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**Film matters: Historical and material considerations of colour,
movement and sound in film**

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Film matters

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Historical and material considerations of
colour, movement and sound in film

Kerstin Schroedinger

A thesis submitted in partial fulfilment of the requirements of the
University of Westminster for the degree of Doctor of Philosophy

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Abstract:

The narratives presented in most film histories seem to ignore the essential material components of analogue film stock. *Film matters* focuses on material components of the film image – specifically colour, movement and sound – with the aim of telling a material history in a contemporary, ‘post-digital’ environment. The aim of this history is to show how film as a material has participated in the building of social and political realities that are still at work today. My practice-led research results in two videos on colour and a 16 mm film on movement and sound.

In these works I practice alternative ways of history writing and telling that may not be written, but which leave their sediments in the materialities and projections of film. My research is embedded in a historical framework, but at the same time reflects upon the actuality of the political history of film. History and memory images are disassembled into their components in order to make visible that which the image does not show, but of which it is made.

Setting out from this methodology, in Chapter 1 I research the representational and constitutional participation of these material components in film’s different temporalities. Through a close reading of several seminal films and moving image works I focus on the interplay between film, time and certain contexts of social and political structures, in order to understand how these are constructed along with material history.

Chapter 2 explores movement, rhythm and physicality in the materiality of film. Setting out from the experimental set-up of the film *Fugue* (2015), the chapter analyses the relationship between physicality (of a body) and materiality (of the film) founded on movement. I claim that movement on film

and movement of film produce involuntary side products, which become readable in film through dance-like movements and rhythms. I discover micro-movements and habit-formation in both the movement of the film and the movement of the body and seek to read their political and transformative potential in situations in which they were joined, or when transitions from one to the other took place.

In Chapter 3 I analyse the role of colour within film history and collective memory. Colour, as a chemical component of the film emulsion, has a temporal permanence, seeping into the grounds and bodies as chemicality, as toxic substance. Colour as a transtemporal figure is elaborated in the video *Red, she said* (2011), which focuses on *Technicolor*, looking at the colonising power of colour film by characterising the film emulsion as an autonomous actor within the rules and boundaries of cinematic space. The research into colour continues with *Rainbow's Gravity* (2014) – a cinematic study of the production, use and employment of colour in the Nazi period and the politics of memory it entails. I found that in many historical cases colour can take on an active role in processes of memorisation.

The thesis concludes in a reflection on the practice of working with a negative approach. In my search for forms of resistance within the moving image that interrupt constant reproductions of power and its representations, I detect the necessity of working with negativity in a processual way.

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Red, she said

Video, 13 min, directed by Kerstin Schroedinger in collaboration with Mareike Bernien, 2011

Rainbow's Gravity

Video, 33 min, directed by Kerstin Schroedinger in collaboration with Mareike Bernien, 2014

Fugue

16 mm, 8 min, directed by Kerstin Schroedinger 2015 (digitised version)

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This thesis is dedicated to the memory of Ian White.

Parts of my doctoral research have been presented as conference papers and published in other journals:

publications:

Moving Image Body, Rab-Rab No. 3, edited by Sezgin Boynik, Helsinki
(forthcoming)

Bewegte Bilder – Bewegende Körper, Bildpunkt Austria No.3/2015

Cinenova: Diffracted Landscapes, with Irene Revell, Camera Austria No.
130/2015 (see appendix 4)

Red, she said, with Mareike Bernien, in: *Re: Ästhetiken der Wiederholung*, eds.
Hanne Loreck and Michaela Ott, Materialverlag Hamburg 2014

Re-reading Chromatic Borders, with Mareike Bernien, in: *Sequence No. 3*,
London 2013 (see appendix 5)

conference papers:

Matters of practices/actions/doings, lecture performance at Visuality and
Abstraction Symposium, Hochschule für bildende Künste Hamburg in
February 2016,

Image politics of de-constitution, at Kicking Images conference, University of
the arts Linz in May 2015,

Counter-memory work: Film and Sound again, at SOUND/GENDER/FEMINISM
conference, CRiSaP, London College of Communication in October 2014.

Author's declaration

I declare that the thesis has been composed by myself and that the work has not been submitted for any other degree or professional qualification. I confirm that the work submitted is my own, except where work which has formed part of jointly-authored work has been included. My contribution and those of the other authors to this work have been explicitly indicated below. I confirm that appropriate credit has been given within this thesis where reference has been made to the work of others.

The work presented in Chapter 1 on Sandra Lahire's films was previously published in *Camera Austria* No. 130, spring 2015, as 'Cinenova: Diffracted Landscapes' by Irene Revell and Kerstin Schroedinger.

The work presented in Chapter 4 on the history of early colour film and the Technicolor process was previously published in *Sequence* No. 3, 2013, as 'Re-reading Chromatic Borders' by Mareike Bernien and Kerstin Schroedinger.

The video *Red, she said*, submitted as part of the practice, was co-authored with Mareike Bernien. Apart from co-writing the script, co-directing the shoot and all accompanying recordings, and co-editing the video and sound, I carried out the casting and collaboration with the performers in the video. I performed in the video myself. In particular, I conceived the performative composition *Untitled 2, Study For Film* that is part of the video, in collaboration with Cay Castagnetto. I planned and carried out the location scouting at Rio Cinema London and 113 Dalston Lane London. I conducted two of three voice recordings in close dialogue with the speakers Irene Revell and Ian Joyce. I commissioned the composition of the soundtrack in close dialogue with Ain Bailey.

A visual essay on the video has been published as *Red, she said*, by Mareike Bernien and Kerstin Schroedinger, in: *Re: Ästhetiken der Wiederholung*, eds. Hanne Loreck and Michaela Ott, Materialverlag Hamburg 2014

The video *Rainbow's Gravity*, submitted as part of the practice, was co-authored with Mareike Bernien. Apart from co-writing, co-directing and co-producing the video, I carried out the organisation of the first research shoot with the support of Werkleitz Stiftung Halle.

I presented parts of the research as a work in progress in the solo exhibition *Arbeit/Film/Farbe* at Kunstverein Leipzig in May 2013, which led to a spatial conceptualisation of the final film with its three locations in Wolfen, Frankfurt and the Studio Bethanien in Berlin. I accomplished further research at the Imperial War Museum Film Archives London and with research interviews conducted with Marina Vishmidt and Esther Leslie in London. I introduced the idea of including performance aspects derived from working movements into the choreography of the film, a motif which I had first tested during the LUX AAP programme in 2012. I mainly influenced the conception of the choreography, not least through experience I gained from a series of performance workshops and dance classes that I took as part of the research in 2012 and 2013. Another seminal input was a workshop that I taught in Spring term 2013 at Hochschule für bildende Künste in Hamburg titled *Re-Reading Chromatic Borders*, in which I led practical experiments together with theoretical inputs. I carried out the location scouting and cinematography at the shoot at IG Farben Haus in Frankfurt in March 2013. I was responsible for finalising the soundtrack and the arrangement of the voices for both versions, one for the exhibition *Sometimes it rained in the factory* at Les Complices* in

September 2013, and the final screening version, which premiered at Forum Expanded Berlin in February 2014.

The film *Fugue* has been made at the invitation of Liaison of Independent Filmmakers of Toronto in Toronto. The technical implementation was achieved with their support, especially with the advice of Karl Reinsalu.

Since 2006 I work and publish under the name Kerstin Schroedinger.

Introduction : Film as a matter that makes history

Film matters looks at film as material and at ways in which history is perceived, written and processed through and with film as material. This project is conceived as a material analysis of the relations between film and social histories, but conducted within the limits that are given by the specific situations, places, and times of film's own materiality. I have been conducting research and conceptualising the thesis through the production of three moving image works. In these three works, I scrutinise how the analogue past provides the origins for a present that is deeply subjected to an image-led capitalism. Through a contemporary body of film images, I attempt to analyse how a gendered and ethnicised subject has been generated through the modes of production of the film image.

Through making these films I constructed a practice-based research project that concentrates on the experimental and speculative aspects of making work and thinking through practice. In this sense, its theoretical and practical aspects do not illustrate each other, but are rather generated out of one another, with neither afforded any essential priority.

Thinking through practice is experimental in a sense that it is processual and the outcome might remain unknown over larger parts of the work being in the making. In that sense, my films are based on the experiences and knowledge gained through making them, instead of following through a line of execution. While this is nothing new in a conventional sense of moving image arts, I distinguish such a practice from other experimental and structural approaches, because I claim there is no further intellectualising of the filmic

form nor is there a production outside of a textual/theoretical understanding. I rather insist on a thinking through making. The practical part does not dominate the written thesis, nor does the written part explain the practice. Rather each contributes towards a sort of joint venture in research undertaken in an applied and experimental mode, testing the film material from within the film production-process itself, and addressing the matters and problems of the research from within the historical and structural framework on which these problems are based. Such a practice of film making and writing, includes methods of involving myself into the process at different stages, as performing body, as cinematographer, as voice, as editor and more. It also involves a continuous dialogue with various collaborators, foremost in *Rainbow's Gravity* and *Red, she said*, this dialogue has been held through a close collaboration with Mareike Bernien. But the concept of collaboration reaches further into the production. It can take place in the writing, through finding another text that can become my companion. Or in conversations that form and inform segments of my thoughts. Thinking through practice means a constant reversal and alteration of forms, materials, positions, voices, bodies. Like in *Red, she said*, where it says: 'The colours colonise things. They conquer them and discover them, like a paint bucket, that someone pours out over something. The colours colonise things, because they inhabit without asking for permission, and initially refuse to commit to an equal relationship.' Here the dialogue of the film describes a form of collaboration, between colours and objects, although it is crucial to not equal collaboration with a relationship based on equality. I will come back to this mode of *production in collaboration* throughout the thesis, since it constantly adjusts a notion of negativity to the procedure of making and production, because it refers to a process which

does not necessarily proceed; 'a structure which makes of the process its own structural characteristic' (Pasolini, Ibid:193)

The return to the historical means of production, as they have been thematised in the three films, is only possible from a contemporary perspective and through the performance of a physical body, because it relies on my own situative reading and reacting.

In *Fugue* (2015) I play out this conviction by analysing a body in motion, showing how film provided the framework in which a figure can appear and disappear through movement.

In *Red, she said* (2011) the colonial implication of film colours are traced back through a fragmented arrangement of bodies and the process of highlighting and fragmenting film-historical projections.

In *Rainbow's Gravity* (2014) the question of coming to terms with history and the refusal to make peace with the past is confronted with the task of bringing history into the present, in order to create historical loops and feedback.

In all the three works my approach is to research the material history of film by making film myself, in order to understand critically the conditions in which film has enabled social change, since 'technical progress is for the author as producer the foundation of his political progress' (Benjamin, 1999(1):775). This frame enables me to 'revise the distinction between writer and reader' (Ibid: 772), and filmmaker and viewer, with the aim of understanding those conditions in the same way in which 'an individual, as author, reacts to a system by constructing another one ..., in the same way in which men, as authors of history, react to a social structure by building another through revolution, that is, [react] to the will to transform the structure' (Pasolini, 2005:193f). While Pasolini reflects *the screenplay as a structure that wants to be another*

structure, I find it useful to apply this concept to my own practice of writing text and making film and to consider both the writing and making as transformative processes. In that sense as noted above, the preconditions of making this work are inherently bound up with a will for transformation. Between the films and this text, I aim for a transformation not from one form into something else, but rather for a transformation that is 'a "process which does not proceed", a structure which makes of the process its own structural characteristic' (Ibid: 193).

I consider my work in writing and film making as a 'structure that wants to be another structure' because I look at film in relation to history, and I claim that film in relation to history acquires such a desire for transformation because film disrupts the continuity of time. Referring this notion to my practice of thinking through making film, I can employ elements of the formal and temporal structure of film to the construction of a disrupted narrative structure. Such an approach to time will be of importance throughout this thesis, where I look closely at film historical developments. To understand the continuities from early cinema to contemporary modes of image production that I use in my own works, I focus on moments of disruption within the history of film. I see these moments as hinges through which I can understand the construction of those narratives. Especially the ideology-critical aspect of structural film of the 1960s and 70s and its influence on feminist film theory and practice appear as such a hinge in the discontinuous narrative, but however, not as a simple reversal. The reversal won't work, but as Laurotis has stated '[F]eminist work in film should be not anti-narrative or anti-oedipal but ... working, as it were, with and against narrative (...). I would open this further up from its strict strategic use, towards a method of forming other connections and relationships.

Because with historical determination there is on the one hand clearly a dominant power structure at play, that supports a constant reconfiguration of coherence, but on the other hand the potentially violent experience of making things coherent and bringing them into a time line – violent because they establish themselves along practices of exclusion, erasure and silencing. This reconfiguration also produces a desire for redemption and a wish to memorise and create memory loops in the temporal structure of a film.

Kracauer (1961) encounters such a desire to redeem reality in the framework of the imaginary; he sees it emerging out of historical circumstances, from within the transformative structure that is film 'toward decomposing given wholes' (Ibid, 50). Following this, I explore film as a 'memorial matter' – a matter that always remains the basis on which new, transformed structures between film and history are built.

Kracauer's concept of film presents it as a matter that redeems reality, both as a form of registration of movement and as a fragment of a memory, as a sort of flashback. Both aspects have to do with the continuity of time, and they challenge continuous time in multiple ways, 'disintegrating familiar objects and bringing to the fore – often just in moving about – previously invisible interrelationships between parts of them' (Ibid:54). With film, we are dealing with a fragmented memory structure, and I work with its components so as to render visible what the image alone does not show. Since the materiality of film challenges forms of memorisation, the desire for redemption should be seen within a historiographic approach that does not give in to 'grand' narratives. In this sense, film and the historical loops that film creates could be seen as a

way of remaining in process that is opposed to a constant historical progressiveness. Such is a negative approach.

In analogy with Benjamin's work on the concept of history (Benjamin, 1968), I am concerned with the material history, and I analyse film as historical material, as archive footage and temporal documentation, and as a device 'to explode the continuum of history'.¹ While film writes history differently, film material also has its own history. Referring to the materialist tendencies in structural film analysis since the 1970s² and approaching these from the perspective of a materialist feminist critique,³ I aim to have different histories of materials, people and places interact and collaborate with each other. Pasolini speaks about the necessity of the reader collaborating with the formal structure of the screenplay. And this leads to the simultaneous presence of two different operations, creating 'a "tension" which moves, without departing or arriving, (...) from one linguistic system to another' (Ibid:193).

While I focus on the history of the material and listen to the narratives that the material tells, film gains a certain autonomy. Film as material writes, so to speak, its own biography.⁴ This biography might have already been the concern of structuralist film. It is crucial to note that from the beginning, film theory was always also written by practitioners. They found that they needed such theory in order to understand what they were doing, as it were in the making. When the structuralist approach formed in the 1960s, it seemed to

¹The awareness that they are about to make the continuum of history explode is characteristic of the revolutionary classes at the moment of their action' (Benjamin, 1968:261).

²See amongst others Rosen, 1986.

³See amongst others de Lauretis, 1987

⁴The idea that things have their own biography is not at all new, see also Tretiakov, 2006.

emerge from the necessity of bringing together ‘usually overlapping conceptualisations of narrative in film, of the cinematic apparatus, and of ideology – with all these often thought out in relation to a theory of the subject’ (Rosen:viii). Writing from the perspective of a filmmaker, Gidal puts it like this: ‘It was the possibility of having access into and thereby through and thereby onto the possible processes of representation’ (Gidal, 1980:151). Thus I include a number of relevant films, performances and artworks in my considerations, which I analyse in order to unpack the complexities of film’s material temporality. Framing my own practice within these specific works provides me with access to a deeper theoretical understanding of my own ways of working with and through film. In accordance with Gidal, then, I consider my own work in a tradition of representational critique. But I also distinguish my work from it, because I return to the material not in a straightforward turn against representation – or reproduction –, but I consider the historical implications of both material and form, in order to understand the relation between the material and the body. ‘Each film is a record of its own making. Production of relations is a basic function which is in direct opposition to reproduction of relations.’ (Gidal, 1978:2) in that sense I embrace Gidal’s seminal statement, hence I imply that things are more complicated, and have become technically and politically more complicated since Gidal wrote his text. What I am inherently missing in the structuralist/materialist approach is the notion of the body within the material and the historicity of material and form, which has been left out in order to work against narration.

Thus the work done in this thesis involves not only taking up the structuralist approach of a representational critique and reconsidering it in a contemporary environment, since this approach has too often become a self-referential, a-

historical exposure of material properties, which does nothing to challenge the invisibility (or the making invisible) of material agencies.

I go beyond this approach by situating film-as-material in the centre of my research with the aim of seeing what the material does, how it reacts to historical, social and political discourses. Through involving myself in the practice, inserting myself in the image and testing my own body against the materiality that aims to make it visible within its discourse, my investigations continue the structuralist/material critique beyond the deconstruction of the image/narrative. While Sandra Lahire's works on radioactivity provided me the tools to think about layered images between video's and film's different materialities and invisible impacts on the worker's body in the late 1980s, The film experiment in *Fugue* provides a quite direct translation of similar questions but exposed to my body. In *Rainbow's Gravity* this intervention through the physical body is more thematised in the distance that appears between the femininity of the Nazi actors and the performer in the factory who fail to bring their bodies into relation to them. My research and practice is specific to the materiality of film and is devoted to telling its histories differently. But my method is bound to a longing for radical change, exposing and de-composing representational practices, material agencies and their inherently hegemonic narratives.

On the one hand I'm thereby insisting that history cannot be overcome, because film recycles and loops. On the other hand the speculative level considers the history of the material properties of film vital for contemporary discussions around materiality.⁵

⁵ Here I refer to a present discussion around New Materialism. Opposed to the projective manner of this discussion, I aim to insist that the material agency is not to be reinvented so much as its historicity is to be foregrounded.

Methodology : Trauerspiel – Going back in time

Although the technical conditions of cinema have changed tremendously since its introduction in the late nineteenth century, I begin by going back in time to early photography and film making, because at this early period there formed certain ideological tendencies that – along with the basic material components of the medium – are still at play today. The cinematic apparatus was formed. Since the late nineteenth century film stock produced a new kind of historical record, which is in movement itself and stems from an idiosyncratic relation between reactivity and the development of materials. With it a new memory device was created, as well as a new medium of historiography. 'Ever since that epochal change we have been in possession of storage technologies that can record and reproduce the very time flow of acoustic and optical data' (Kittler, 1999:3). I am thus arguing for a way of analysing the material means of film that does not disconnect technical developments from the social realities in which they appear, nor from the social histories they have constituted. The reverse movement of going back in time is motivated by an archaeological drive. However, my intention here is not to trace something back to its origin or to reveal an original state of being. This research is more concerned with the process and procedures of excavation. 'The term origin does not mean the process of becoming of that which has emerged, but much more, that which emerges out of the process of becoming and disappearing' (Benjamin, 1998:45).

