighted, color graded, art directed. I see real people, not "ideas" and meaningless sounds of yet another "electronic music" performance, or yet another meaningless output of a neural network invented by brilliant scientists and badly misused by "artists". (Manovich, 2020, n.p.)

In an ironic way, the broadband and database cinema that Manovich dreamed of two decades earlier now seems to have come true. But it did not arrive in the form of a new avant-gardistic language of hyperlinked "database narratives" that takes Dziga Vertov into the digitally networked age as Manovich once hoped for. Instead, the irony lies in how this broadband cinema has now been realized as a manifestation of narrative cinema with its mimetic representational form having become the mass produced audiovisual "content" for the platform economy. However, if this content does not live up to the idea of a database cinema on the content level, the big data machinery behind it takes the database aspect of it to unprecedented scales.

Tom Gunning argued that the initial Cinema of Attractions went underground or at most survived in what he calls the "Spielberg-Lucas-Coppola cinema of effects" (Gunning, 2016, p.387). Today, the attraction has rather migrated to the software interface turned media "experience" (cf. Lialina 2016) of video streaming platforms such as Amazon Prime, Netflix and Disney+ . This is an experience that seems like the perfect combination of the physical videotheque's presentation, with its rows of film covers, and the Vaudeville film exhibitioner's ways of boldly integrating different content items into the infrastructure of the traveling road show, always on the move to the next spectacle. That road show does no longer need to move anything but bits around, as The Cinema of Attractions now transforms into The Cinema of *Extractions* which is the real motor behind the spectacle, operationalizing cinema as research through data infrasructures enabling massive algorithmic data analytics. To investigate this closer, we do not need so much to turn to Vertov's cinematic constructivism but to the machine learning powered data analytics of Netflix Research.

Netflix Research is really our attempt to apply scientific techniques to all parts of what we do at Netflix." - Caitlin Smallwood, VP Science and Analytics in "What is Netflix Research? (Netflix Data, 2018)

Since starting the transition in 2007 from a physical DVD rental mail-order service to an online streaming platform, Netflix has become the Cinema of Extractions research infrastructure par excellence, through its elaborate Netflix Recommender System (cf. Pajkovic, 2021) and extensive data analytics infrastructure. This infrastructure comprises of both humans and algorithms who collect and analyse as much different data as possible of its users' interaction, in a process that its engineers has compared to pulling Hollywood cinema apart (Madrigal, 2014). When putting it together again, Netflix acts as a Vaudeville artist-researcher of the digital age, effectively reconstructing cinema as we know it, not according to conventional paradigms of content distribution, but following an algorithmic logic of collecting, categorizing and reordering content on simultaneous macro- and microscales.

> Netflix has a massive user base of more than 140 million subscribers. Here are some metrics that Netflix tracks to give an individual taste to everyone —
> • What day you watch content
> • What time you watch content
> • The device on which the content was watched
> • How the nature of the content
> • Searches on the platform
> • Portions of content that got re-watched
> • Whether content was paused, rewind, or fast forward
> • User location data
> • When you leave content
> • The ratings given by the users
> • Browsing and scrolling behavior
> (Costa, 2020, n.p.)

This finegrained collection of user data is combined with both automatic and human tagging of the actual content, according to parameters such as genre, types of endings, cinematic styles and techniques including the use of lighting, editing and music (Madrigal, 2014). All of this feeds into Netflix ever-more complex algorithmic recommendation system that is customized to every individual user (Pajkovic, 2021). Important in complementing this big data model is the way that Netflix also lets the data inform the production of new content such as their originally produced series and films. This is a methodology of producing content based on what data analytics predicts will be successful rather than relying on content pitching or more traditional consumer analysis and targeting. The major Netflix hit series *House of Cards* that ran between 2013 and 2018 was the first famous example of a show produced through this principle. As was reported by in the media, the series did not undergo the traditional treatment with pilot development and screening before getting green lighted for production. Instead, the algorithms had already pointed to the combination of director David Fincher with actor Kevin Spacey and the legacy of fans of the original *House of Cards* as sure factors of success (Leonard, 2013, n.p.).