Which historical situations led to specific changes in the technological process? How did films become colourised? Why did photographs begin to move? What does a film image sound like? I look at the configurations of film as

one technology of modernity. In this regard I take a close look at the question of from where these changes in film derive – a move I take to be analogical with what Benjamin did with the literary form of the *Trauerspiel*, the Baroque Tragic Drama.⁶ In the *Epistemo-Critical Prologue* to that work, he emphasises the concern with the origin as a practice that ‘On the one hand (...) needs to be recognised as a process of restoration and re-establishment, but, on the other hand, and precisely because of this, as something imperfect and incomplete’ (Ibid). Digging out the origins of film – while rejecting the assumption of a pre-historical original state – allows an understanding of how the interaction of film, mechanisation and industrialisation of physical labour together function to transfigure the material of present relations of movement and moving images. This methodology does not follow a coherent path, but considers fragmentedness and incompleteness as being themselves material properties. Particular films can never be brought into the present, but in the *attempt* to bring them into the present they redeem the political realities that have determined present conditions. To the extent that we see in films a materiality in the process of disappearing, their presence gains historical reality.

As I will elaborate in more detail in the corresponding Chapters 2–4, the three moving-image works that build the practice part of this project undertake precisely such a historical restaging. They do so with the intention of

⁶ This take on Benjamin is inspired by Ian White’s performance piece *Trauerspiel 1* (2012) of which he wrote: ‘Benjamin’s text and the selected films effect a resistance: a slow motion flicker between the auditorium, stage, and screen. Allegories of Love and Time generate each other. Co-occupation. Production is the matter of our own act of reading (which is also speaking) and an encounter’ (White, 2013, 208).

understanding present reality through an exploration of the historicity of their material reality. From the formal reflection of, and the structural reflection on, the theories of Benjamin and Pasolini, I disentangle the different temporalities that film contains, approaching the materiality of film as a temporal-spatial structure. As I will point out in the following, film tells social histories differently, not only in its structure, which is inherently different to text, but also through the material elements that form analogue film stock. I analyse how these material elements react across time and enable certain spaces and environments (the cinema, the laboratory, the factory). For this purpose I build a set-up in which different temporalities are confronted with each other. Again, I do this in my image-making practice as well as in my writing. The laboratory text, which, as described above, is a processual and thus inherently experimental form, can describe, record and analyse the material components of film. Through such a procedure, I can recognise film's ability to deconstruct temporal continuities and spatial certainties. I can identify the layered temporal structures that define both the material itself and its production process.

1. Film Material as Transtemporal Structure

With film there is
the production time of the film stock in the factory,
the labour time of the factory workers,
the film speed; that is, the reaction time of the light sensitive emulsions on the
stock,
the exposure time; that is, the time during which the filmstrip in the camera is
exposed to light,
the shutter speed; that is, the speed with which the shutter opens to let light in
during
shooting time,
the labour time of the cinema workers,
the processing speed; that is, the speed with which the emulsion reacts to the
developer in the developing tank,
the lab time; that is, the time it takes to develop the film,
the time spent working at the editing table; that is, the work done to disrupt and
arrange the different shots in a new order,
the synchronised time of sound and image tracks,
the projection speed; that is, nowadays, 24 frames per second in 16 mm film,
the screening time; that is, for instance, 3.45 on a Saturday afternoon,
the time spent together in a cinema to watch the film,
the time before it starts and after it finishes, waiting in the foyer to enter the
cinema,⁷

⁷ See White (2011), as cited in Korczynski (2016): “A place that slides between positions, potentials, instructions, openesses, closures.”² The place you identify here is the auditorium as site, but you could indeed be claiming your own position as both an artist and curator. ... Adjacent to the auditorium, the foyer is the interim space, indeterminate and open, where bodies first assemble, but are yet to be aligned.’

the historical time; where the film is located within film history,
the actual time; when it was made,
the archival time, when the film has been entered into the archives,
the copyright time, how long the ownership of the rights last,
the time it takes to transfer the film to a different format,
the time between one transfer and the next; for instance, between the transfer
to video in 1992 and the one to digital in 2014,
the ageing of the material, and age-related illnesses, so-called vinegar
syndrome, the colour film prints turning pink,
the break-down time of the material; when will it all have vanished?

All or some of these times come together in a structure that is film. The material agency of film has these times collaborate with each other, in a manner similar to the collaboration between the writer and the reader that Pasolini mentions, in that 'the author of a screenplay asks his addressee for a particular collaboration: namely, that of lending to a "visual" completeness which it does not have, but at which it hints. The reader is an accomplice immediately' (ibid: 189). Pasolini addresses also a temporal notion, in that the collaboration forms from the desire for an imagined future structure and from the demand for immediate response, which he locates in the formal structure of the screenplay. Given that this structure has its own temporal agency one that is open to the collaboration of the audience, I propose that the elements of film have a material agency, which has different temporalities at play, but that interact collaboratively. Collaboration is thus a specific form of relationship between certain material components and their interaction through time (that is: their historicity). This collaboration is distinct and in a way autonomous from the

human interaction between what is onscreen and the spectator, although the material agency and activated spectatorship and appearance may interfere with each other.

Such an idea of collaboration seems similar to the notion of relatedness between history and the *here-and-now* in Benjamin, when we consider human (or social) agency as a collective (or collaborative) and historical dynamic: 'History is the subject of a structure whose site is not homogeneous, empty time, but time filled by the presence of the now [*Jetztzeit*]' (Benjamin, 1968:271). Historical time is already the product of the colliding of present times, and such presences of the now collaborate and they have different kinds of economic, social, political and aesthetic impacts on one another and provide different sites of history.

In this regard, the works, films, videos and film performances that I look at in this chapter challenge the concept of discontinuous narration on and with film. They are pertinent in regard to 'the enactment of one body thinking and feeling in time and space – a body that developed, in this way, a radical activist politics' (White, 2007)⁸ Each work helps me to understand the material and social agency of film through acknowledging the presence and situatedness of material components and understanding the historical, social and political structures that bring them about. I read these works with a focus on their specific material entanglement and 'collaboration' in a material historiography. Film's relationship with time appears in each work through specific temporalities, and particular paces, rhythms and durations of the times listed

⁸ Here White wrote about Yvonne Rainer's autobiography *Feelings are facts*. I return to this thought in chapter 2, when I discuss the relation between movement and production of emotions, where I find it crucial to highlight their interdependence, similar maybe to the mutual influence of material historicity and the temporal structure of film outlined here.

above. Together they build their own version of film history. My own works cross section these works; notions of contaminated history in *Rainbow's Gravity* relate to the layered radioactive images in Sandra Lahire's work, or the reduced disembodied film space in *Blue* might resonate in the fragile visuality of *Fugue*. These manifold times that collaborate to build the temporal structure film then materialise in particular ways in each work, as I will further elaborate in this chapter.

The production time of the film stock is present in the destruction time of the film in Nicolson's *Reel Time* and it appears in the location at the factory in *Rainbow's Gravity*.

The film speed in combination with the exposure time enables the movement to write stripes into the stock in *Fugue*.

The synchronised time of sound and image gets activated with the optical sounds and movements in *Fugue* and the projector sounds and the sewing machine in *Reel Time*.

A screening of *Plutonium Blonde* (Lahire) takes place in our exhibition *Red, she said* at Les Complices* in Zurich in 2011.

The archival time is thematised in the installation of *Rainbow's Gravity* in the Dovzhenko Centre, a former Soviet film archive and laboratory, in Kiev in 2015.

Theweleit has used the title 'ecstatic mixture of temporalities',⁹ which I'd like to adapt in order to describe what it is that the material of film does with our recognition and understanding of time. To make this thought more concrete, I'd like to look at a specific work by the US artist Ken Jacobs, so as to discuss the

⁹'*Ekstasen der Zeitenmischung*' is the title of an audio play by Theweleit from 2007, in which he employs spoken text with the aim to engage with the complexity of temporal structures in the arts.

several layers of time that come together in the compilation film *The Whirled* (2007). With Jacobs I choose a filmmaker who re-uses his own body of work as the basis to make new work. With regard to the above-mentioned reversal movement – of going back in time in order to access a convoluted historical structure – Jacobs' recent films have shown that the process of re-working one's own filmography doesn't need to be self-indulgent or hermetic. In these works, in which he uses footage he filmed in the 1950s and early 1960s, his reworking of his back catalogue is not a nostalgic, self-referential gesture. Rather, by re-arranging the footage he makes of it new and independent work. Herein I see my primary interest: Jacobs analyses and restages material in a transtemporal montage, in which different temporalities correspond. They speak to each other, across time. Such a work can only be described by a discourse that is located in the present and that allows the different temporalities to relate to one another.

In 2007 Jacobs compiled a number of his fragmentary early works from the mid-1950s into the 20-minute compilation video *The Whirled*. One can recognise an *ecstatic mixture of temporalities* in *The Whirled*. I am interested in the different temporalities that culminate in this new work, and want to watch it specifically in relation to its ability to reach into present time. Jacobs revisits footage from his own archive, while the short film-sketches playfully adapt the movements, music, plots and muteness of early film.

The film begins with a scene in the street. It documents the Lower East Side in the mid-1950s – an area that in the intervening period has changed completely in terms of its appearance and inhabitants. It also documents a certain Saturday afternoon attitude of leisure-time activity, an atmosphere which seems to belong to the era of productive, Fordist labour.

The scenes on the street mock silent film aesthetics, at times bringing to mind film noir, while the actors appear to perform a kind of ritual of sacrifice or prehistoric mythical rite. By bringing these short experiments together, Jacobs is in a sense presenting his own biography. He had transferred the works from 16 mm to digital video. The *ecstatic mixture* is not only present in what we see, but in how we see it. The temporalities transgress the boundaries between format and format, container and container, and leave their material imprints.¹⁰

The first short fragment film is titled *The Saturday Afternoon Blood Sacrifice* (1956). A group of people perform on the streets of the Lower East Side. They mock movements from a silent film, as if moving in time lapse. The scenes are accompanied by a musical waltz that underlines the silent cinema pastiche. A man comes jumping and dancing down a street; then he's standing still and a woman comes dancing around a corner. They kiss. The man falls down: is she a vampire? They sacrifice the man.

Then the artist Jack Smith comes out of a fire exit with a fan, draped in patterned fabrics. He goes down some stairs. Cut: a street parade, 1950s cars, but the movements of the parade seem to come from a different time, or belong to no historical moment at all. Their pace and rhythm seem to counter the urban setting. In the parade there are kids and dressed up women. Jack Smith leads the parade. He folds out papers on the street. The kids in the parade bring some objects along. Extreme camera angle from below. They place the sacrificed man on the papers. Jack Smith places an object between the man's legs.

¹⁰I watched the film at EAI in New York in 2014. The description here follows the notes I took then and how I remember it now, thus adding another temporal layer.



Fig. 1: Jack Smith on a fire exit, filmstill from The Whirled, Ken Jacobs, 2007

Cut, noise, scratches on soundtrack. View from above out of a window. A jump cut to the present of the film, to a documentary gaze. A police car, some policemen investigate, to see if a crime has taken place. Jack Smith talks to them, while the man continues to lay on the pavement and the other girls stand around, as if they were unsure whether they should run away or hang on. Then they proceed with the sacrifice. Applause. Voice over.

‘ ... Since 1957 ... the academy award ... cut’ to black.

Then the title of the next part appears in a circle-shaped mask.

Little Cobra Dance

Jack Smith on a staircase, the same ‘silent movie’ music, which was probably added much later. When? In a slapstick manner he tries to get down the stairs but has to fight with a piece of fabric. He is dancing on a roof in a backyard

and on a fire exit, his postures move fast from one to the next. Close up, eyes rolling, mimicking silent film facial expressions.

Again a circular mask shapes the image. A short scene filmed from the first film, this time filmed from a TV monitor. Then a text field explains that these two films were tests or preludes for the more ambitious *Star Spangled to Death*.

Two short films that are notes for another film become a work of their own 55 years later. This brings to mind Pasolini's notebook films that he made between 1964 and 1970 in preparation for feature films.¹¹ In these films, the figures, scenes and settings appear to be some sort of testing ground for another film that Pasolini intends to make: film is a structure that refers to another structure, a feature film (Pasolini, 2005). Pasolini's concept of a transformative structure can be read in analogy to the film as a temporal structure that longs to combine different temporalities and in this sense expresses a desire for change. The film *The Whirled*, released in 2007, also suggests another film – *Star Spangled to Death*. It hints at a future work, but already in retrospect, and this retrospection is itself sedimented into layers that we as viewers have to dig through. Jacobs uses film as a temporal structure that re-arranges itself in relation to different times.

The temporalities that can appear in the cinematic form, which may be mixed and intertwined, are all more or less measurable as durational time. In opposition there appears the material motion of film and the movement of the bodies exposed on film, which also have their own paces and rhythms. They are bound to the mechanics of the projectors and the frame rates of the

¹¹*Sopralluoghi in Palestina per Il Vangelo secondo Matteo* (1964), *Appunti per un film sull'India* (1969), *Appunti per un'Orestide Africana* (1970)

camera and thus belong to habitual time, to the everyday and ritualised, embodied, hence cyclical time, which is not as easy to measure. An attempt to measure such times was undertaken in so-called motion studies in the 1920s, with the idea that if you measure repetitive work movements, the way they form habitual movements can be understood and made usable for working environments, while they tried to make such cyclical time measurable.¹²

Another form of analysing such habitual time, as Beller suggests in *The Cinematic Mode of Production*, is to activate the supposedly passive, never-ending mode of the cycle that the apparatus establishes in order to bring about images. For Beller the activity of watching is understood as a form of productive labour. 'Cinema and its succeeding (...) are deterritorialized factories in which spectators work, that is, in which we perform value-productive labour' (Beller 2006:1). As consumer activity film still remains in the cycles of the everyday, but if cyclic time is made productive it becomes measurable, because it is part of a value economy. 'This conversion of spectating, generally conceived as a consumer activity, into a socially productive activity depends on the establishing of media as a worksite of global production' (Ibid:112). If we understand filmmaking and film-watching as worksites within a wider socio-political context, then they escape cyclical time and become part of a wider socio-political history. This is relevant in so far as we have to widen the concept of productiveness if we wish to include the material components of the film image in relation to cinema. Collaboration takes place between the viewer-worker, the worker in the factory and the filmmaker-worker. But it also takes place between the site of filming, the factory site and the cinema space; and also between the celluloid and the eye and the

¹²see Chapter 2 on the work of the Gilbreths

camera and the projector. I will now think these material-machine-body entanglements through the 'life'-cycle of the film material and its several states of being, from its production in the factory to its distribution and projection in the screening situation.

Birth/Production:

Film stock is a chemically produced material. It uses a range of different chemicals in its several states of coming into being. Film stock consists of the film base, a clear transparent strip of celluloid. Light-sensitive emulsions are applied onto the film base. Furthermore, chemicals are needed in order to develop exposed material, either in a positive reversal process or negative process. The first film base was derived from nitrocellulose, a substance first discovered in the mid-19th century. Several inventors began to experiment with this substance, which led to a film base composed of celluloid, derived from cellulose and polyester in the 1880s. Cellulose, nitric acid and camphor make nitrate film.¹³

Later this was altered by the introduction of materials that were less flammable. The film stock with a cellulose triacetate plastic base was then called safety film.¹⁴

The emulsions and dye coupler applied onto the base consist of silver halide grain, suspended in a gelatine colloid. Colour film has three layers of such emulsion, which are mixed with dye coupler and light filtering interlayers. These emulsions react to exposure to light.

¹³After (Theisen, 1967)

¹⁴See for instance (HSE, 2013)

Development chemicals are applied after exposure. Dilute solutions of acetic acid or citric acid, ammonium thiosulfate, alkaline agents, sodium sulphite and hydrogen sulphate are all components used in the developing process. Photographic processing develops the image and also makes it permanent and insensitive to light. During processing the film is treated with a series of chemical baths. The developer bath converts the exposed image to a visible image. Then the stop bath halts the developing action. Finally the fixer makes the image permanent. All these different processes alter the states of the material. As it is being exposed, developed and fixed, it goes through different stages of transformation. Molecular compositions of chemical fluids affect the emulsion on the celluloid in various ways.

Adolescence:

In the moment of recording, exposure (shutter) time and the reactivity or sensitivity of the material – the film speed indicated in ISO/ASA – *collaborate* in order to compose a picture. The developed image contains both, the exposure time and the reactivity time of the film stock. Both times are most often very short, so as to create the impression of capturing real time, the instantaneous moment of exposure. This might not always be the case, however: fast moving objects and also longer exposure times may appear as blurred images. There might be moving objects in the frame or a moving camera or both, and these movements find their representations within the images as blurs and streaks. This is particularly distinct in highlights and reflections. Often those streaks give a scene a 'natural' look, because they correspond with the persistence of vision of the human eyes.

Film stock gets wound up in cameras, exposed to light, cut apart, spliced together, wound up in projectors, projected into cinemas. The strip is threaded through at least three, maybe four machines: through the camera, the processing machine, editing table, then projector.

It is necessary to touch and fiddle with it to make all these processes work. It is a destructive process. Film destroys itself throughout its lifetime. When used it is unavoidable that the material gets scratches, tramlines and sprocket holes. It suffers throughout the mechanical procedures to which it is subject. Film-treatment takes into account the fact that the number of projections is limited and that every screening will bring more and more damage to the strip. This counteracts the concept of the endless 'historical loop' (Kittler, 1999:4) and of numberless projections. At least the life span of a film print is limited.

Ageing:

Film stock as well as film prints also react through time. The material itself ages. It needs to be restored and conserved. The question of what gets reproduced, restored and conserved is an immediate political and economic question, because the expenses involved obligate selectiveness with respect to what material gets restored.

In addition, the ageing of the material also challenges the idea of an *original* condition of film material. Core concerns here are whether or not time and age belong to a material and whether film should be restored to a state in which it appears as new and as unscreened as possible. Degrees of decomposition, decay, disintegration and dissolution belong to the material, since that is what chemical substances do over time. This proved to be even more apparent for nitrate films. Chemical instability meant that the cellulose nitrate film base

would react with oxygen and catch fire. Nitrate films undergo a dramatic end to their existence because they either explode when exposed to oxygen or pass into non-existence in metal cans that can never again be opened.

This precarious and dangerous situation led to the development of safety film, which was less flammable. Safety film is affected differently by decomposition. The film base is composed of cellulose acetate plastic. With exposure to moisture, heat, or acids, the acetyl groups break from their molecular bonds and acetic acid is released. Acetate film base degradation, also known as vinegar syndrome, is a very similar problem to nitrate base deterioration. Its causes are inherent to the chemical nature of the plastic and its progress very much depends on storage conditions.

Another sign of decomposition is an asynchronous fading of the three layers of colour dyes on colour film stock. Colours gradually fade on celluloid. Or as Grafe puts it, 'Colour film stock doesn't acknowledge patina, it just disintegrates' (2002:16).¹⁵ All colour film will fade over time. But the three layers of emulsion on the film stock lose their colour at different rates. Since the red-sensitive layer comes at the bottom of the emulsion and for an uneven fading, the colour balances change and the affected print becomes tainted in a pinkish brown-red. Time infects the film stock and pink shows as a symptom of such an infection.¹⁶ Time makes the material disintegrate. Film archives and film restorations try to bring these processes to a halt in order to conserve the film in its original state.

¹⁵ My translation: 'Farbfilmmaterial kennt keine Patina, nur Zerfall'.

¹⁶After *The Film Preservation Guide*, 2004, pp 15

Death/Projections:

The film projector makes the images on the filmstrip appear and brings them into movement. It enacts the mechanical passing of time: the film is shown from beginning to end. While projected, the image cannot be brought to a halt.

Otherwise the heat of the projector lamp would burn the celluloid. The film would start to burn immediately or melt away. Film projection provides a linear structure with a beginning and end, subject to frame rates that control and define the time passing: feet convert into seconds. The sprockets transport the filmstrip mechanically through the projector and thereby also give the procedure an audible rhythm and pace. 'However historical the moving image might be, it is bound into an order of continuity and pattern' (Mulvey, 2006:13). Through this process, the projected film appears on the screen and reflects back onto the mental screens of the audience.

Through the projection film also enters a realm of circulation and distribution. The form of circulation varies significantly from the circulation of printed photographs, since the projected images won't stay. They appear only at the moment they are illuminated and gain a life afterwards only through their being remembered.¹⁷ 'The images that constitute our memory (...) are alive, but because they are made of time and memory their life is always already *Nachleben*, afterlife; it is always already threatened and in the process of taking on a spectral form' (Agamben, 2011:70). Such a spectral form could be seen in the light beams reflecting on the screen.

¹⁷Although of course film stills and posters aim to support these memorisations.

1.1. A Natural History of Synthetic Matter

From this description of a 'life cycle' of the film material I return to the implications of the material, and to the question of how they might intersect with this cyclical – that is to say, natural – structure.

A materialist view of history stems from the idea that the production and exchange of products is the foundation of social structures. 'Historical materialism supplies a unique experience with the past' (Benjamin, 1968:262) – one that is genuinely individual and appears only in the 'here-and-now'.

With the arrival of cinematic history, that is, with the emergence of '... its technological promise to capture time', including the promise of 'immortality, the denial of the radical finitude of the human body, access to other temporalities, and the issue of the archivability of time' (Doane, 2002:2) – there also emerged a concept of history in which social structures belong to the realm of historical time, a form of time that is conceptually segregated from cyclical 'natural' time. What happens to the historical loop that film promised we would encounter?

'Within the concept of history, time indicates social change and the uniqueness and irreversibility of human events. Traditionally, it has taken on meaning in opposition to "nature", in which time is change only in the sense of cyclical repetition' (Buck-Morss, 1989:58). If technology can accompany both times – linear progressive time and repetitive cyclical time – then through film nature gains its own historicity, because nature's cycle is disrupted in the synthetisation of the chemically reactive emulsions and by the implied reproducibility of the material.

In other words, with the arrival of the filmic record, cyclical time and linear time fall together, or, one might say, they collapse into one another. In regard to this collapse of parallel times I refer to Adorno's concept in *The Idea of Natural History* (1984). He brings the oppositional yet parallel time-concepts of natural time and historical time into a dialectical relationship. They began to affect one another. If history is no longer a book but a film, it re-cycles, rewinds, repeats, and 'turns into an endless loop' (Kittler, 1999:4), while at the same time providing a 'new' record. '[The] elements of nature and history are not fused with each other, rather they break apart and interweave at the same time in such a fashion that the natural appears as a sign for history and history, where it seems to be most historical, appears as a sign for nature' (Adorno, 1984:121). With this dialectical relation Adorno deconstructs a seemingly 'natural' progress of history as well as the concept of an ahistorical nature. If nature is not just nature itself, but contains also the idea of itself as a second construction that brings the first nature into being, likewise the temporal structure of film as both lineage (strip) and loop might contain Adorno's thought: since it is produced from synthesised matter, film may in the first instance be seen as an abstraction from nature, because the chemical components of film stock are derived and extracted from natural products. But then these substance are re-arranged. Their molecular order is converted. Chemical reactions produce new substances, synthetic environments.¹⁸ Film is made out of these substances. From the emulsions applied to the celluloid, film creates its own – autonomous – synthetic environment. Photographic film is then processed through chemical substances; and thus images become reality when the developing agents convert a latent image – that is to say, the image

¹⁸See Leslie, 2005; see Chapter 4.

that had been exposed onto the film strip but is not yet there, i.e. developed – into a visible image.

The molecular combinations that build the film stock are synthesised from natural sources and their manifestations as images are abstracted from reality. For instance colour is such a synthetic component of the film stock and its molecular arrangement in the emulsions on the celluloid lets colours tribute to the creation of a 'synthetic world'. The molecular structure is held up to create depictions of reality. Film stock thus derives from natural substances, but in an abstracted way. 'The image is not a copy; it speaks only to the extent in which it is abstracted from nature'.¹⁹ But while film is not a reproduction of nature perceived, it projects back into the past. This aligns with a 'discontinuous' concept of history, as Benjamin has shown, 'the images themselves cannot be strung together into a coherent, non-contradictory picture of the whole' (Buck-Morss, 1989:55).

Or, as one might say in chemical terms, film contaminates the past, giving it a historical transitoriness. In this respect I argue that the use of archival and historical material changes the present (and consequently the future), so that the contamination of the material with history always already refers to itself and feeds back into itself. 'An "ur-history", a history of the origins of that present historical moment which, while remaining largely invisible...' (ibid:47), manifests itself in its materiality. I employ film as the operator of this transaction in order to make these invisible yet material manifestations apparent.

¹⁹'Das Bild ist kein Abbild; es spricht nur in dem Masse in dem es von der Natur abstrahiert' (Kracauer, 2004:185f, my translation), see Chapter 4.

1.2. Film and labour time / life time

In analogy to nature and history – and with it the concept of cyclical (natural) time and linear (historical) time – habit and memory perform time in film, make it both a constant, monotonous mechanical repetition and a memory device. The moving images are looped, rewound, played back. The projection builds viewing habits, up to the point at which, after watching a movie and coming out of the cinema, physical reality itself is aligned within the parameters of these viewing habits. The idea that film as a device reconstructs and constructs the past could potentially help us to come to terms with the past. Re-working film, as the *historical index of the images*, ‘for the historical index of the images not only says that they belong to a particular time; it says, above all, that they attain to legibility only at a particular time’,²⁰ and thus coming to terms with it, could be understood as a sort of work that is itself dependent on repeated performance. The monotonous performance of the same movements over and over again, in the manner of the projector, inscribes habits into viewers, as in another context it inscribes habits into workers. Smithson (1996:17) describes the experience of watching a film in the cinema as a sort of erasure of passing time. He writes, ‘The physical confinement of the dark box-like room indirectly conditions the mind. (...) Time is compressed or stopped inside the movie house, and this in turn provides the viewer with an entropic condition. To spend time in a movie house is to make a “hole” in one's life’.

²⁰ ‘And, indeed, this acceding to legibility constitutes a specific critical point in the movement at their interior. Every present day is determined by the images that are synchronic with it: each “now” is the now of a particular recognizability’ (Benjamin 1999(2):463).

Again in reference to Beller's above-mentioned activation of the viewer as a productive worker, the idea that time stops in the movie theatre can be compared to the habitual time spent in the factory, a time that is not progressive or in any way transitory, that is, so to speak, 'dead time' – time that is uneventful and can be said neither to 'pass' nor to be memorisable (see Doane, 2002: 159ff). Repetition forms the entropic space of film viewing habits and turns the time spent in a cinema into habitual time. However, memorisation in the cinema takes place on a different level: the dead time of factory work is inscribed in the muscle memory of the body, while, as Kracauer has shown, the



Fig. 2: Women worker are leaving the factory, filmstill from La Sortie des Usines Lumière à Lyon, F 1895

transient elements of film work on a different medium: 'like dream elements, (such impressions) may haunt the moviegoer long after the story they are called upon to implement has sunk into oblivion' (1961:52). The after-effect of

cinema – the audience leaving the cinema resembles the famous ‘workers leaving the Lumière factory’²¹(fig.2) – is a means of aligning different temporalities with one another. The life of the material and its immaterial afterlife proves that the distance between film reality and physical reality is a constructed one.

With film, a new temporal structure was introduced, which needed to be understood. We had to learn to read film in order to be able to see that, for instance, blurred images were related to the motion in front of the camera, or that a cut means that the situation has changed with respect to the position of the camera.

The habitual movement of the cinematic apparatus and the habitual memory that the film material inaugurates seem to oppose the idea of continuity and linearity of text. Emerging out of these movements and memories, habitual history seems fundamentally different to linear history. It exists, so to speak, outside of the continuum of history, which Benjamin wished to explode.

Industrialised working movements in the Fordist factory environment are often composed from habitualised movements. But, if we look at film, habitualised movements are what make ‘images run’ in the first place, either through the looping mechanisms of the recording and projecting machines or through the viewing habits that produce reality. Through this other habitual movement, the

²¹See also Farocki, *Workers Leaving the Factory in Eleven Decades*, installation, 2006. The installation gathers film scenes of re-enactments of the scene throughout film history. ‘But the existence of factories and movie stars are not compatible. A movie star working in a factory evokes associations of a fairy tale in which a princess must work before she attains her true calling. Factories – and the whole subject of labor – are at the fringes of film history’ (Farocki, cited from <http://www.harunfarocki.de/installations/2000s/2006/workers-leaving-the-factory-in-eleven-decades.html>, retrieved 03/07/2016).

film keeps coming back, keeps returning, both through the recorded reality that is captured on the film strip and through the mechanisms of the reproductive medium. Memory becomes work, memory cycles. Film keeps coming back, and thus history is no longer a chain of events, but instead entails the haunted, spectral aspect of revisiting.

In *Reel Time* (1973)²² Annabel Nicolson performs habitual and durational time in a film performance.

Performance with sewing machine, projectors, long loop of film and two readers.

(...) In the middle of the room she sat at a sewing machine, annabel nicolson. onto the wall in front of her, her shadow with the sewing machine was projected, at its side a film with a woman at a sewing machine in silhouette. a huge loop sliding along the floor, along the wall, under the roof and through her sewing machine. she did her job with the needle and holes defoliated the silhouette image in closer and closer succession. that is how she works, annabel nicolson, dives into an action and fills out its aspects.²³

²²The description of the performance stems from material from Annabel Nicolson's private archive. It was gathered by Lucy Reynolds and Irene Revell on occasion of the event *Someone else can clean up this mess* at Flattime House London on March 16, 2014. I'm grateful to Irene for providing me with access to the papers. Furthermore, the description of the performance is informed by Reynolds (2009).

²³Krarp, 1973 as cited on http://www.luxonline.org.uk/artists/annabel_nicolson/reel_time.html, retrieved 23/06/2016

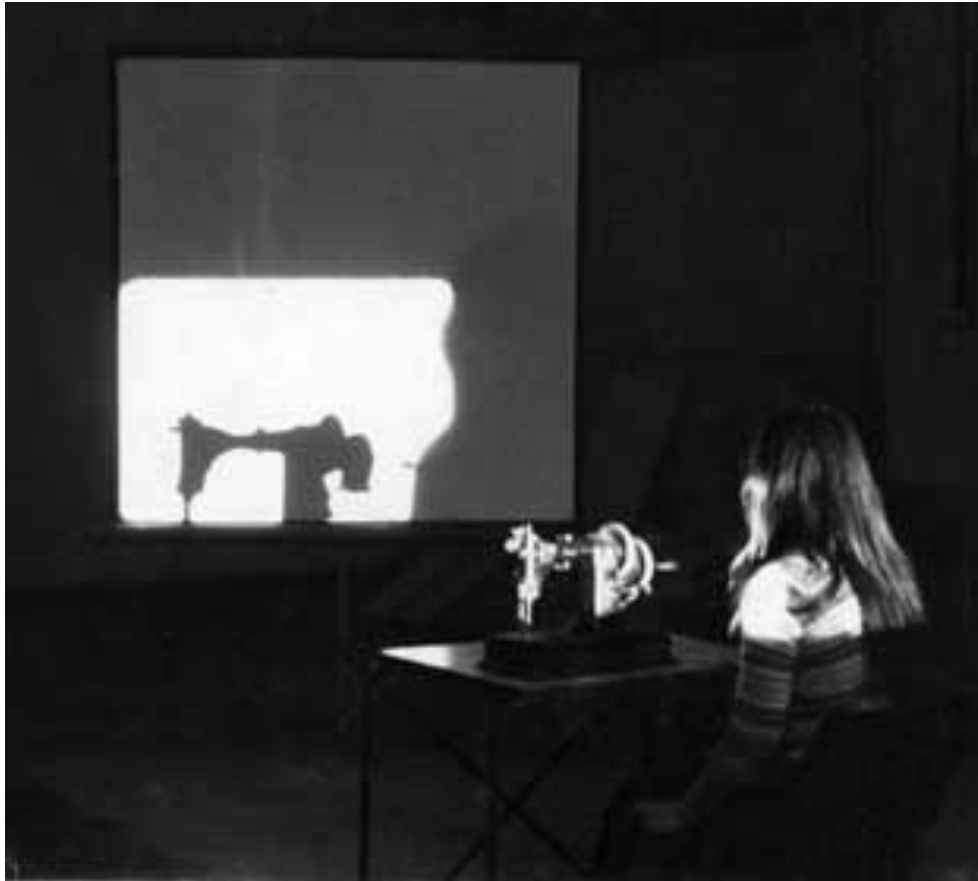


Fig. 3: Reel time, performance still, Annabel Nicolson, date unknown.

Annabel Nicolson sits at a sewing machine. Operating the machine, she sews through a film strip without thread (fig.3). The needle of the machine punctures the film. The punctured film, which depicts her sitting at a sewing machine, is then threaded through a projector. Projector, sewing machine, and Nicolson are building a loop, a sort of never-ending circuit between the three. The projected film becomes more and more pierced and damaged, 'as it continues its perilous journey, sometimes spilling, gathering dust and scratches, slithering along the floor, spectators picking it up and passing it along. Intermittently the image blurs as the film clatters and slips in the gate until it snaps altogether' (Sparrow). The performance ends when the loop breaks and the film strip tears apart (fig. 4).



Fig.4: detail of film strip after the performance Reel Time, Annabel Nicolson, date unknown.

Material deterioration establishes the film's temporal limits. The looping, habitual time ends when the material suffers and breaks apart. Nicolson performs the time that is needed for the material to break down. She lets the audience experience this time and take part in the deterioration of the film.

What Beller frames as cinema's 'dialectical relation to the social; in learning the codes of commercial cinema, spectators also learn the rules of dominant social structure' (Beller, 2006:2), in the performance setting of (Expanded Cinema) works such as Nicolson's 'the cinematic mode of production' is brought into a shared and collective experience, an experience which is nonetheless considered to be a productive activity. Opposed to the somewhat confrontational aspect of the cinema situation, in works such as Nicolson's, a space is created, in which the productive activity of spectatorship also makes 'connections between the everyday and the large context (...) Our project is

one of collective memory-work, with the emphasis on collective and memory and work' (Haug, 1997:132). In *Reel Time* cinema becomes an activity of collective memorisation, which has in return consequences for 'the re-organisation of desire itself' (Beller: 3), since the experience of singularity in spectatorship, which 'sucks up solidarity time' (ibid:5) gets collectivised, and so do by the same analogy the structures of desire that accompany the activity of watching. This concept might have been at the core of expanded cinema and structural film works in the 1970s (see Gidal), a context in which Nicolson has played a crucial role, through an emphasis on the living body and the social collective body of the audience.

When we speak about a desire for transformations in memory through film, the 'factory settings' of this transformation are established by the institutions which hold, preserve, display, hide, bury, distribute and circulate the material of film itself. One aspect of Structural Film might have been to expose these processes of institutionalisation, or to extend (in Beller's sense) processes of socialisation.

The labour time spent with film stock production is also inscribed into the material and thereby becomes part of the material history of film, but time is also always lived time and social time. Focusing on the production of film stock and thus also on its material construction allows us to understand how temporal structures get modified in the process, 'so what we can investigate is not "how it really was", but how individuals construct their identities, change themselves, reinterpret themselves and see what benefits they derive from so doing. In short, we can explore how they inscribe themselves in the existing structures' (Haug:134). In Nicolson's performance, such an exposure of the

existing structures is experienced through destruction and the audience witnessing in the destruction of the film strip.

The workers who produce the film stock in the film factories may go to the movies in their leisure time; however, their work time and the time that they spend producing, which both follow the rhythm and pace of the machine, might be considered as aforementioned 'dead time'; that is, time in which nothing happens and there is nothing to memorise. By contrast, Nicolson offers a space in which repetitive viewing, the continuous destruction of the film strip and the visible performance of her own involvement in this process – in other words, the whole time-structure of film – permits these supposedly dead times to form into a memory structure: to 'inscribe themselves into the existing structure' with and through the physical involvement of the audience. De Lauretis (1987) calls such an idea a strategy of coherence. She claims that these strategies can inherit contradictory narrative structures – or I might say contradictory historiographic structures – and activate them towards their transformative promise. 'It is precisely in that space of contradiction, in the double and self-subverting coherence of its narrative grammar and figural ambiguities, that the film addresses me, (...) that is to say, in the personal-political contradictions of my own history of a-womanness' (Ibid:124).

Since there is an analogy between the movements carried out on the production line of the film factories and the 'reeled up' time on the film print that make up a continuous motion picture, every step of the process of film production and reproduction acquires a connection to the re-working of history as a form of catharsis. Both movements, that of productive labour and reel time, that is, the reeled up time of the film, are subjected to the same limits, blockages and resistances. In particular these stem from the human body. And

yet how does the factory setting transform the memory structures of workers' bodies? While Beller argues for the activity of watching and its inclination of 'separation and expropriation of vision from the spectator' (Beller:8) being a successor of the alienation of labour, I find in the temporal structures of *Reel Time* a (feminist) argument for an expansion of such a setting, through involvement of the personal, the body and memorisation into cinema's mode of production. This argument will become in particular relevant to my contemporary attempt of understanding the relation of the body in movement and the moving image in film in the following chapter and subsequently in the film *Fugue*.

1.3. Film writes history differently,²⁴ in a non-linear way

How does film's materiality transform memory structures? Kittler suggests that with cinema a temporal re-arrangement took place, '... the making of films is in principle nothing but cutting and splicing: The chopping up of continuous motion, or history, before the lens' (Kittler, 1999:117). The invention of photography and other recording media in the nineteenth century intervened in linear history by changing the linear structure of text and the hegemonic structure of literacy. Before, 'history was the homogenized field that, as an academic subject, only took account of literate cultures. Mouths and graphisms were relegated to prehistory' (Kittler, 1999:4; see also Kittler, 1985).

²⁴'How film writes history differently' (Wie Film Geschichte anders schreibt) was the title of a film programme at Arsenal Berlin in 2013, honouring the life and work of German film critique Frieda Grafe. See <http://www.arsenal-berlin.de/en/arsenal-cinema/current-program/single/article/3989/2796.html>, retrieved on 03/07/2016.