In a recent study of the Netflix recommendation system, Niko Pajkovic registered an overexposure, or what he calls "a corrupt personalization" (2021, p. 14) of the *Fast & Furious* film series in a way that did not seem to have a direct relation to his viewing habits (pp. 14-15). Speculating on the reason for this, Pajkovic concludes (p.15) that *Fast & Furious* films represent "a 'bingeable' series making them particularly useful for increasing retention rates." and that:

> these eight films would take users over 16 h to watch, and considering user retention is the current currency of the Streaming Wars, it would be in Netflix's best interest to have users watch every second of them – or better yet, plan to eventually do so. (p.15)

The foregrounding of types of content that has a statistical chance of creating viewer feedback loops seems to have precedence on Netflix. In 2017, Time Magazine reported that Netflix users had in total watched a walloping 500 *million* hours of Adam Sandler movies on the platform (McCluskey, 2017). How did Adam Sandler become a Netflix staple to the extent that the company is now the main (only?) producer of new

Sandler films? The reason for Sandler's persistent presence on the platform, is of course also sustained by algorithms that keep recommending users to watch more Adam Sandler movies, because these have been successful on the platform in the past. Thus, Netflix finds itself making contracts with an otherwise relatively washed-up actor to keep producing new movies that its algorithms can recommend. It might seem as if Adam Sandler is the attraction here, but in fact, he is merely a function of the cinema of algorithmic extractions and similarly, the writer for this cinema is primarily an extension of its research. In Netflix Research, human and non-human bots are watching many million hours' worth of Adam Sandler movies, setting off a self-fulfilling prophecy where the system will keep recommending them, and in order to keep on doing this, it subsequently needs to produce new films with Adam Sandler. Netflix Research can thus be understood as constructing complex consumer-machine feedback loops, that extract, analyse and act on data in this platform model of film as an infrastructure for research.

According to the basics of cybernetic information theory laid out by Claude Shannon and Warren Weaver already in the late 1940s, it is not the meaning of messages that are important for computerized signal transmission (Shannon and Weaver, 1949). In their theory of information, instead of a qualitative interpretation, communication systems perform quantitative operations to obtain as accurate transmissions as possible. Some latency or information loss is permitted in this process, and the key factor is at what threshold of noise that the message is no longer a coherent body of data. Similarly, The Cinema of Extractions performs a constant balancing act, a predictive regime of capturing human attention and varying bits of information for the purpose of maintaining a constant state of transmission. In this, the human attention is but a function

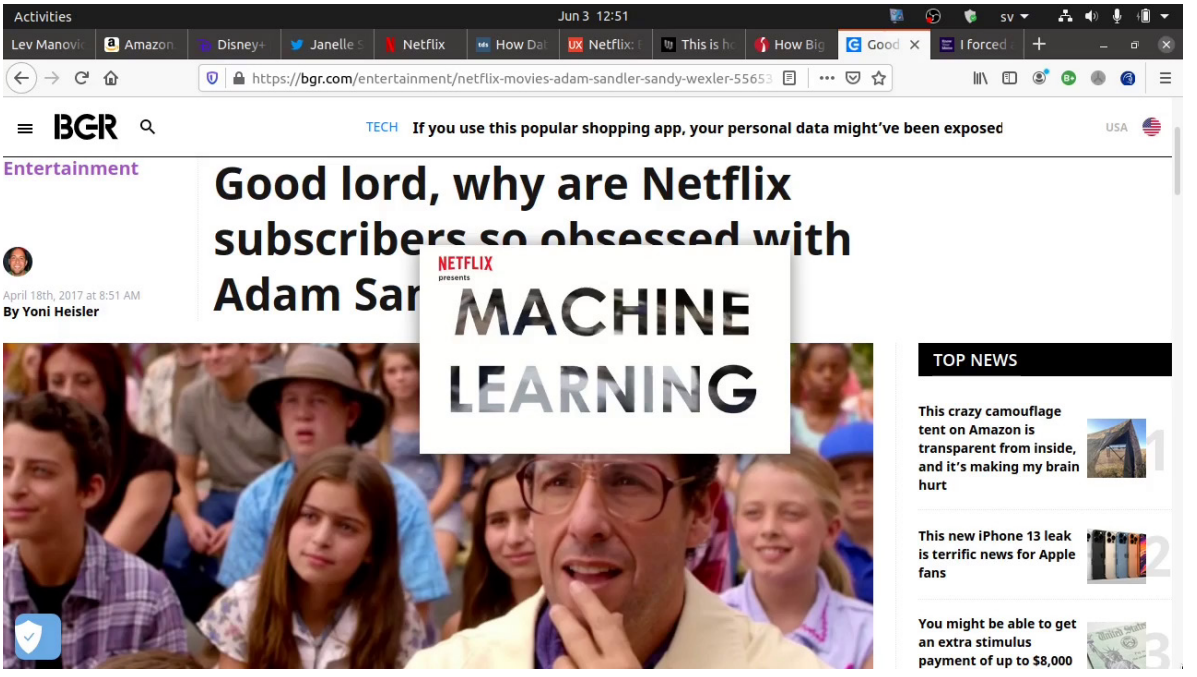

Fig. 12 Still from *The Cinema of Extractions* (Kristoffer Gansing, 2021). Public Domain.

of the algorithm's inward gaze towards itself, as even when aided by the human labour of so called content taggers, the end purpose of an algorithm is not to show anyone great movies (hence Sandlermania) but to record data flows in order to perform new calculations. The apparently human-to-machine system in this sense turns out to primarily be a commercially motivated machine-to-machine architecture.