With the emergence of industrialisation, the (illiterate) working classes appear in the frame and a machine-body relationship is established. For this 'machine-body', materiality becomes a distinct factor in the procedures that render the social conditions of modern life. The machine-body demanded a different way of entering the archive. No longer were occurrences written down in order to become historical records, but 'the arrival of film constituted an intervention (...) in both the production and the reconstruction of history' (Lütticken, 2013:8). I'd like to draw attention to the fact that this is not only a turn in technological terms, from the book to film, but also in material terms, from paper to celluloid.²⁵ Thus I find it crucial to reconsider many of the early writings on film in terms of their descriptions of materiality, rather than in terms of their semiotic or theoretical analysis. Beller mentions Vertov's 'Kino-Eye' in this context. I'd like to suggest an analogy between the 'machine-body' and the 'kino-eye'. In this sense, I'd see the 'kino-eye' as a sort of sub-species of the machine-body. "Kino-eye", according to Vertov, is "the documentary cinematic decoding of both the visible world and that which is invisible to the naked eye" (Vertov, 87) The manifesto from which this phrase is drawn has affinities with the filmic aspirations – inspired in part by Vertov – in the surgical cinema discussed by Benjamin' (Beller:43). Benjamin (2008) analysed the impact of modernity on social constructions and criticised how hegemonies constantly re-establish themselves within these structures. But the turn in his thought is bound to materialism. It comes out of a process of the industrialisation of work, the establishment of the working class and the social struggles that came along with this. History is materialised in these new technologies of

²⁵Broadly speaking, industrialised capitalism induced a new form of historiography that is not based on the written text, in order to implement itself on the (illiterate) working classes.

historiography, but in a distinctly new and different way, since 'Writing (...) stored writing – no more and no less' (Kittler, 1999:7). In contrast to this, the film format stored images, sound, colours, movements. 'Technology is a way of letting appear and thus re-generating history, creating rhythms that synchronise past time and present time, with all the distortions this may engender' (Lütticken, 2013:7).

The documentary filmmaker Joris Ivens described how he re-created scenes for his documentary about the workers' strike in the miner's town Borinage in Belgium.²⁶ He filmed re-enacted scenes from the miners' struggle. Ivens was one of the first European documentary filmmakers, and yet at the moment documentary film was first conceptualised as a form, it also became a staged action, a re-enactment of a historical situation. He wrote: 'Another important scene also had been re-enacted. In a miner's home in the village of Wasmes (where Van Gogh had lived), I saw an extraordinary "primitive" portrait of Karl Marx that the miner had painted himself (...)

The portrait was brought out and carried up the hill like some religious object by two miners, past the small scattered blackened houses. We joined the procession with our camera. The people came out of their houses, raising their fists. It was very solemn and the people forgot that it was for a film.

Spontaneously, the whole community gathered and our staging turned into a real demonstration ...' (Ivens, 1969:90ff, fig. 5). The film set becomes not only a space that enables enactment, but also re-enactment as well. Put differently, the film set not only enables certain actions; it also produces them and inserts them retrospectively into history.

²⁶ *Misère au Borinage* is a 1933 Belgian documentary film directed by Henri Storck and Joris Ivens.



Fig.5: Workers carry a self-painted portrait of Marx during a protest, filmstill

Misère au Borinage, Storck/Ivens 1933

The aftermaths of this material-technological turn – what Beller called ‘the surgical cinema discussed by Benjamin’²⁷ – and the preconditions that led to it, are discussed in Benjamin’s essay on Surrealism (Benjamin, 1999(2)). In the title, Benjamin mentions a ‘last snapshot’, which clearly draws a connection to photography. Snapshot photography was inaugurated around 1900, when *Kodak* introduced the inexpensive box camera and roll-film, with higher sensitive film material for amateur use. Before that, still photographs had to be taken of still (i.e., stationary) scenes. Anything moving blurred and disappeared from the picture. Benjamin’s *last snapshot* appears just a short

²⁷As mentioned above.

time after it had evolved²⁸ and describes a phase of transformation in Europe. He begins with a reflection on the relation of image and sound, as a transformative relation per se, and as the condition for language: 'language seemed itself only where sound and image, image and sound, interpenetrated with automatic precision and such felicity that no chink was left for the penny-in-the-slot called "meaning". Image and sound take precedence ... Language takes precedence. Not only before meaning. Also before the self' (ibid:208). The precedence of image and sound together present an idea of cinema that emerges from a specific transformative process. Their priority may indicate a 'will to transform' (Pasolini) and stems from physical experiences of suppression (of desires, but also of class repression). The turn evoked not only a different type of history writing through 'symptoms of deficiency', but also created a different concept of the body: a body that is no closed entity; an image that is not a fixed frame of reference. Hence the *surgical cinema* that sews this body together, with 'its manifold parts being assembled according to a new law' (Benjamin, 2008:35). Such a 'change in the state of reality' also has to do with a new definition of substance and with the utilisation of new substances. What is recorded on film is thus not simply a file or entry in an archive, but is at once the activation of these substances. Since its beginning, film has been able to store time and thus disrupt a historical concept of a linear chain of events and progress. It enables the storage of time in reaction to exposure to light and a chemical process of development. In this process, a transformation takes place. The linearity implied by the writing of history is

²⁸In the original text, the title says *Momentaufnahme*, which translates as capture of a moment. This seems to refer directly to the term 'Kodak moments', coined by the company, to align the photographic snapshot memory with the company.

interrupted when the distribution of history also always already refers to itself and feeds back into itself. The cycle of nature is distorted when the reproducibility conveys the inscriptions of one material registration to the others in transfer processes to different formats and containers. 'Time itself is synthesized' (Leslie, 2005:237).

The concept of synthesised time forms a contradiction. It plays with the idea of eternal time (nature), but in an unnatural – synthetic – sense. Film stock, as a chemically produced material, emerged out of discoveries in modern chemistry. Once it was discovered how to rearrange molecules, a myriad of new substances were compiled and supplements of existing substances were synthesised, from which heaps of new fabrics, materials and objects were produced. 'Chemical reactions bring opposites together in an exchange of properties to produce new things' (Leslie, 2005:7). Not only does modern chemistry result in new products, but new habits are established among them.

Such rearrangements of molecular structures seemed to promise both everlasting reproducibility and a constant belief in renewal, while they developed at the same time their own complex temporality. Mass-fabricated plastic materials were on the one hand indestructible and everlasting, but on the other hand they became products of modern disposable society that demanded a constant renewal of inputs and outputs. Film appeared as one of those products. It offered the reproducibility that is particular to loops and playbacks, while at the same time the new spectacle of cinema seemed to demand that the material not so much represent as 'perform' reality – so to speak, a new, synthetic reality. Such a performance of reality can again be linked to Barad's concept of an 'agential realism' that is 'a posthumanist

performative re-formulation of the notion of discursive practices and materiality' (Barad, 2003:811).

1.4. Material Disintegration, Contaminated History, Infected Time

On the other side of things were the promises that were projected onto the durational and temporal components of celluloid plastic. The inorganic matter of film stock got contaminated by time. Over time, film decomposes and gets affected by light, dust and humidity. The combination of chemical substances makes film stock a highly inflammable product. Its by-products are very poisonous. The production and development processes use toxic fluids and emulsions. Film production contaminates the environment. It binds to the bodies of the workers in the film factories and infiltrates the skins of the lab technicians. Subsequently chemicals taint an image that 'performs reality', because the contamination that infiltrates the material and environment in the process of production synthesises with the material itself and cannot be separated from it. Contamination becomes a part of material history, and consequently history cannot be cleansed from its material contagion. In a reverse reaction, time becomes contaminated by the chemicality of film stock. 'Time's dominion was to be cracked too through the accelerating power of chemical reaction – modern magic consists in the short-circuiting of natural process, in speed-up, in the cheapening of materials and processes. In time, technology remakes time itself, removing it from natural rhythms to an abstract universal' (Leslie, 2005:9). Film brings about a new memory device, but one that constantly reworks its structure. The chemical processes confuse linear,

measurable time. Their substances' half-lives are of non-measurable duration, but the chemical processes set going immediate chain reactions. Bringing things nearer in time (short-circuit) and simultaneously further away (never-ending), film destabilises memory.

Concerned²⁹ with the indefinite half-time of radio-activity, between 1987 and 1989 Sandra Lahire made three³⁰ short films that deal with the aftermaths of Chernobyl and the effects of Uranium mining and nuclear energy. The making of these films coincided with a proclaimed 'end of history', the historical moment when the Cold War – with its promises of an endless source of nuclear energy – was falling apart. In these three films – *Plutonium Blonde* (1987), *Uranium Hex* (1987) and *Serpent River* (1989) – Lahire explores the invisible contamination brought about by radioactivity. In the industrial wastelands Uranium mining has left behind, she shows how radioactivity affects the bodies and landscapes exposed to it, investigating physical reactions to a process that itself remains invisible, as well as the exploitation that places are made to suffer just as much as people.

It's an endeavour defined by contradictions. Lahire arranges different materials, film and video footage and juxtaposes them, yet superimposes them on one another. A similar technique is applied in the soundtrack, which brings different voices together, combines them with machine sounds, sirens and whistling.

²⁹An earlier version of the following part on Sandra Lahire was brought into the text *Cinenova: Diffracted Landscapes*, written in collaboration with Irene Revell, published in Camera Austria 130. See Appendix 5.

³⁰See <http://cinenova.org/filmdetail.php?&filmId=216>, retrieved 06/07/2016.

She exposes and superimposes the conflicts between the image politics involved in depicting bodies and the distances between opposing gazes and voices. Moreover, one can find different temporalities at work, which I see at once working for and against a concept of historiography. I can see this in the layering of images, which brings different shots together. There is a continuous repetitive edit. The *Plutonium Blonde* is both science fiction character and contemporary witness. I recognise both continuity and disjunction of time. De Lauretis (1987) speaks about mechanisms of coherence in regard to feminist forms of narration: she espouses a fundamental suspicion in relation to narrativity, and yet simultaneously argues for its re-articulation, in reference to the narrative strategies in Yvonne Rainer's films. '[F]eminist work in film should be not anti-narrative or anti-oedipal but (...) working, as it were, with and against narrative in order to represent not just a female desire (...); but (...) the duplicity of the oedipal scenario itself and the specific contradiction of the female subject in it' (ibid;108). This duplicity (as a kind of paradigm of narrativity) is not yet general; its purpose is to be specific in regard to the history of cultural forms – of which film is one – as well as the contexts of film reception. It means that film offers a specific handling of this contradiction. De Lauretis cautions that it is important to consider narrativity 'strategically and tactically in the effort to construct other forms of coherence, to shift the terms of representation, to produce the conditions of representability of another – and gendered – social subject' (ibid:109).

In *Plutonium Blonde* (1987) narrative coherence enters with the very first image, a figure, supposedly the eponymous blonde, deliriously operating switches, then soon enough engineers operating what we assume to be a

nuclear power plant, white boiler suits dropping control rods into cuboid voids to the accompaniment of playground song.

The colour set conducts nauseating swerves, as if induced by a giant electromagnet, bleached-out, indigo-toned. As toxic as the colours are, they still hold an allure. Colour is an active participant, asserting the images with a sort of consistency and disturbance. And colour signifies an invisible atomic danger. Through colourisation, naturalness and reality gain ambiguity. Lahire combines the labour force of the nuclear plant with the laboured production of femininity, treating both as nuclear processes (reactions); the colourisation or dyeing of the film acts as a transmitter between the two. As Marina Grzinic (2) contends, 'There is no difference between the politics of the medium and the politics of the topic; both are reunited in a clash of layers within deadly light. Radioactivity is deployed as a radioactivity of the film image in itself'. And turns everything against itself: 'Even the drinking water – you can't drink it to save your life'.³¹

Uranium hexafluoride is a highly poisonous, colourless, crystalline, radioactive matter which is used in the uranium enrichment process to produce fuel for nuclear reactors and nuclear weapons. *Uranium Hex* proceeds in a similar sound-colour-visual collage with a repetitive layering. At once projecting her materials into a nuclear future with hundreds of thousands of years of half-life and exploring the destructive effects of radiation on bare skin, Lahire herself notes, 'I am working on acid-coloured printing and video performance techniques, treating voices and fields of industrial sounds as well as making local speech come to the foreground of the composition' (Lahire, see fig.6)

³¹Cited from *Uranium Hex*, min 9:23



Fig. 6: *Superimposition in Uranium Hex*, filmstill Sandra Lahire, UK 1989

Serpent River (1989) is the last work in Lahire's trilogy. She goes underground, into Uranium mines. Her protagonists are women, whose work or living places expose them to radioactive matter, and scientists, who frame the violent images with a language that seems also to be contaminated by capitalist exploitation.

In *Serpent River* the images seep into one another: blue-tinted floods of water, X-rays, positive/negative, skeleton dances, descriptions of physical labour, ice, crystal ice, blue ice, blasted rock, children, radiated pink, day-for-night, skating on ice, reflections of water, reflections of sun, flames burning images. These are all overlaid and shift simultaneously from one to the next. The montage is not done with straight cuts, but the sequences seem rather to taint each other in the process of their superimposition. Colour contrasts hurt the eyes; radiant flashes burn into the retina. The soundtrack remains

autonomous; aggressive sounds of cutting through ice. Narrative bits are juxtaposed with sci-fi sounds: Uranium capital nursery school, Uranium in the drinking water, formerly a clean town, generous with the hospital, sulphur cycle, Trans-Canada Highway, drilling, the sound of drilling. The film material simulates X-ray plates. Or it is treated, scratched and pierced physically, contaminated, raw images exposed over and over again, or brought into bright sub-zero winter. *Serpent River* may be the final film in the trilogy, but it does not come to a conclusion. Just like the activity of nuclear radiation, there is no end to it.

In *Serpent River* the narrative coherency that de Lauretis has disclosed materialises not in a lineage, but rather in a *diffracted* way. Lahire shows layers of bright colours, both radiating from and X-raying into the depths of the images. The term diffraction is borrowed from Barad, who writes that the problem of representation should be placed in 'questions of diffraction rather than reflection' (Barad, 2003:803). In relation to film and its temporalities, such an understanding of agency complements de Lauretis's notion of narrative coherence, whilst also offering grounds for a simultaneous suspicion. Lahire uses radioactivity as a formal figure that escapes the patriarchal gaze. Decomposition takes place not just in the film frames, but also in the context of production, in the aspects of perception. Discontinuity – but at the same time also the demand for women artists to talk, tell their stories. It can be both: '... feminism understands the female subject as one that ... is at once inside and outside the ideology of gender ...; the female subject is in both places at once. That is the contradiction' (de Lauretis, *ibid*:114).

Apart from a reflection on the long duration of radioactive pollution, undertaken at both the levels of form and content, in these three films Lahire

clearly challenges the concept of passing time, defined not only as it relates to a narrative structure but also to our own activity of viewing. In the same way, the film layers the levels of contamination on the body: it reflects upon our retina, layer by layer, imprinting deeper and deeper. Like a reversed excavation, the films are sedimented in memory. If I then return to the material components of the films, I could say that everlasting contamination distorts the linearity of time because it takes too long to be humanly experienced. Or, put differently, the film images contaminate history both in a memorial (as an imprint on the retina) and in a historiographic (as archival matter bound to decay) sense. '[T]he image of our moment: time turned toxic, contaminated, congealed, irradiated, and wasted. (...) Toxic time, in its own way, promises an end to time, an entry into a timeless time, even if that is now conceived as hell' (Noys, 2016). This sort of contamination lies precisely in the conflict between the materiality of film and the contradictory forms of its implication in history.

When transported to the camera and projectors, the images no longer gain a static presence. Moving images were able to record history in movement and to replace or reset memories. Film became a memory device of its own, an instrument of recovery or restoration, but one without a presence, because it only appeared when projected and only left an imprint on the memory screen. But even this imprint seems evanescent. Benjamin (1999(3):462) describes memory as a mental image that flashes up only for a moment. '[It's not that what is past casts its light on what is present, or what is present its light on what is past; rather], image is that wherein what has been comes together in a flash with the now to form a constellation. In other words, image is dialectics at

a standstill'. Through this (film) images have a historical value. Film stands in for imaginary pictures or an unsettling betrayal of the memory image. But similarly to mental memory, the film still can't stand still. A still image burns itself into memory and leaves an imprint on the iris as it melts away in the projector.

Moving bodies and moving images reveal unrepresented areas of history, because their imprints on the memory have not (yet) gained a spoken or written language or a static representation. *Dialectics at a standstill*: the images we perceive of movement linger between the device that produces them (the projector) and the moment in which they flash upon the screen. What if we were to no longer need a static or written device of memorisation?

In *Blue* (Jarman, 1994) a different kind of disintegration takes place on the representational level of the cinematic. The film consists of a blue picture lasting for its entire length of 79 minutes. It is Derek Jarman's last film, released only four months before he died in 1994. The soundtrack is a poetic and musical recollection of vision, while the spoken text elaborates on Jarman's experience of gradually losing his eyesight. 'I am helpless. I can't see him. Just the sound. In the pandemonium of the image I present you the universe of blue'.

In the film Jarman deals with his HIV infection, which led to AIDS-related illnesses. The moment of infection itself is not visible but nonetheless is present and manifests in fear and taboos. Instead, what causes the infection to manifest itself as a disease is, in his case, the loss of vision. A blue screen as the endpoint of representation: there is no image for death, but blue.

I reflect on this film not only because of an apparent analogy between the infection of the film stock within a historical framework and an infection with an invisible but fatal virus, but also because with *Blue* Jarman manages a seemingly impossible task. He enables a transition or transgression between the reduced and 'blued' screen and the infection of social spaces that took place in the context of the AIDS crisis.

Jarman achieves this by bringing voices and sounds together with a kind of discharged image, a blue screen, in order to work through that which cannot be represented as an image: one's own death. An image of one's own death cannot exist. Grzinić (1) called this the *zero degree of representation*. 'Jarman moved from the disintegration of film structure to that of the viewer's sight. The institution of the subject ill with AIDS within the visible is carried out by the absence of a "truly ill body"'. Thus disintegration of the film stock, the disintegration of film structure and an intervention into the representations of time are considered all to belong to the same project. 'Moreover Derek Jarman not only refused to reiterate the conventional pieties surrounding representations of an HIV positive person, but brought to light, paraphrasing Sally Stein, the hidden agendas inscribed in the particular mode of representation of our culture and times' (Grzinić, *ibid*). I might suggest that such a cinematic practice, critical towards technologies of representation, may show to us that which de Lauretis has called a 'different point of theoretical-discursive articulation' (de Lauretis, 1986:360). In my frame of reference, this would once again indicate an argument for film as a different representation of history, understanding 'the cinematic apparatus as a social technology' (*ibid*).

'My retina
Is a distant planet
A red Mars
From a Boy's Own comic
With yellow infection
Bubbling at the corner

My eyes sting from the drops
The infection has halted
The flash leaves
Scarlet after image
Of the blood vessels in my eye'³²

Here Jarman describes the visual and physical experience of losing sight. But the viewer may not be blind: they only see celluloid drenched in blue. Film allows us to narrate a history of the non-representational, hence suggesting that the material fabric of the medium can tell us something about the social fabric (or vice versa). Yet, if I am to take such a non-representational situation as a sort of displacement, one that '... opens up, in the process of that displacement, other critical spaces in which [the political expressions of feminism and] the relation of history and practice can effectively be posed' (de Lauretis, *ibid*) – if I can be allowed this assumption, then I would claim that what we see in *Blue* is a critical stance towards vision and the visual regime as such, as well as a love letter to sight. *Blue* is as much about death as it is about

³²*Blue*, Derek Jarman, UK 1994.

a life that enables us to break free from subjection to the rules of representation. Jarman replaces these rules with blue.

However, the blue we see, or rather that we physically experience, is by no means without historical reference. It recollects blue screens from TV studios, Yves Klein's paintings, or Blues music. At the same time, as a film *Blue* placed itself within film history as singularity. And it is only through such singularity that with *Blue* Jarman could direct a film about his own death. In regard to the temporalities of film *Blue* is an event in film history, but it takes the real image to an extreme by evacuating it of all representational content, an act which so to speak places it *out of time*.

1.5. Counter-strategies: Methodology Revised

In this chapter I have tried to unravel several temporalities at play in the materiality of film in order to understand what 'the close tie between cinema and history' (Agamben, 2002:313) means and where it comes from.

Now I can see the film material changing its conditions through time. The colours, audio frequencies and movements change. I rewind and watch again: 'images charged with movement' (ibid:314). What do I see the second time that I haven't seen the first? Towards the past, charged with history, I conduct another experiment of disentangling. I make the images run, re-animate them. And there again I can see 'history before the lens', re-projected as history before my eyes, and yet outside of a chronological idea of history or of the continuity of time. Rather what I see 'is a matter ... of messianic history' (ibid: 314).

Hence my practices include looping and re-projecting and re-animating and in these processes incidental elements begin to speak. 'The image worked by repetition and stoppage is a means, a medium, that does not disappear in what it makes visible ...' (ibid:318). I rework in order to make visible that which the image itself does not show.

Despite the material dissection, the images won't fade. The material conditions may change, but change here is more the indicator for a passing through time than for dissolution in a historical void or in an immaterial future.

Now the split is no longer between image and time; and nor is it between historical time and natural time. Or, in other words, I may now follow a dialectical structure in which both times, cyclical and linear, aim to subject one to the other. Both forms of subjection follow a political, if not ideological, logic. Put differently, my aim is to activate potentially unconscious time in order to break such modes of subjection. I dissect the material in itself and read its movement against a film's timeline (Chapter 2) and read its colour against history (Chapter 4). '... The image gives itself to be seen instead of disappearing in what it makes visible' (ibid:318). Colours, movement and sound give themselves to me to be seen. And then I listen. I can hear cut-ups and scratches, tinned and faded sounds. The historical inscriptions become apparent, they cannot be ignored anymore. What can't be seen will materialise in other means: sounds, blurs, shadows, cuts.

And while listening, I develop a desire to understand. I listen to understand not through seeing what is there, but through hearing what isn't there.

That could be the messianic aspect of film: A history of what is missing, a history of what is not there yet. A history of what needs to be saved (sewn together) – and simultaneously excavated, as if I were an archaeologist.

2. On Movement

Departing from the discussion of the relation between film and history presented in Chapter 1, I now move to a more specific material investigation of the film image, this time based on the history of its movement. The focus on the material will allow me to construct an alternative history that has a 'diachronic structure' – a history with two times. The history told in this transformed way will constitute itself as 'a "structure in movement"', that is, '[of] a structure endowed with the will to become another structure' (Pasolini, 2005:193), through the deconstruction and recomposition of the material components of the film stock which build movement in (and on) film. I analyse the particular histories of certain aspects of film, such as the process from motion studies and chronophotographies of the nineteenth century to Taylorist studies of manual work movements in the 1920s. Setting off from the scientific usage of film, my intention here is to understand both the actual and active part of movement as a component of the film material, as well as the consequences that the material aspects of film have for social and physical bodies. The history of these material aspects leaves sediments in the movements of bodies that are exposed on the film strips; and, not coincidentally, these bodies are the bodies of labour and the 'pathological' individual, placed in an experimental setting.³³ Tracing back the histories of these sediments then performs the movement of 'a critical concept of process' led 'by an actual will to movement' (Pasolini, 2005:193).

How did the celluloid, the emulsion, the strip and the projector change the relation of people to their bodies? Which historical situations brought these moving material components of the filmic image about?

³³Those 'bodies' being women and other marginalised people, whose movements and appearances deviated from the norm. This could be an ill body, a dysfunctional body or an unproductive body.

The definition of the body's movements were framed in supposedly experimental spaces that shifted between film set and laboratory.³⁴ Tretiakov phrased it like this: 'Together with the man of science, the worker-artist has to become a psycho-engineer, a psycho-constructor'.³⁵ In these early scientific films the film-maker and scientist worked collaboratively in order to explore and define through film various mental constructions, as well as the construction of memory as such. I consider such a collaborative approach crucial for my understanding of the material as well as socio-political impacts of film in general beyond its scientific use, but through the impacts film and cinema had on the body. As I will elaborate in this chapter, seeing themselves moving on the screen changed how people moved. These changes in movement seem especially relevant in relation to work, which was the subject of investigation in the motion studies and had a prolonged distanced relationship or 'absence' in the 'dream factory' of Hollywood cinema. Hence my focus on the materiality itself and a neglect of narrative cinema; I aim to reconstruct a new body out of the materiality of film and to give to this body the autonomy that is required in order to produce movement on film.

Performing such an experiment myself in the setting of a motion study film, I reconstructed the experiments that were made in the 1920s, but now in the framework of contemporary image production and body politics.

The film *Fugue* was construed in an experimental studio environment that rebuilt some of the elements of the motion study films; a timer or stopwatch, a

³⁴In reference to these defined experimental spaces, see also Krauss (1979) on the grid as the emblematic structure of Modernity. The grid played a crucial role in the settings of the motion studies films, described below. In the film *Fugue* the grid appears projected onto the (invisible) body. See fig. 8

³⁵Cited by Paperno, 1994:190.

grid structure in the background, lights attached to a body's joints, while combining several time-based recording systems.

The setting was a studio with a black background and a digital camera set to record 6 frames per second. Throughout the film the camera was rigid and still, opposite the black background. It remained immobile, as if it had not yet learned to change position.³⁶ Then I created a costume that consisted of a black bodysuit with a white grid to which I attached white single LEDs on the joints: on shoulders, elbows, hands, hips, knees, feet, there were 12 lights in total. Due to the slow exposure time, when moving in front of the camera, the lights would create a smear or smudge and the body movements would draw lines, like traces. But because I was wearing a dark costume in front of a black background, my body would not become recognisable, but could remain vague and ambiguous. From this situation I created three variations or scenes: In the first one you only see obscure lines and projected intertitles. These intertitles continue throughout the film³⁷ and follow loosely the structure of the biomechanical actor's exercise by Meyerhold, partitioned into three parts; отказ: preparatory counter-movement, посыл: sending off or implementation and Стойка: standing still or fixing.

The second scene has the same camera position, but the image shows a grid structure. The figure now moves within the grid and the intertitles that are projected onto her, this makes it more apparent that one is looking at a moving body, but she continues to be seen as a body that moves within the boundaries of becoming visible. The third scene shows the same grid, but this

³⁶ As described below, the change of the camera position is first described in Soviet Cinema theory, in particular by Pudovkin (2006)

³⁷ See screenplay, appendix. 1

time no body is in the frame. Then a figure arrives and begins to draw over the lines of the grid which produces some interferences with the vaguely visible body of the figure and the grid projection. In-between each scene is a timer or stop watch in the lower left corner, which counts down the full length of the film, from 8 minutes to zero.

After recording the three scenes on video and editing them, I began to modify the frame and changed it into two parts, a 4:3 image and a narrow sidetrack on the right side of the frame filling up the whole frame to a 16:9 picture. This track on the side was to become the optical soundtrack of the film, which makes the image a function of the sound. But because in a 16mm projector the light that reads the image and the light that reads the sound are at different places, there is a 26 frame lag on the film strip between image and sound. This means, in order to have visible movements and audible rhythms in sync, I had to arrange the two accordingly in the digital editing program. What one could see on the right side of the full film frame was a small stripe of the video, but running 26 frames or just over one second ahead of the left part of the image.

In the final step this edited video was rephotographed from a flat screen display at an Oxberry animation table and thereby transferred onto 16 mm, shot with a super16 gate, so that the full image would go onto the film frame, but when projected, only the 4:3 image would be seen and the rest would become audible as optical soundtrack. In that sense, what you hear is what you see.

In the final film, the obscure lines move irregularly across the frame, while noises occur that seem to be related to the stripes. Through the first scene a

rhythm becomes recognisable, both in the visual movement and the audible. The rhythm occurs because the figure wearing the LEDs is jumping up and down, forwards and backwards following a regular pace. The rhythm is produced by the movement of the lights worn by the figure, jumping in different directions but at a regular pace. You can hear a series of rhythmic pulses with a purring quality. It's not monotonic but has a limited range of maybe three notes. The low sample rate of 24 frames per second produces a harsh vibrato. The purring is produced by the frame rate and the pulsing is produced by the movement of the body: The brighter the light the louder the sound.

In the second scene, it is the same camera position, but the image shows a grid structure and simultaneously a constant high pitched sound appears. What we see and hear can be traced back to a moving body, but the sounds and images could equally be autonomous. They no longer have a human appearance. However, the rhythmic sound provides a steadiness. The ambiguous visibility of the body, but hence its defining audibility suggests that dematerialisation does not mean disappearance. It is somehow a reclaiming of a lost body, or perhaps an attempt to re-appropriate the body within the sound register.

In the third scene, one can hear the same whirring sound and see the grid, but this time no body is in the frame. Then a figure arrives and begins to draw over the lines of the grid, this exposes the grid as a source of sound, the brightness of the lines increase the volume of the sound.

While making the film, I did not know the outcome. I had no idea, what the images that I recorded would sound like, if they would be loud or quiet or if a rhythm would become recognisable. Although I did a small number of tests, I was still surprised by the result, by the aesthetic the film produced (and

simultaneously undermined). This method of film making provides a formal and aesthetic structure that reconsiders practices from experimental and structural films of the 60s and 70s.³⁸ Similarly my experiments make use of the technical aspects of analogue film as the material basis for structural transformations, but these transformations move beyond the structure film as film from movement to sound, from body to light or from text to rhythm.

My use of the experimental form appropriates the scientific gaze and such an appropriated gaze redefines these motion studies and the working bodies which are their subject, outside of the scientific context. The fact that I made use of my own body seems crucial. I aimed not only to understand the relation of gazes, motion analysis and scientific ideology but wanted to come to terms with the way these processes defined the (modern) body, as a gendered, functional, working entity. Such an investigation combines the role of the experimenter and the experimental subject and it defines the outlines of my own practice as film maker and researcher, of what I can find out through making work.

In the film *Fugue* the movements of the body become audible: they write the soundtrack without rendering the body visible. Such a transition or translation from movement into sound resembles Pasolini's notion of the structure that desires for another form and requires the reader (or viewer) to collaborate with the formal structure offered to her, in the sense of 'a pure and simple "dynamism", of a "tension" which moves, without departing or arriving, from (...) one linguistic system to another' (Pasolini, 2005:193). I found it important to run this insight through my own body, as a matter of self-observation, as a

³⁸ In particular *Dresden Dynamo* by Lis Rhodes and Guy Sherwin's optical sound films

sort of personal 'psycho-constructor', collapsing my eye as a filmmaker with my eye as a researcher.

In the film you can see an automated body that moves with the habits that have been inscribed in it during decades of subjection. The movements obey habit. But this obedience sets free a space of indecision. The body forms a desire to unlearn her habits. The sound gives instructions to the body on how to move. Or does the movement produce the sound? The ambiguity of the directive is a crucial element in that it makes it difficult to tell whether it is the movement or the sound that is directing the image.

A body moves along the margins of visibility. What we see and hear has no longer a bodily appearance and becomes pure filmic sound and pure filmic image. The visibility of the body is ambiguous, but the definition of audibility in these terms suggests that dematerialisation does not mean disappearance. It is a sort of reclaiming of a lost body, or maybe an attempt to re-appropriate the body within the sound register. It is also an attempt to intervene in the historical loop through the movement of a body. A way to bring constant reproducibility to halt and simultaneously activating the material properties like 'a posthumanist performative re-formulation of the notion of discursive practices and materiality' (Barad, 2003:811).

In the following chapter, these thoughts, which come out of the experience of making and performing the film *Fugue*, will return to their historical and social ground.

2.1. Moving Material – Historical Frame and Technical Procedure

Along with the introduction of photography, and in the process that follows the technical development from photography to moving images to film, playback and re-animation of movement were developed through seriality, repetition and automatism. In the chrono-photographic experiments of the mid-nineteenth century, photography gained a mechanically produced seriality. These experiments aimed to investigate human motion, though they also contributed to the establishment of a pathological exploration of the human body.

Photographs captured case studies of neurological disorders and served as measuring tools for Bertillon's anthropometric filing system. The body of the criminal had to obey this system. 'The criminal (...) is transformed into a test device of the new technique' (Kittler, 2010:141). These techniques framed body movements within grids and along scales and fixed a defining, if not violent gaze on the body. Didi-Huberman calls it 'the violence of seeing in its scientific pretensions to experimentation on the body' (2003:8).

However, the close tie with the scientific gaze seemed to travel from still to moving images. Motion studies in the 1920s then aimed to disentangle film's complex relation to time on the pretext of understanding the body under industrialised labour conditions. Long-term exposures inscribed the paths of movements into still photographs and made time manifest in the light sensitivity of the emulsion. These *chrono-cyclographs*³⁹ aimed to measure work time and detect modes of *habitualisation*.

³⁹ The term *chrono-cyclograph* was coined by F and L Gilbreth to distinguish it from the still photograph in the chronophotographic experiment, see Gilbreths (2012). Note the implication to the cyclical aspect of both the film reel and the recorded motion

Contemporary to these measured time-based image-making procedures, theories of montage⁴⁰ began to emerge. They offered a theoretical frame for constructing discontinuous and interrupted movements, stretching notions of time (and space) by cutting into the film strip and gluing sequences together. The contemporaneity of these procedures, techniques and material developments might reveal their connections. Hence in this chapter I focus on the environment of the 1920s, when rhythms of machines converged with durations of exposure. Film is here the sort of material ground for the body that is at stake in the turn to dematerialisation through work. 'Modern work was dematerialised work, work without the body' (Rabinbach, 1992:298). On film one can witness the body slowly dissolving even to the extent that the body itself becomes superfluous. The motion-study film becomes the primary document for dematerialisation, which occurs due to a constant need for greater efficiency: for the production of more using less resources.

The film camera takes a series or sequence of pictures and exposes the film strip to light while it is being pulled through the device. The shutter inside the camera rotates to either expose the film strip or to cover the light, and then the strip moves to the next frame. In a reverse technique, the frames of this filmstrip are played back in a projector at a certain speed in order to give the impression that they are moving. The introduction of sound film in the late 20s and early 30s made it necessary to standardise the frame rate, at 24 frames per second in 16 and 35 mm films. Since then, the projection speed has usually been the same as the film speed. The technical elements of the camera

⁴⁰See Pudovkin (1958, written in 1926), Kuleshov (1974, written around 1929), Eisenstein (1991, including several essays written in the 1930s and 1940s)

and projector are similar in principle, at least if we set aside the light bulb used to illuminate the filmstrip in the projector. In addition, a camera also has some exposure control functions.

The shutter speed in still photography is the indicator of the length of time that is captured on the film stock. The shutter speed in a film camera is thus distinct from that in a still camera. It combines the mechanism that pulls film through the gate with the shutter angle. At the standard speed, 24 frames per second are pulled through the camera. Changing this speed changes the pace of the movements in the film, but not the sharpness of movements in the single frame. Film speed as the reactivity time of the material itself adds another time-layer. Film speed measures and indicates the film's sensitivity to light. Or, in other words, the film speed is the fastness with which the light-sensitive chemical emulsion on the film strip reacts when exposed to light.

These processes imply that the production of the images is bound to and controlled by material processes. 'Matter thus resolves itself into numberless vibrations, all linked together in uninterrupted continuity, all bound up with each other, and travelling in every direction like shivers through an immense body' (Bergson, 1988:208). Understanding Bergson's statement on matter as a description of the material of film may concretise the relation between the material and the registration of movement in time. 'Travelling in every direction' when applied to film's materiality could mean a matter (film strip) moving forwards and backwards in time as well as in space, towards the auditorium and onto the screen, from the viewer's perception and beyond. A sequence of images played back at a constant speed leads us to perceive a movement, while each film frame is a single snapshot taken at a particular time. The

'numberless vibrations' then may be in fact the 24 frames per second, which only appear to us as a vibrating light, or flicker. This may indicate that the movement is not added in the sense that the images are brought into movement, but that the movement rather is in-between the images, like 'shivers', or a flicker, and thus belongs to the body of film as if it were its pulse.

Bergson might also refer to the automated process, the 'uninterrupted continuity' within the cinematic that establishes the relation between movement, body and materiality, but which does so in a productive way, because it is out of this constant relation that images are produced.

This mode of production is bound to the rhythm of the image-making (camera) or image-giving (projector) machine. This rhythm becomes visible – as well as audible – in the vibration of the film projection. Hence there are already a few movements and rhythms involved in the process of making images move, but the situation and with it the apparatus as such changes when a body appears in front of the camera. A moving body adds another moving element. The body on film is animated by these different speeds and rhythms that are applied to the body's movements through the filmic apparatus, 'like shivers through an immense body'. In other words, in film the body becomes the carrier of movement, and it is carried by movement, moving – like an *intermediate* – between visibility and invisibility. Movement thus takes over the body in film even as it makes it appear in the first place. The body in film is in a sense brought to life by the movement of the cinematic apparatus, camera and projector. Stripes and blurs appear as visible registration of pure movement on film. The shapes of these registrations depend on the responsiveness of the material, the speed – on how fast or slow it reacts.

Bellour distinguishes this feature from the eye, which doesn't 'retain inscribed in itself the materialized trace of movement' (Bellour, 2012:100).

The filmic apparatus brings the body into movement. However, such a being-in-motion brings the body to the limits of its own visibility. If the body in front of the camera is moving too fast, it disappears – or dematerialises – from the film strip. The photographic emulsion on the stock then reacts too slow. In the opposite direction, what we do see in this transaction is 'a kind of physical and mental agitation produced by the body as it tries to insert itself directly into the image, in defiance of all technical mediation' (ibid: 102). The body attempts to gain access to the image, and not just on a visual level, but also as material registration. The consequences are, as described below, a moving out of joint of the movements of the audiences, as they learn to recognise their movements from the screen. These consequences are manifest by a need to distinguish one's own movements from the movements of the machine.

2.2. Moving out of joint

In a sense there is no one single narrative of why film was invented: film does not necessarily follow a logical trail of historical reason, but came out of multiple narratives and investigations that seemed to have neither territorial nor categorical consistency. Historical circumstances were interlaced with chemical discoveries. Experiments were made in lots of different places and in a variety of disciplines. And moving images were deployed in the most various settings, from spectacle in vaudevilles and cabarets to scientific experiments in laboratories.

However, there is a historical strand on which I wish to focus. As photography ceased to be primarily a craft, the industrialisation of the process led to a new kind of photography – a photography that was animated by a distinct mechanical apparatus. There is an obvious similarity between filmstrip and conveyor belt – one that derives not only from the simultaneity of their invention.⁴¹ Only with the appearance of industrialised work and the belt conveyors of the 1910s and 20s did mechanised processing and observation of the body become inseparable. Is the conveyor belt designed to imitate the filmstrip, or is it the other way around? The chain of the belt conveyor resembles the perforation that needs sprockets to move forward at an even pace. ‘... [M]uch of the standardisation and rationalisation of time can be linked to changes in industrial organisation and perceptions of affinity between the body of the worker and the machine’ (Doane, 2002: 5). The connection between different systems of body and machine or factory and film strip seems to show that there is more at stake than just an affinity: film needs mechanical motion in order to appear projected on screen; likewise, the movement played forward needs to be mechanically standardised in order to appear continuous and uninterrupted.