Commenting on such machine-machine systems and their implications for visual culture, the artist Trevor Paglen has stated that today, most images are not produced for humans at all but by machines for machines. In his essay "Invisible Images (Your Pictures Are Looking at You)", Paglen writes that "Human visual culture has become a special case of vision, an exception to the rule. The overwhelming majority of images are now made by machines for other machines, with humans rarely in the loop." (2016). The example of Netflix Research may not seem to fit into such a depiction, as after all, streaming platforms are made for interacting with human viewers. When approached through their operative dimension however, it becomes clear that the main component of such platforms is a cybernetic system of keeping the streaming images ever streaming, so that they can record new data in order to further optimize the system. Paglen reflects on forms of resisting such surveillance and control structures of this new extractive visual culture, concluding:

> We no longer look at images–images look at us. They no longer simply represent things, but actively intervene in everyday life. We must begin to understand these changes if we are to challenge the exceptional forms of power flowing through the invisible visual culture that we find ourselves enmeshed within.

In the case of the Cinema of Extractions, the invisibility is actually a more complex assemblage of both human actors and non-human, machine-machine architectures, and as such resemble the hidden mechanical operations inherent to what Joanna Zylinska's has called "non-human photography", which manifests itself also in human-operated photography (Zylinska, 2017). The invisibility of the Cinema of Extractions is in this sense hidden in plain view: in the everyday media interactions that create an "experience" layer seeming to be in our own command. The Cinema of Extractions demonstrate that even when in the loop, humans are subordinate to a system of constant optimization according to algorithmic logics that are biased towards making this loop as aligned with commercial interests as possible. This has deep implications for the knowable and sayable, not because humans are left out, but because the massively datafied knowledge culture sets the basic infrastructural conditions for how speculation and research can unfold. The question is how artistic research can take place here, considering the ways that artists have historically reconfigured dominant knowledge cultures? The avant-garde strategy of resistance within the medium seems particularly challenging in this setting, as the practice of countermovements now needs to take tackle the unforeseen scale of the transversal entanglement of the technical and the human.

5. Transversal Infrastructures for Artistic Research

> New technologies for automated surveillance and prediction neither simply augment human reason nor replace it with its machinic counterpart. Rather, they affect the underlying conditions for producing, validating, and accessing knowledge and modifying the rules of the game of how we know and what we can be expected to know. (Hong, 2020, p. 2)

The transversal computational regimes explored through my thesis of The Cinema of Attractions, could also hold a key to understanding how artistic research (in film) could effectively take shape today, considering that they are, as hinted at by Sun-Ha Hong above, also epistemological regimes. This is given that artistic research itself is a transversal field working across parallel and maybe even contradicting materialities

and fields of knowledge. Can artistic research in film then, come about as a thwarting of the algorithmic streaming image regime, in the sense of the thwarting that Jacques Ranciere explores in his book *Film Fables* (2006), wherein he argues that the art of cinema came about through living contradictions within the medium? In Ranciere's view, cinema lives through the idea of absolute film as truth clashing with narrative and representational linearity, producing a "thwarted" moving image – which he also maintains is the space where art emerges.

One of Ranciere's prime examples, is Godard's documentary TV-series *Histoire(s) du Cinema* (1988-1998) which stands out as one of the most comprehensible works of artistic research, both produced within and reflecting on an emerging post-cinematic era, marked by TV and Video. The 8-part series plays as an attempt at decentering both world history and cinema history through a videographic deconstructive approach which breaks down boundaries between subject and object and performs multiple global histories, of cultural, political as well as technological tropes and transitions. The episodes are post-cinematic operations made possible by the combination of VHS as a personalized remediation of cinema history and the emerging digital tools of non-linear editing. These Histoire(s) were informed by a life in cinema itself now remediated or perhaps even democratized on both reception and production levels, and as such the end product is a videographic Stream of Consciousness that oscillates between Godard's own subjective situation of reception and the collective memory of cinema. It thwarts both the impulse of "personal" cinema championed by the avant-garde as well as the truth claim of the historian documentarist, and does so through re-engaging the infrastructure of cinema, here recast as a video library.