Film is a product that developed from the industrialised mechanisation of production. Both the invention of cinema and the nineteenth-century re-organisation of workspaces through factories changed the relation of people to their bodies fundamentally. Both developments structured time very differently, through pacing work movements and shift work. Beller, as mentioned above,

⁴¹Henry Ford introduced conveyor belt assembly lines in his car factories in 1913 (source https://en.wikipedia.org/wiki/Conveyor_belt#History, retrieved 20/02/2016).

has also argued that 'the separation and expropriation of labor from the laborer, the alienation of labor, is a precursor introduction to the separation and expropriation of vision from the spectator. This alienation of vision, in which vision is captured to produce worlds that confront spectators as something hostile and alien,' (Beller, *ibid*:7f) has subsequently an impact on the movements of bodies and how they were perceived, registered, analysed and pathologised. Hence film plays a specific role in this process, because on film bodies are subjected to the apparatus. In distinction to Beller, I move the problem of this dialectical relation of cinema and the factory more in a context of the body and how it moves and away from the sheer physical activity of watching by the spectator. Film reflects back to the people how they move. It also tells them how they should move. Watching people on screens, in the cinema and through the camera captures the obedience of the factory worker's body to the industrialised working environment.⁴²

The whole apparatus – the strip, the perforation, the shutter, the projector – implies the industrialised production process. Mechanised production of images in the capitalist age has consequences for the body (of the worker) on multiple levels. In order to understand these consequences, I move away from a general term Cinema and its connotation of narrative film and Hollywood, to the mechanical material process of making a film. Lazzarato (2007:94) speaks of the automated process of the camera: 'Not only does the production of images become automatic and therefore independent from man, it also introduces movement and duration as the chief components of its own ontology'. In the wider context of industrialised production, movement and

⁴²But the subordination of the worker's body to the machine already takes place in the film factories, when the material itself is produced. This factory environment and the working conditions are described in chapter 4.

duration were the subordinating elements to which the worker had to submit her own bodily movements.

In addition, there is also the automated playback in the cinema; the projector works quite similarly to the camera. All forms of automated, mechanical, mechanised movements of film – from production of the film stock in the film factory to the projection in the cinema – form a sort of functional relation with the movement of the body. ‘The functional relation is guaranteed here by a technological assemblage’ (ibid:93). If I understand both film material and the body as technological assemblages, the consequences, Lazzarato says, are ‘solidarity and conflict between the movements of matter [that is, in this case, film], of the body and of consciousness on the basis of time’ (ibid). In other words, what actually establishes the relation of these moving technological assemblages is their being time-based.

In *Notes on Gestures* Agamben (2004) describes the moment *when images learned to run*⁴³ at the end of the nineteenth century as a ‘moving out of joint’, referencing Tourette’s research on the human gait – a body of work whose descriptions bring to mind Muybridge’s contemporary work on *animal locomotion* (Muybridge, 1887). Agamben points out that film is a discursive medium, because it can document and simultaneously create (life). Early films capture movements going out of joint; thus the movements of bodies become analysable (fig.7).

⁴³ This is a literal translation of a German proverb. Lütticken (2013:7) uses a similar expression in the introduction to *History in Motion*, he writes: ‘When “images learned how to walk” – to use a German expression for the dawn of cinema – it became possible to fold time back onto itself’.

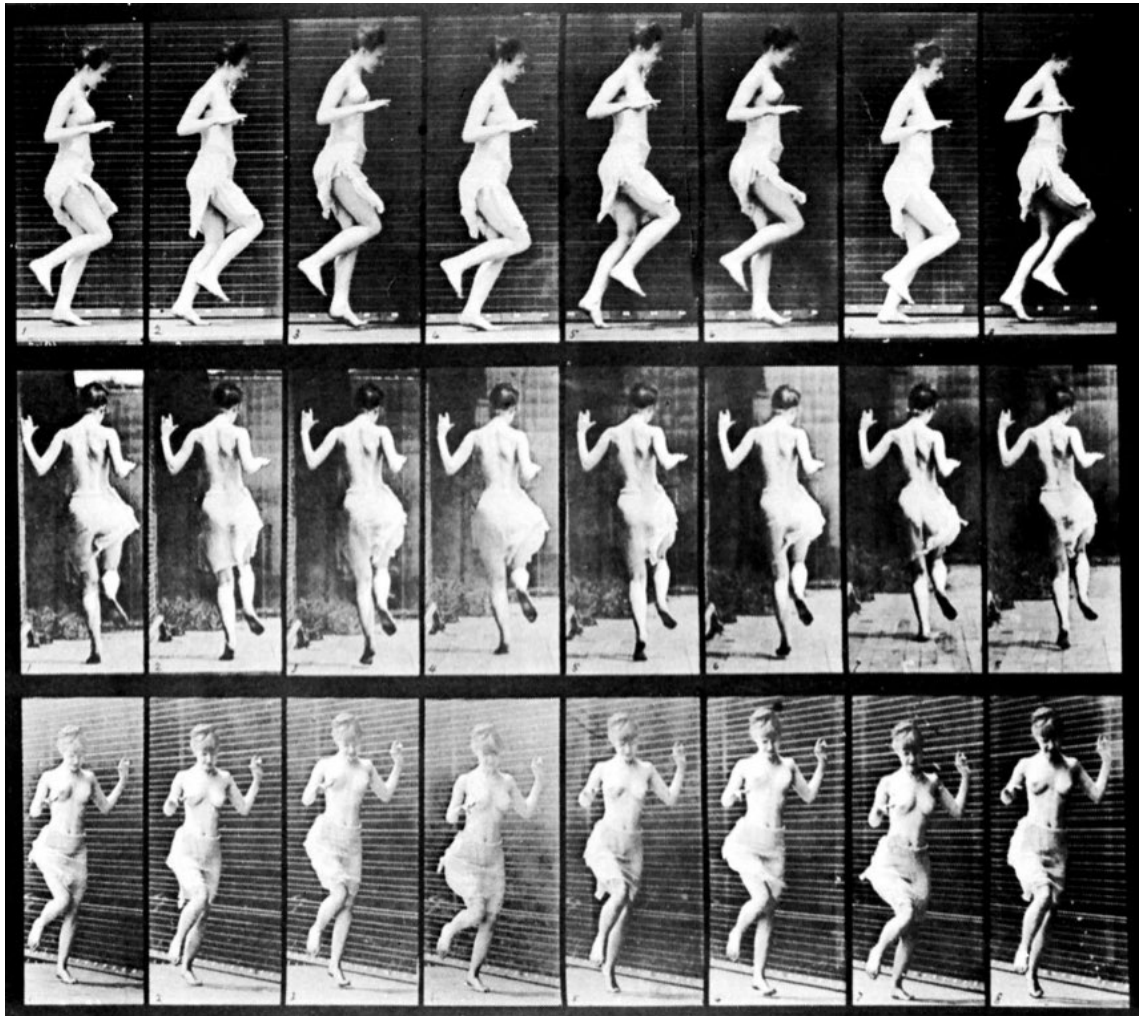


Fig. 7: Female figure hopping, from Muybridge's *Animal Locomotion*, 1887

Agamben (ibid:107) describes the rise of scientific, literary, neurological and photographic motion analysis at the end of the nineteenth century as 'an age that has lost its gestures[and] is, for this reason, obsessed by them'. In that sense the invention of photography and subsequently film necessarily brought into being new memory devices, together constituting 'a desperate attempt to recover or record what has been lost' (Noys, 2004) – a desperation that might become visible in early film as a sort of stumbling gait, at the moment when a sequence of freeze frames become re-animated. The bodies in *locomotion* that we see in early film were stumbling and trembling. They stumble because of uneven projection speeds and projectors that were often cranked by hand. The

projection speeds varied so much because there was no fixed standard. The standard only appeared when sound-on-film was introduced in the late 1920s and the introduction of a regulation became necessary so as not to alter, pitch or distort the voices, pointing at another material interconnection that of sound and image combined on the same film strip.⁴⁴

These early films⁴⁵ picturing stumbling gaits and movements out of joint resemble the pathological conditions that appear at the time in cramped bodies with tics and contortions. The films might bring to mind photographs of stiff and contorted bodies taken in Paris in the 1870s. In the book *Iconographie de la Salpêtrière* (Charcot et al. 1875) such positions are titled *Lethargy*⁴⁶ or *Catalepsy provoked by the sound of a tuning fork* or *Somniation with an artificial contracture* (as cited from Didi-Huberman, 2003:212). The pictures were taken at the *Hôpital de la Salpêtrière* in Paris around 1880. I claim that, when these pictures were taken, photography was established as a scientific, neurological tool to pathologise the (female) body.⁴⁷ One of the photographers, Albert Londe, said 'Thanks to photochronographic methods, the eye's impotence can be easily supplemented in the particular case and documents

⁴⁴See next chapter on sound.

⁴⁵See also Auerbach (2007), see also Ken Jacobs' seminal work *Tom Tom the Piper's son*, US 1969, a remontage of an early *chase* film.

⁴⁶ The titles of these pictures hint towards a supposedly unproductive body, that, following Didi-Huberman's argumentation, was 'invented' at the Salpêtrière. Rabinbach (1992:20) notes that 'before 1860 almost no medical or scientific studies of fatigue are recorded.'

⁴⁷The photographs in *Iconographie de la Salpêtrière* show almost exclusively women's bodies. This is also the focus of Didi-Huberman's work, in which he makes the claim that because the patients were women, they were in fact performing, thus inventing the illness of hysteria for the pathological gaze of the (male) medicinal scientist. See below.

of great value can be obtained'.⁴⁸ Although these were still photographs, I consider them relevant for their impact on the rendering of the body in motion through the documentation of time, adding the *chrono* to photography. The still photographs take over the movements, they conquer the movements and incorporate them in the technology. What if the women had to keep still since otherwise they would disappear from the photograph or transform into blurry stripes? What if the capitalist age created the demand for the production of these pictures in the first place, but also created the demand for such a body? '[T]he productive body was shadowed by its unproductive double', as Beloff (2011:09) puts it.⁴⁹

Movement as well as the absence of movement – as in the case of cataleptic seizures – plays a decisive role in these photographs. The 'patient' is subjected to the image, in that she cannot escape the delivery of pathological readings, but she is also subject of the image. The enactment of hysteria goes along with a manifestation of certain symptoms of bodily dysfunctions within the female body – as an image. One might talk in this connection of a 'new description'⁵⁰ for the sake of the continuous reenactment of the patriarchal order. Since this is a kind of gendered inscription, it can be read as a form of patriarchal violence.

⁴⁸Cited from appendixes to Didi-Huberman, 2003:286

⁴⁹Beloff's work *The Infernal Dream of Mutt and Jeff* shown at Site Gallery Sheffield 2011 used stereographic images in an installation that employed the various aspects of the Gilbreth's motion study film set. In the centre of her work is also a female figure and the precarious situation of the female body within the productive working environment.

⁵⁰See also Hacking (1995) and his idea of 'acting under description'. 'The thesis that action is action under a description has logical consequences for the future and for the past' (ibid:235). I think this is interesting in relation to who renders which bodies as pathologically sick, non-productive or deviant – it was the practice of the doctors in the Salpêtrière to give to the women under their care descriptions of how they would act. I return to Hacking below.

At the beginning of *The Invention of Hysteria* Didi-Huberman (ibid:3) states: 'How does pain get to work, what might be its form, what is the temporality of its emergence, or its return? How does this occur before – and within – us and our gaze? (...) At every moment of its history, hysteria was a pain that was compelled to be invented, as spectacle and image'. He construes photography – and I include film as its successor – as a discursive medium with a political implication that has pain⁵¹ as its source. And this might not only lead to an understanding of film as a medium of social relations, helping to explain 'how discursive practices produce material bodies' (Barad 2003:808), but it might also lead in the opposite direction: to the issue of how material bodies produce discursive practices. The moving image and the moving body, their interdependence and their autonomy might then build the components of such a 'material-discursive' practice.

Early photography of bodies built the foundation of an oppressive apparatus for modern society. The body reacted to this by moving out of joint.⁵²

Photographs from the time document how the body and its movements transformed along with this process and how this in turn changed modern society. These early motion studies, chrono-photographic experiments of Marey, Muybridge and so on, were based on the pathological gaze. Photography was used to pathologise the body. On the other hand, these studies had not yet fully evolved any specific scientific or artistic purpose; rather they were hybrids of art, technology, anatomy and clinical psychology.

⁵¹Or rather violence! I think this is important to point out that the pain originated in the violent procedure of image making.

⁵²See again Agamben, 2004, I return to this below.

In the 1920s scientists used photographic and cinematographic machines and settings in order to capture and analyse moving bodies for the sake of efficient working environments and the reorganisation of workflows. The purpose of their studies shifted to the area of applied sciences and economics. By interpreting the ways in which motion habits were produced in working environments, these studies aimed to find formulas to increase the efficiency of production.

Film thus took part in a so-called scientific analysis of movement. The gaze of the film camera was given the role of the objective observer. This 'objective' gaze had been established at the very beginning of photography and even before. Daston and Galison (2007) see the analogy between, on the one hand, the ideological conceptualisation of objectivity that emerged in the sciences of the eighteenth century, and, on the other, the role of image production in the establishment of modern objectivity, rendered by machines, mechanic gazes and automated procedures of scientific image-making. Modern sciences endeavoured to establish a formal procedure for an objective investigation, employing all kinds of measuring apparatuses and metering tools.⁵³ 'Modern objectivity mixes rather than integrates disparate components, which are historically and conceptually distinct. Each of these components has its history, in addition to the collective history that explains how all of them came to be amalgamated into a single, if layered concept' (Daston/Galison, 1992:82). This 'layered concept' might again serve as a description of the filmstrip as I understand it. Film in this sense is something composed of several components that work together (collaborate) in order to produce a moving image. Maybe here lies the crux of why film fit so well as a medium of

⁵³Note the German term 'Objektiv' for a photographic lens.

objectivity: because, in the processes of exposure and development, the images chained up on the strip – *a layered concept* – bring opposites together, mix things up and reduce their individual contents. Objectification is in this sense a practice of domination through simplification, reduction and abstraction.

At the same time, such a mixing of components might be perceived as counterproductive for a scientific experiment, for it complicates the process of analysing matter. The mixture would rather work as a form of synthesis. The claim for film as an objective medium was thus already complicated – undermined by the process of the medium itself. In the laboratory of filmmaking both synthesis and analysis – or, if you like, creation and documentation – were conducted as simultaneous experiments. The body had to endure such procedures.

In the second half of the nineteenth century Marey, Muybridge et. al started to construct machines that were able to take automated images, in the belief that they would reveal nothing but what is 'objectively' there. 'Wary of human intervention between nature and representation, Marey and his contemporaries turned to mechanically produced images to eliminate suspect mediation' (Daston/Galison, 1992:81). Any mediation would have been considered immoral, or at the very least as a distortion of the scientific procedure. The scientific aspect of the early chrono-photographic experiments might in fact lie in the ability of these images to take movements apart. Hence the only purpose of the experiments was to analyse, and not to synthesise – or, as Daston/Galison call it, amalgamate. Objectivity is a form of abstraction.

'Abstractions like objectivity become concrete and visible, reflections of changing scientific ambitions for right depiction' (Daston/Galison, 2007:27).

Frampton, on the other hand, describes Muybridge as a predecessor of cinema who was deeply dedicated to the problem of time. In Frampton's account, Muybridge brought the body in relation to time by means of photographic material. '20th-century cinema discovered, quite early on, that temporality is precisely as plastic as the filmic substance itself' (Frampton, 1973:74). At the beginning Muybridge let horses and other mammals trot through the batteries of cameras. At the end of his life, after depicting all kinds of human motions, of naked and dressed bodies, of deformed and athletic bodies, of male and female gaits, movement became a sort of demonstration or proof of existence of time.⁵⁴

Filmic and thereby time-based investigations of human motion continued⁵⁵ in the early twentieth century, when Frank and Lilian Gilbreth filmed so-called motion studies in order to record and analyse the working environments of productive labour. In these films the Gilbreths developed a system whose purpose was to visualise manual working movements in order to economise them. The analysis of the movements could reveal unproductive time that could then, once identified, be eliminated from the workflow. 'There is no waste of any kind in the world that equals the waste from needless, ill-directed and ineffective motions', wrote F. Gilbreth in the description and general outline of

⁵⁴Thank you to the curatorial team of Forum Expanded at Berlin Film Festival for pointing me towards Thom Andersen's film *Eadweard Muybridge, Zoopraxographer* (US, 1975)

⁵⁵Or were picked up again.

Motion Study, in which he explains the necessity of studying work movements (Spriegel, Myers, 1953:149). By breaking down movements into smaller units – so-called micro-movements – it became possible to discover problems, such as superfluous movements, irrational motions, irrational postures, or unsafe operations. ‘Our duty is to study the motions and to reduce them as rapidly as possible to standard sets of least in number, least in fatigue, yet most effective motions’ (ibid:150). Fatigue, defined as the opposite of efficiency, was likewise a trait of human motion that was only invented with the mechanisation of work environments. ‘(...) Fatigue also became the concept and the means through which the industrial body could best be understood and employed’ (Rabinbach, 1992:23). The outcome of the Gilbreths’ studies was then to provide ways to decrease staffing, eliminate inconsistencies, wasteful motions and idle time, ‘with the standard method that will be synthetically constructed after the time study has taken place’ (Spriegel, Myers, 1953:150). In this context, Beloff (2011:11) states that the difference between the Gilbreths’ method and the studies in human locomotion by Marey et al. in the nineteenth century was that the Gilbreths intended not just to ‘record the body in motion but to change it. They believed that if people studied their films they would learn to synchronise their movements with the more efficient movements shown in the films; their bodies would reflect the motions they watched on screen’. Put differently: the function of film proceeds from objective to participatory.⁵⁶ What had been a stumbling gait in the late nineteenth century, revealing a process of moving out of joint, changed with the standardisation of film processes. The motion studies aimed to change the movements of the

⁵⁶In a similar train of thought, I have tried to explain the active participation of colour in National Socialist crimes. See Chapter 4.

workers. And while the production lines in the factory required more fluent and constant sets of movement from the workers, the regulation of projection speeds gave movement on film more regularity.

Fragments of the Gilbreths' films usually show similar experimental set-ups: a grid background was used to measure the length and dimensions of movements. A stopwatch in the front indicated duration. F.B. Gilbreth described the setting like this: 'The micro-motion method of making motion studies consists of recording motions by means of a motion picture camera, a clock that will record different times of day in each picture of a motion picture film, a cross-sectioned background, and other devices for assisting in measuring the relative efficiency and wastefulness of motions' (Spiegel, Myers:221). The experiments were indeed staged as film sets. The actors appeared in either white suits so as to stand out from the background grid or in black suits with only their joints highlighted, so as to reduce the body to only its moving elements. The Gilbreths attached light spots to the workers' joints and used longer exposure times so that the movements would draw continuous lines on the film and thus visualise the movements and inscribe them into the film.⁵⁷

In these films, the scientist worked as a filmmaker. She used film as a scientific tool in order to make certain aspects visible, or at least visually measurable, and thus these aspects became comparable. '... The desire to analyse and to rationalise time was frequently embodied as a desire to make time visualizable' (Doane, 2002:6). In a sense, the movements inscribed time into the images. The measuring systems thus indicate their degree of

⁵⁷As described above, this is precisely the method I applied in *Fugue*, in order to draw lines on the film that then become both visual track and soundtrack.

usefulness for the scientific analysis and control of time. Film could do the job, because it plays forward 24 frames a second. And because film was not a cheap material, it already demanded of its user that it be put to work efficiently. Film was employed as a medium of analysis. Through extraction of data from the film, it became a useful and efficient source. A mechanical apparatus such as the film camera provided an 'objective standard' to compare speeds and paces in comparison to other machines and bodies. Compared to the early studies in locomotion, in the work of the Gilbreths the passing of time had a much bigger impact.

Beyond the 'chrono' in the cinematographic experiment, time was recorded and replayed. The process of exposing the filmstrip and then developing and rewinding it in the projector – this actually built the framework of the scientific setting.

The silent film *The original films of Frank B. Gilbreth* is apparently a montage of several of those motion study films compiled by James S. Perkins. The compilation joins fragments of these studies into a successful narrative of their research efforts. In the beginning, we see studies in brick laying.⁵⁸ The next experiment shows the advance from one-handed motion to two-handed. Stopwatch and grid background give these short scenes the scientific context of a laboratory. Text boards are held up in the pictures. Many of the experiments compare the traditional method with the new Gilbreth method. The workers have to wear white to stand out from the grid background. With conveyor belts and conveyor feeds, moving mechanic elements are added to

⁵⁸See also *In Comparison*, Harun Farocki, Ger 2009, in which he compares different practices of bricklaying, in particular regarding their different durations.

the workplace. *Laboratory studies of one handed and two handed work*, an intertitle reads. A metronome indicates the pace of the movement. In a study on typewriting the grid is superimposed onto the filmed movement. Close-up. *Early studies of eye movements in conjunction with the hand motion patterns*. A variety of motion patterns under investigation are shown: sports; rowing; a tumour removal operation in which the research outcomes suggest a standardisation of surgical routines, and so the assignment of specific duties for each doctor and nurse for all common types of procedure. Along with the analysis of the movement goes its standardisation. The motions of the workers obey the rhythm and design of the machines. They are bound to them, in size, rhythm, pattern, speed (Giedion, 1948:101). The work done by these visual studies was not only that of visualisation – rather it employed the film stock as the direct conveyor of these rhythm, pattern and speed of the workers' movements.

However, the research that was conducted with still photographs shows images in which the bodies of the workers simply disappear – a result of the fact that they are moving too fast to be captured by long-exposure photography. What remains are lines that write light graphs into the pictures. Frank Gilbreth commented on such motion studies: 'The path of the motion is shown, but not the speed or the direction. The record does show the beautiful smooth repetitive pattern of the expert' (as cited in Giedion, *ibid*:101). Doane (2002:6) calls this a 'trend towards abstraction in the representation of movement through time' and Giedion comments that 'Their [the motion studies'] purpose was to determine the path of a motion through space and its duration in time' (*ibid*).

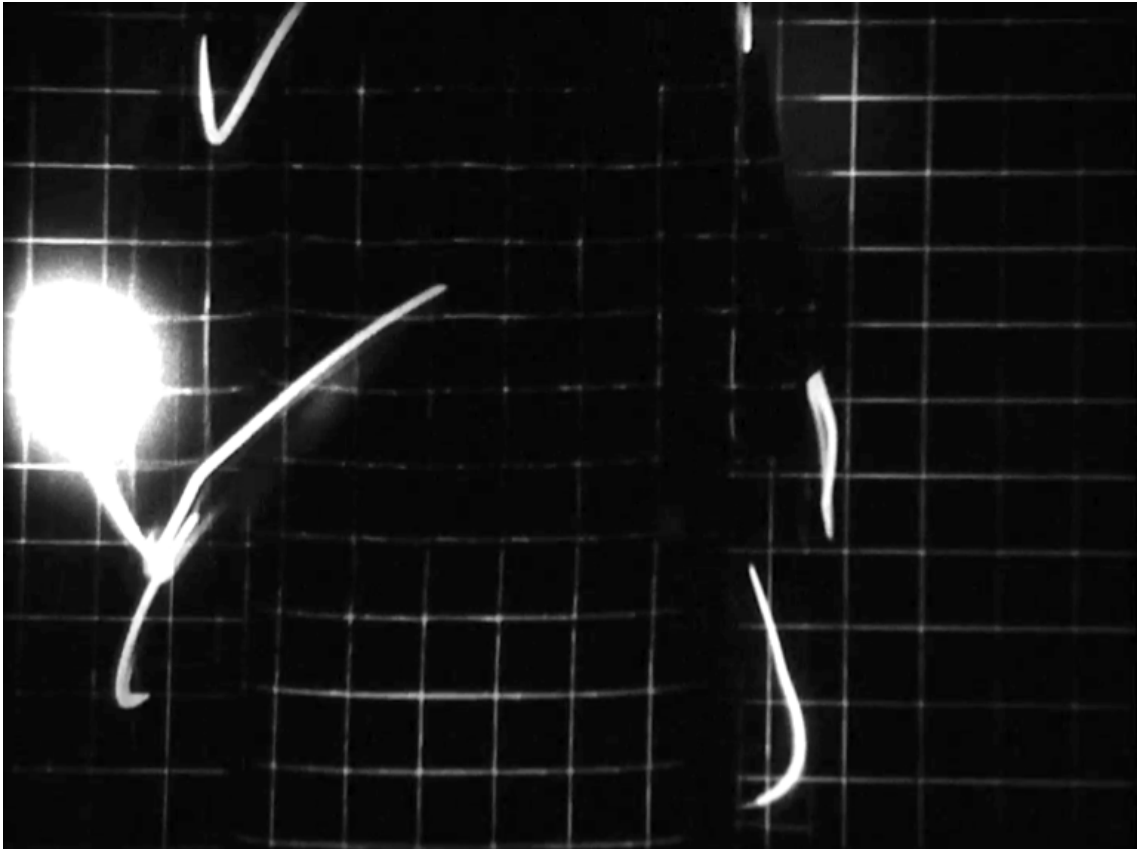


Fig.8: Filmstill Fugue (2015)

In this regard, abstraction is one way of making pictures readable, for instance by extraction of details. A body disappears in order to show a pure registration of moving light (fig. 8).

For scientific purposes, the body itself becomes superfluous. It does so almost in the way that film visualises the human worker becoming superfluous in the industrialised environment. Just in that moment when these images inscribed the motion of work into the medium of photography, they were already historicising exactly this modern kind of labour. The images become nostalgic remnants of human labour, depicting only the absence of people. The depiction of what had not yet fully surfaced as Fordism was in a sense already a manifestation of the 'post-Fordist' era. We watch the disappearance of the physically working body as 'history before the lens...'

2.3. Body and film between habit making and dematerialisation

In this process, the human worker and her body not only disappear from the image, but also become increasingly abstracted and de-humanised. While their work is more and more completely replaced by machines, the workers develop the desire to become machines themselves. One of the women depicted in Gilbreths' studies was Anna Gold, the 'fastest typewriter of her time' (fig. 9). She said about herself, 'I am never tired'.⁵⁹ Thereby she promised a supernatural female body that could be endlessly productive. Such supernaturalness, involving the abolition of physicality, was attributed to a female body, understood as a body that was already objectified and thus could be easily mechanised, automated and deleted.



Fig.9: Anna Gold in a Gilbreths motion study, date unknown, note the technical instalment in the background.

⁵⁹As cited in Gilbreth/Gilbreth, 2012:268.

Like a fantastic figure out of a science fiction movie,⁶⁰ a cyborg, such a woman as non-human⁶¹ fulfilled the scientists' desire for perfection, as well as the capitalists' demand for endless productivity. Rabinbach localises this in the desire to overcome fatigue. 'The body without fatigue was the ideal, not only of the industrial bourgeoisie, but of the workers' movement which, albeit differently, imagined a point of maximum productive output and minimum exhaustion as the *summum bonum* of modern society' (Rabinbach, 1992: 23).

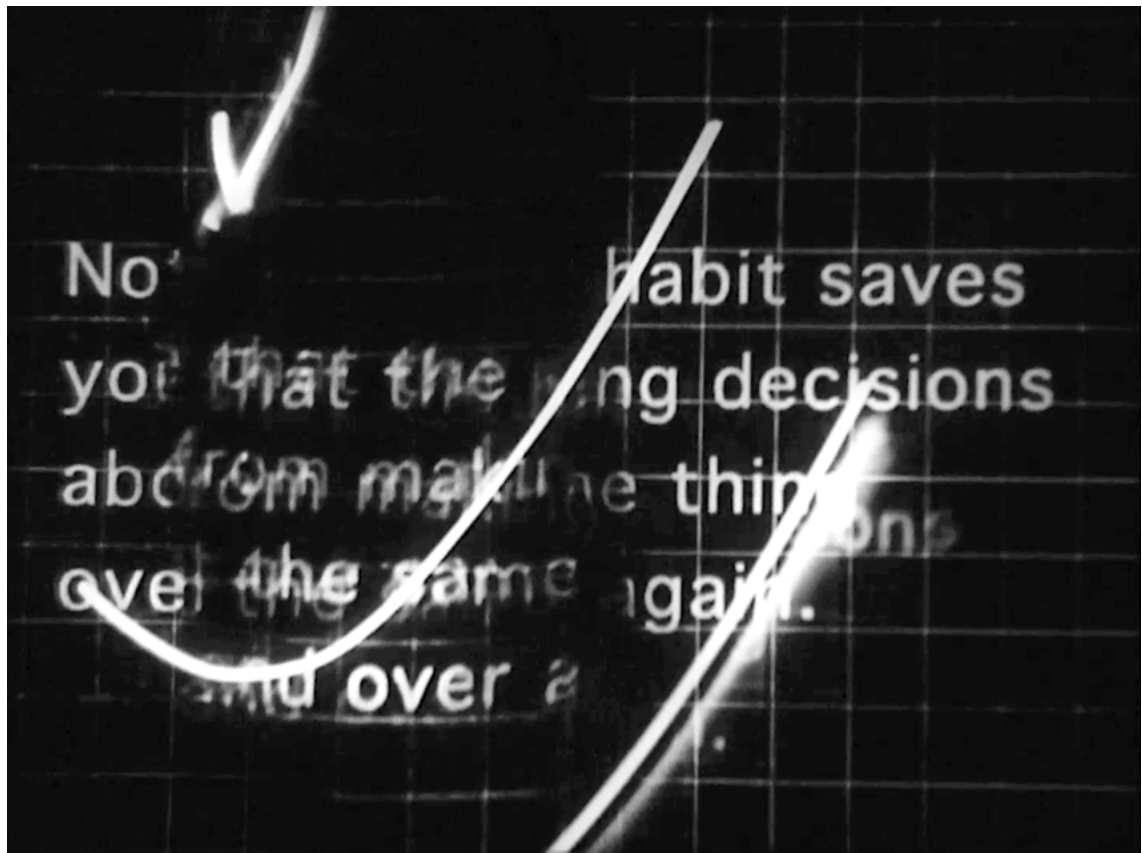


Fig. 10: Filmstill *Fugue*, 2015

In a way the films of the Gilbreths document the process in which workers' bodies become more and more mechanised. In fact the mechanisation, and thus the de-humanisation, of the bodies is a desired outcome of their studies. They emphasise the useful employment of habits in the workflow as a way to

⁶⁰See for example *Metropolis*, Fritz Lang 1921.

⁶¹Or post-human – Barad discusses such a relation to material discursive practice, as mentioned above.

achieve this. Habits are formed by the constant repetition of a series of motions, which lead to a sort of liberation from the burden of thinking too much while working. 'You will note that the habit saves you from making decisions about the same thing over and over again' (Gilbreths, 2012:269,(fig. 10).

Hence to come to the 'right' decisions it would be essential to learn the 'right' habits in the first place, as well as to unlearn 'wrong' habits, as habits tend to interfere with each other. Old habits interfere with new habits. 'The past has become a habit that shapes every form of present and future new learning'.⁶²(fig.11) At the same time, a past that has become a habit changes the present, and thus controls what needs to be done. The past has not only become a habit, but it is also revised retroactively.

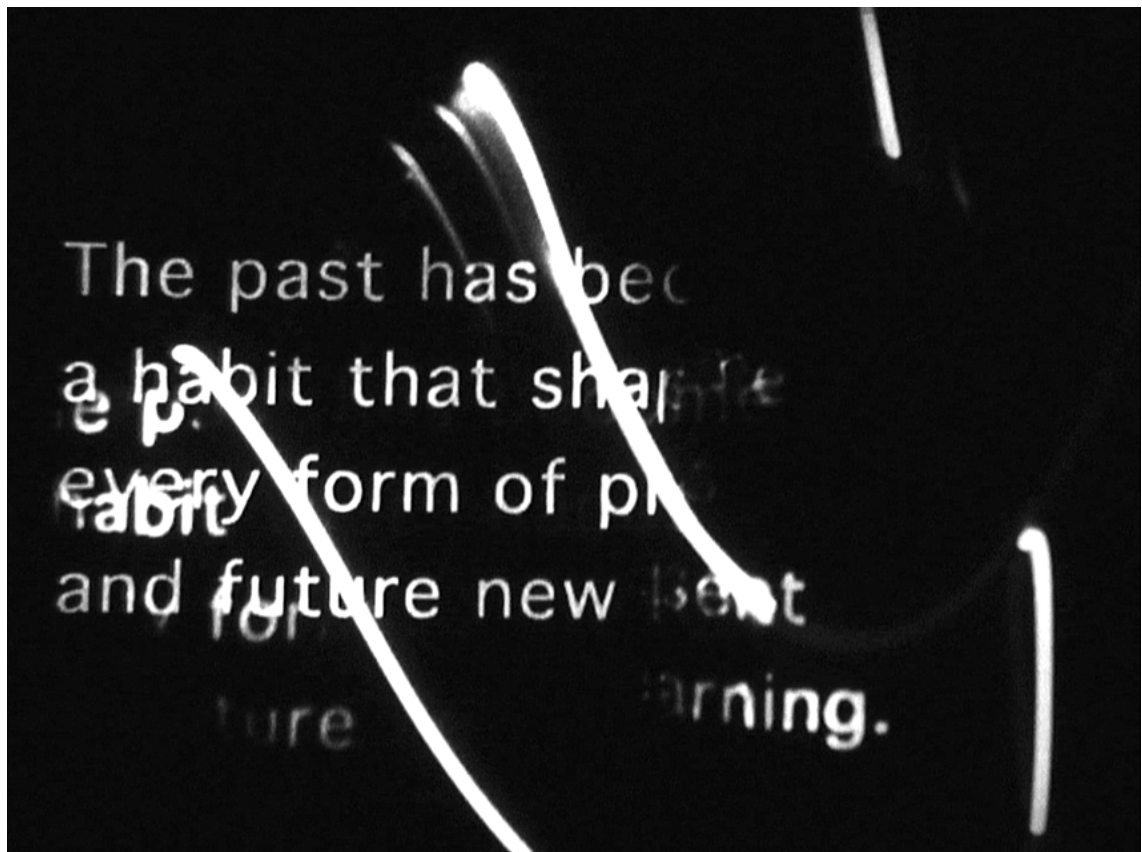


Fig. 11: Filmstill *Fugue*, 2015

⁶²Cited after Gilbreths, 2012:269, my translation from German: 'Die Habitus gewordene Vergangenheit prägt jede Form von gegenwärtigem und zukünftigem neuen Lernen'.

Related to the formation of habits is a concept called *Acting under description*, introduced by Ian Hacking (1995:234): 'Intentional actions are actions "under description"'. On the level of training and purpose, habit and acting under description might serve similar structures in controlling the body.

Both performing habits and acting under description are forms of memorial inscription into the body, resembling the way that the body inscribes itself into the image as light. 'As we change our understanding and sensibility, the past becomes filled with intentional actions that, in a certain sense, were not there when they were performed' (ibid:261). That is why the movements of bodies changed – people could watch them on screens and began to move in accordance with what they saw.

Habits are both formed and performed and memory is simultaneously written and overwritten. The filmic form involves the projection of single frames that are then replaced 24 times per second with the following frame. In that sense, film provides instant replacements for what is seen and what is stored in the memory. Bodies store events and experiences in their muscle memory. On the one hand this allows the body to perform 'in a certain way' (i.e., this way in particular and not in any other way), while most of the actions can then only ever be conducted as re-enactments of past movements. Without habit, I'd be unable to perform, because the body needs the memory stored in the muscles. The purpose of body performance and film performance is thereby inherently different. Film works as a reconstruction of past actions under description. The material performance rearranges and modifies the actions that it records. It does so through montage, through continuities and discontinuities, through the insertion of meaning or the deletion of objects.

2.4. Matters of practices/doings/actions

Also related to habit-building is a concept in early Soviet theatre theories reflecting upon the then newly formed role of the actor in Soviet theatre. This idea makes use of the notion of habit as a way of freeing the body, and subsequently the mind, from the complex process of decision making. I draw on this concept – the idea of ‘movement management’ – because of its influence on the Soviet filmmakers of that time (an influence that is clearly evidenced by the film theories they developed).

Biomechanics as a form of actor training was introduced around 1918 by the Soviet theatre director Vsevolod Meyerhold – a contemporary to the Gilbreths. He borrowed the term from the neurophysicist Nikolaj Bernstein, who worked at the time at the Central Institute of Labour (CIL) in Moscow, where, alongside others, he conducted experiments quite similar to the Gilbreths’ and with the similar primary goal of increasing productive force, which for Bernstein was a means of serving the Soviet project. The means for the creation of a properly Soviet body were thus researched at the CIL.⁶³ Like the Gilbreths, Bernstein and his collaborators also used film and photography to record their experiments.

Meyerhold did not use the scientific research laboratory as a film set, but he understood the work of an actor as an artistic equivalent to industrial labour, as if the actor worked in a factory, and theatre was the production site. ‘The Constructivist director worked much like Taylor, who approached each task

⁶³Note that there is an analogy to the creation of the Nazi body and the Volkskörper in German Nazi Cinema, also closely connected to the emulsion on the film strip, especially apparent with colour film, as discussed in Chapter 4.

differently, seeking a unique strategy for the execution of economic and efficient movements' (Law and Gordon, 1996:39). The development of Meyerhold's biomechanical exercises was thus informed by these experiments in the scientific organisation of labour.⁶⁴

The training he developed for his actors consisted of a series of sixteen etudes, which he abstracted from various theatrical sources. Each exercise was supposed to teach the actor a principle acting task, such as *Throwing a stone* or *Shooting a bow*, in the form of a movement score exercised and practised to internalise the rhythms of the etude.

According to Pitches (2003:33) this training system was as much informed by a Soviet grasp of Taylorism as by the objective psychology of Ivan Pavlov. From Pavlov, Meyerhold applied the idea that behaviour is a kind of reflex response to the outside world. In Pavlov's objective sense, we do not act, but react to the world that surrounds us. From Taylorism, Meyerhold took the idea of rhythmically executed, economical movements. 'Biomechanics is a fusion of these two ideas. It is an objective system, focusing on the external apparatus of the actor and designed to create a responsive, efficient and *productive* actor' (Pitches, *ibid*). An efficient actor would not act out her own, independent expression, but would rather re-act to whatever a particular movement brings to her conscious mind. This would '...break through the wilfulness of most actors, their overwhelming consciousness of self, their unawareness of their surroundings. He must teach them to hear not their internal rhythm but the rhythm of the whole' (Schmidt, 1978:80). Thus Meyerhold employed the motion study experiments for the training of the

⁶⁴Although I haven't found a particular reference to film or the use of film in Meyerhold's writings, Law and Gordon draw the apparent connection to Eisenstein (see Law and Gordon, 1996)

actor's body. A productive actor is thus an actor who is aware of the rhythm of the whole. She aims not to create a mimetic image, but rather to generate her body through movement. In a sense, the body that had gotten lost in the process of dematerialisation would now be generated through movement in the rhythm of the 'whole', that is, in the body of Soviet society itself.