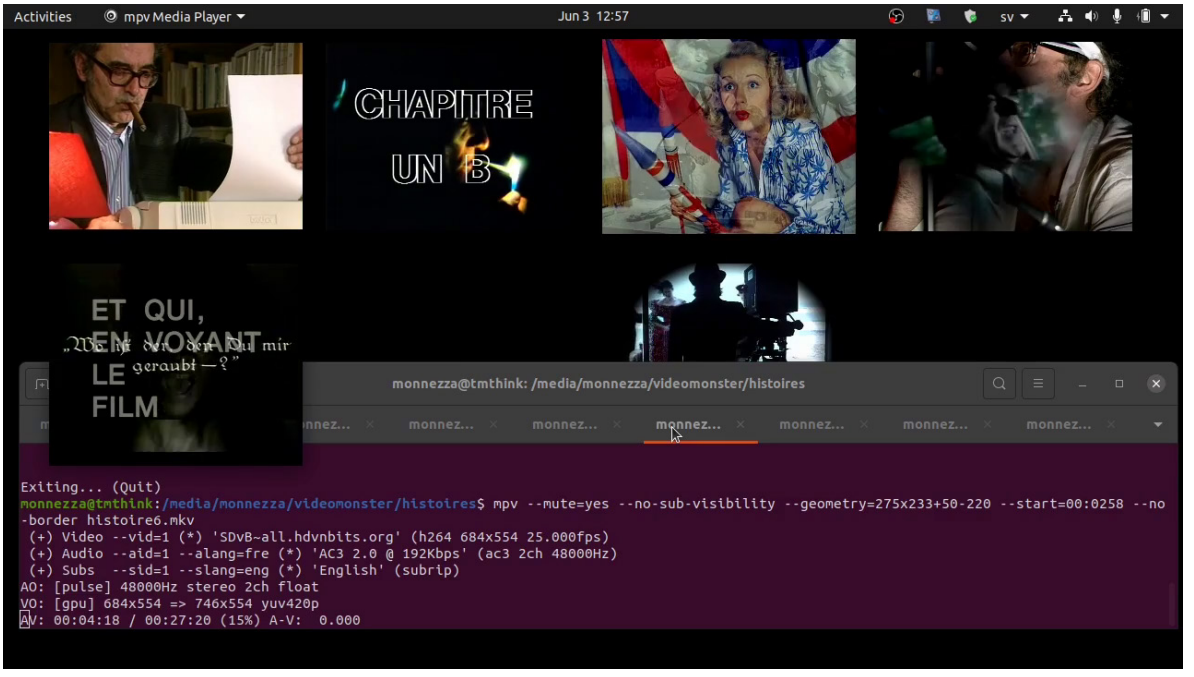

Fig. 13 Still from *The Cinema of Extractions* (Kristoffer Gansing, 2021). Public Domain.

Yet this thwarting could today be said to have been itself fully thwarted by the algorithmic *Streaming Consciousness* of the Cinema of Extractions which produce connections across the whole of a no longer simply past but *undead* cinema history as an effect of its infrastructure where film has become an archive for datafied research. The Cinema of Extractions is thus not post-cinema but an atemporal past, present and future of moving images all at once. Where does subjectivity, politics and aesthetics in these images gain hold, and how could artistic agency take shape? A place to start could be the computational infrastructure itself, which can be simultaneously engaged and de-centered as a motor of research. Artistic research in film could in this sense move towards a transversal approach to the Cinema of Extractions that stays contingent with some of its technical capabilities while exploiting the limitations of its speculative reach, in order to generate knowledge otherwise than as strict data-points and optimization schemes for content circulation.

Such an undertaking is affiliated with the development of the field of digital humanities, which utilizes data analytical infrastructures and tools as an extension of its interpretive capacities. But more than that, artistic research could go beyond this focus on interpretation and align itself with the critical *post*humanities that Rosi Braidotti and Matthew Fuller have outlined as a transversal approach that, among other transdisciplinary epistemological and ethical concerns, actively responds to and transforms the non-human dimensions of digital and ecological materialities (Braidotti and Fuller, 2019). There are already indications of this type of transformative transversal artistic research in film being undertaken, for example in the exemplary infrastructural approach of Jan Gerber and Sebastian Lütgert: their long ongoing 0xDB project is an experimental online database where films are not statically archived for live streaming, but become part of a commons of "digital objects" (Sollfrank, 2019) that can be expanded and intervened into through algorithmic operations. Here, what Tomas Dvořák and Jussi Parikka have recently explored as crucial factors of "measures and scales" (2021, p. 10) in navigating and operating the sheer quantity of images of infrastructural visual culture, is brought to the foreground in the user interaction, rather than hidden away in opaque recommendation algorithms. 0xDB builds a collection of both mainstream and obscure film history through low-res digital copies that are navigated with the help of the time-codes in their corresponding subtitle files. This is an infrastructural approach that retells the history of cinema for the digital age, effectively constituting a "Histoire(s) du Cinema" that is non-linear and ever-expanding. Such work of re-scaling cinema as a research infrastructure, countering instrumental extraction with the invention of new tools performing according to alternate aesthetic parameters will become a crucial strategy for artistic research in The Cinema of Extractions. If Netflix has become the new Coney Island of the *once* avant-garde, artistic research needs, not so much any longer to go underground, as to *create* its *own* ground.

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