In their relation to rhythm as well as in their form of production, the training of actors' bodies in order to 'give freedom within a defined set of boundaries' (Pitches, 2003:55) is closely related to film production. The movements have a strict rhythm and pattern. The rigidity of the 'defined set of boundaries' can be considered in analogy to the film frame. The film sets at the CIT and Meyerhold's theatre stages used the worker/actor to produce the Soviet body. 'If we observe a skilled worker in action, we notice the following in his movements: (1) an absence of superfluous, unproductive movements; (2) rhythm; (3) the correct positioning of the body's centre of gravity; (4) stability. Movements based on these principles are distinguished by their dance-like quality (...)'.⁶⁵ Meyerhold's description of the skilled worker seems to imply that what we have here is not only scientific film which utilises film to study motions, but also something else: the movements of the actors – their exercises in biomechanics – are informed by film in their formal setup. Meyerhold aimed to recreate a 'dance-like quality' by inserting montage, repetition, structure and form to the etude. In other words, the dance-like quality is created through film-like movement patterns.

Through the rigid form of the biomechanical chain of movements, Meyerhold made use of habitual movements that he learned from the motion-

⁶⁵Meyerhold as cited in Vaingurt, 2013 : 62

study films. In these exercises, the habitualisation of movements leads to a sense of movement that can be free 'within a set of boundaries'.

These boundaries are determined by habit. Although the body learns through habits, the body that works with habits is able to function without the need to think; automated, or mechanised, one might say optimised, for the industrial environment. By contrast, unlearning habits is very hard. We inherit our habits, but we need to ensure that they remain useful to us. This structure is useful for actors because within the boundaries of habitualised movement they can find the space for expression. A 'theater of acting-as-action: movement presented as equal to work, as valuable activity for its own sake. Movement, in other words, as social and reciprocal, not as autochthonous and reflexive' (Schmidt, 1978:81). What this means is that the externality of the mechanic movement (of the body) makes it a part of the social movement, a material practice.

I am expanding on this notion here because I want to understand the steady rhythmic movement of the film in relation to the body of the actor/worker and to the body whose movements are captured on film. Understanding movement on film as being moved by a material practice (that of filming) – this is to move from Meyerhold's transformation of the motion study into an exercise in habit formation as a means of, or basis for, expression. The actor executing the biomechanical exercise might become a component/participant in the operative construction of movement on film.

Kuleshov described the actor in film as being more like a film model, who, through training of their motor skills and emotion, functions as a purely technical being. Therefore Kuleshov shifted focus to the montage, and used the actor as the operative figure who delivers meaning and intention within the

framing of the film. '... [I]n order to take into account the entire mechanism of work, the entire mechanics of movement – we divided the person into its component parts' (Kuleshov, 1974:65). The body of the actor is operatively edited into the film and not represented as a whole, howsoever imaginary.⁶⁶ Instead the montage of the film is made operative in order to represent complex temporal and spatial structures. Kuleshov describes this with a concept named after him: *The Kuleshov Effect*. This effect reveals that montage is a productive operation. It shows that two shots edited together are perceived by the viewer with more meaning than a single shot. In the experiment, Kuleshov shows the same shot of a child intercut with changing counter-shots, an older man, a young woman, an animal. Each combination gives the sequence a different connotation. You see something and apply an emotion. However, the clear definition of cinematic space allows the actor to perform in 'maximum clarity (...) You will read everything he does on the screen as clearly as in a mirror'(ibid:67).⁶⁷ Similar to the biomechanics etude, montage is a sequential operation that enables a certain narrative structure. Or, in relation to my research, it is just as much a structuring device used in order to break up components of continuous movement for the purposes of analysis.

As if 'travelling in every direction like shivers through an immense body' (Bergson, 1988:208), montage in film gives the material multiple directions, backwards and forward, in synchronicity and contrapuntal. As a 'chopping up of continuous motion' (Kittler), montage cuts into the film strip

⁶⁶Note that this fragmented body worked rather against a subjectivist conception of the body and in that sense might have served the soviet concept of the mechanic 'rhythm of the whole'.

⁶⁷Similar to the gait that moves out of joint after seeing how this happens on screen, noted above, the viewer of a film might have the emotions that they see depicted on film.

and is spliced together with glue or tape. Breaking down continuous movement 'into categories: repulse, run off, kiss, bow, etc'⁶⁸, the biomechanics approach to acting is a technique of montage, but it is also 'built on muscular activity which is broken into individual parts' (ibid).

When captured on film, the boundaries in which to move around, to express myself, to tell a story, are determined by the limits of the material properties of film. Hence, I try not only to compare biomechanics and film in reference to the Soviet body, but I also try to understand them as productive elements that move beyond representation, which include as inscriptions both the material implication and the way that movement is stored on the film stock. Film is thus not a definite entity but instead needs to be constantly produced and reproduced.

'The move toward performative alternatives to representationalism shifts the focus from questions of correspondence between descriptions and reality (e.g., do they mirror nature or culture?) to matters of practices/doings/actions' (Barad, 2003:802). Or in Meyerhold's terms, the alternative to representational strategies is a performative production of materialised emotions. 'Why must I have an authentic emotion when such a marvellous means of expression exists?'⁶⁹

In analogy to the actor, who is not acting as if she was someone else, but who is rather through her movements holding up a magnifying glass to the things that are, the material aspects of the film comprise the reality that we are in. Nonetheless, in contrast to the scientist as a filmmaker described above, the filmmaker now appears as scientist. She acts as a scientist (a statement

⁶⁸*Notes on Biomechanics* by Eisenstein, as published in Law/Gordon, 1996:165.

⁶⁹Meyerhold as cited in Schmidt, 1978:79

which doesn't mean she is pretending to be one). Rather, through operative montage she dissects the pictures, separates layers of colour emulsion or chops up movements. It is an experimental approach to science as well as to filmmaking.

In *Mechanics of the Brain*⁷⁰ (fig.12) Pudovkin includes in his definition of montage the ability to move the camera position. He thus recognises a transition: the camera from being 'a "stationary observer", received what we might call a charge of life. It acquired for itself the possibility of movement and was transformed from passive contemplation to active observation. By such means the director could use the camera to force the viewer not merely to see but also to examine the phenomenon being filmed' (Pudovkin, 2006:67).

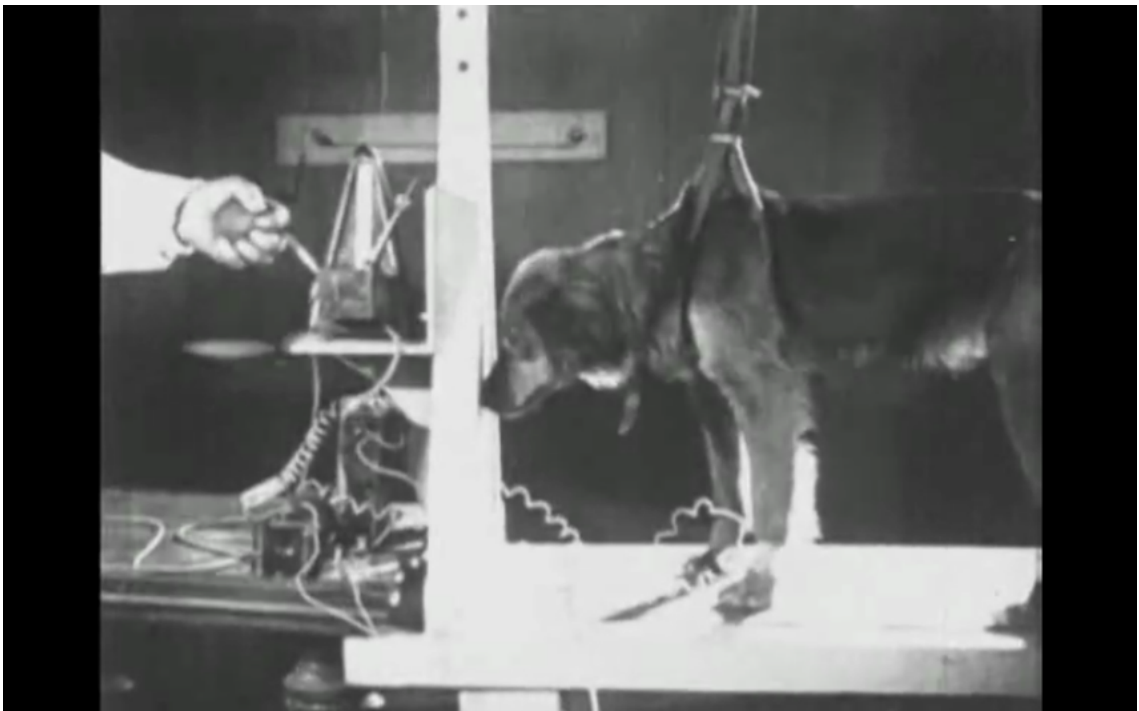


Fig. 12: Filmset as laboratory/laboratory as filmset, *Mechanics of the Brain*, Pudovkin 1926.

⁷⁰Mechanics of the Brain, Vsevolod Pudovkin, SU 1926

If I expand this thought towards the material components of film, I would not only see what the material registers, as light, movement, colour or sound, but I would also note that these pure registrations force an examination of their interplay. Pudovkin explains his camera technique in *Mechanics of the Brain* as the result of his engagement with Pavlov's reflexology: 'I became aware of the fact that the photographic exactness in fixing a movement allows one to catch this much more accurately than with a simple observation of the eye. I proposed (...) to fix the narrowing of the pupil with the camera as a precise unconditioned reflex of the eye (...)'.⁷¹ He applied a juxtaposed use of wide and narrow lenses to implement the physiological experiment on the viewer's eyes. Vöhringer draws on this: 'He considered film technique not only to be a condition for mediating experimental knowledge, but as a procedure amenable to the scientific goal of investigating experimentally gained knowledge' (ibid). Through the film, the viewers' brains themselves are exposed to conditioned and unconditioned reflexes. They were meant to undergo a psycho-technical experiment by watching a documentation of the same kind of experiment performed on frogs, dogs, monkeys and children. Neurological laboratory, film studio and cinema merge into the same space.

2.5. The Performance of Life extracted from the Film strip

Almost simultaneously the screen reflects onto us, what remains of the body.

But what remains, once movement has been extracted from the image? What

⁷¹Cited from Vöhringer, Margarete. 2001. 'Pudovkin's "Mechanics of the brain" - Film as physiological Experiment'. The Virtual Laboratory (ISSN 1866-4784), <http://vlp.mpiwg-berlin.mpg.de/references?id=art5&page=p0003>

remains, after the body's movements have been segregated into single frames?

Asking for remnants seems inevitably linked to questions of representation, because we ask for something that is not there, but represented by something else. Instead of seeing a body, we can hear the body. We hear the light that is registered by the light sensitive emulsion. In *Fugue* the body appears, but only as a registration – it is what Agamben (2004) might have named a *pure image*, but more in the sense of a bare image, of an image stripped of the powers of making visible or revealing, than in the sense of any kind of material purity. The body has both vanished from the picture and gives us the idea of that body in a different form, or as a different structure.

In analogy to Meyerhold's theory of acting, let's once again change direction from image/representation to feeling/intention. Then we don't act but react. The purpose of the actor's training is 'to teach the body to think'. 'Teaching the body to think' also de-hierarchises the relationship between body and mind, thought and movement, movement and image. 'Feelings become facts' (Rainer, 2006) and facts become feelings because they are physically enacted and thereby brought into reality. 'Movement, in other words, as social and reciprocal, not as autochthonous and reflexive movement directed out, not turned in' (Schmidt, 1978:81). Through habitualised movements emotions are produced for the same ends as the movements of manual labour, for the purpose of optimisation, efficiency: the production of emotionality.

Have emotions replaced material labour? In this account, the appropriation of habit-making could just as well have been an act undertaken on feminist grounds, associated with discussions around reproductive work and emotional labour. Emotions are recognised as physical enactments. And I can detect

another feminist argument, which lies in the method of producing emotions – a method that is not result-oriented or purpose-ridden. ‘By her own account, this was not a practice derived from an explicit political position or agenda, but rather the enactment of one body thinking and feeling in time and space – a body that developed, in this way, a radical activist politics’ (White, 2007).⁷² Thus the production of emotions through habitualised movement has a distinct relation to time, since it is process-based and not result-oriented. The physical *production of emotionality*⁷³ is not something that simply appears or becomes visible, but is produced over time through the enactment of the body. Yet, claiming the production – or the productive character – of emotionality consequently means that there is no difference between feeling and the production – that is to say, the performance – of feeling. Or even further, that there is no difference between life and the performance of life. And the observance of this recognition is to be understood as a radical political (anti-capitalist) practice, because it radically opposes the capitalist separation of production and life – or as I refer to Noys, image and life: ‘The original sin of capitalism is our separation from life, and this takes place through the image; we are at once subject to the image, to being reproduced as an image, and subjects of the image, which reigns over and dominates us’ (Noys, 2014:90).

What is at stake is the relationship between the body and the image; the image might need to become in that sense ‘decentralised’ through movement and the appearance and absence of movement, and also through sound and the material production of optical sound, that is, sound from the image. If the intention is to deconstruct the power of images and the ideal of a wholesome

⁷²White writes about Yvonne Rainer’s autobiography *Feelings are facts* (Rainer, 2006).

⁷³ See Konings (2015)

and complete image, what will remain are pure registrations of movement: the movement of the stock through the camera/projector and the re-animated movements on this film stock. 'What we need to do is to liberate this dynamic force from the static spell of the image' (Noys, 2004).

2.6. Restore without a Presence – Conclusion of Chapter 2

Through looking at several practices in which the movements of the body were measured using image-making devices, it became clear to me that the film and body become entangled and in a sense come to depend on each other. Even to the extent that it becomes unclear which leads which. However, there is a certain violence implicated in the mechanism of the moving image, a violence that is reflected in the mechanisms of the apparatus, in the endlessness of the conveyor belt and in the bodies who have to operate the machines. Their movements have to obey the rhythms of the machines.

Both such obedience and such automaticity have in turn wider political and historical consequences. Again, this is understandable in two ways: first in terms of the ways in which material has participated in the production of history; and secondly in terms of the history of the materiality of film and the ways in which our readings of historical movements on film create their own historical narratives. This history alongside technical innovations and increasing mechanisation of life is told with a nostalgic grief for a supposedly 'free' body of the pre-industrial era (see Giedion, 1948). The above-mentioned re-appropriation of frame and gestures, undertaken in order to set the body

free,⁷⁴ has certainly been a strain of thought in the conceptualisation of the filmic experiment that I underwent with *Fugue*. In opposition to the idea of a 'free body', I proposed a strategy of remaining invisible and silent, of turning towards the materiality so as to let it 'speak' and 'show'. I proposed a viewing and hearing of the film that is aware that 'we cannot pass through the image to life, but rather we have to perform an ambiguous un-working on the image, an act of profanation, to free from the image the dynamic that exceeds and refuses the deployment of the image within the smooth space of the capitalist sensorium' (Noys, 2014:90).

Film entails a concept of memory that rewrites itself over and over again, as if the material was trying 'to evoke gestures in the process of their loss' (Noys, 2004). Film precisely does not stand still, and precisely does not manifest itself, and thus actually represents nothing but life. The movements in the picture are therefore not animated, made to run, but re-animated, revitalised. In the period from early time-based photography to the efficiency-oriented motion study, film became an instrument of recovery or re-storage, but one without a presence.

⁷⁴See Adorno: 'Rigid things can always be moved about' (2005:194). In that sense the film frame as a rigid thing ('das Starre') would give the ability to be moved ('das Verschiebbare').

3. On Sound - An Interlude

The component of sound in film was invented in the same experimental laboratories of the 1920s that had worked on the motion studies. For the cinematic apparatus, the appearance of sound-on-film had a similar impact to the introduction of colour film. Both developments happened around the same time in the late 1920s and 1930s. In this interlude I will bridge from the examination of film and the body in movement in the previous chapter to the history of synthetic colours and film in the next chapter.

Although at the time of their invention the chrono-photographic practices of the motion studies described in the previous chapter produced silent images, rhythm and sound seem crucial elements of the movement of the film. One can listen to the rhythmic whirring of the projector. The stillness of the movement hints at a silenced expressivity. Alternatively, while watching moving bodies on screen we are made aware of the noises of the audience and our own bodies' sounds, the rhythms of breaths, heartbeats, and the disrupting coughs and sneezes in the auditorium.

At the same time, the invention of optical sound – sound-on-film – runs parallel to the re-construction of movement on film. The technology for storing sound on film was first developed in the 1910s and 20s. Similar to colour film systems in the 1920s and 30s, there were then several technologies competing to screen film with sound. Kittler (2010) describes the invention of sound film as a result of the technologies of WWI, and therefore a necessity in the continuity of technological progression in the twentieth century. He describes the introduction of the German *Tri-Ergon* system, which was rooted in the following principles: '1. The same film that carries the image must also serve as a sound carrier. 2. The sound must be recorded and reproduced through photographic

processes (...)'.⁷⁵ The principles clearly specify the relation of the soundtrack to the film's image and they were eventually accomplished in the sound-on-film method.

Optical sound means that the sound is photographically recorded as electrical waveforms from a microphone, which are translated back into sound waves via a *light reading* device when the film is projected. Optical sound works with a signal transition that writes the audio signal as information (black) onto the transparent celluloid strip. When projected, a little electric lamp is used that shines through a waveform printed on the edge of a filmstrip. The light that shines through the film is then read by a light-sensitive material and processed into electric impulses that are converted into an audio signal, which is then amplified and sent to a speaker.

Numerous systems were invented by experimental electricians in the 1920s and 1930s in Berlin, Moscow, the US and elsewhere. With these inventions, the problem of synchronising sound and image appeared. Thus the projection speeds had to become standardised. However, the problem of synching image and sound also hinted towards a complicated relation between the two. Eye and ear support each other and it is in fact quite difficult to decide which one tells which what to do. Do you hear the steps that you see or do you see the voices speaking? On the material level, this meant that, through implementing both on the same strip of celluloid, a material inseparability⁷⁶ led simultaneously to a dependency which would not always prove to be productive. The optical process meant that one could hear scratches in the

⁷⁵Vogt, 1964, p. 11, cited in Kittler (2010:195)

⁷⁶Note that due to the distance of the projector lamp and the sound lamp in a projector, there is actually a distance of a few frames – 26 frames on a 16 mm film, which is a little bit more than one second – in order to have image and sound in sync when projected.

celluloid and that deterioration of the image would mean that the soundtrack would also fade away. These are just a few of the ways in which the film material itself became audible.

Sound is also the defining element of the film's recording and projection speed – the frames per second. Although the speed is regulated through the mechanics of the projector, the defining element is the 'right' level of the human voice. Chion (1994:5) emphasises this 'vococentric' aspect of sound on film. It is the human voice that gives film its standard projection pace of 24 frames per second. Much like a test chart, a beep at the beginning of the note A tells us whether we are going to hear the voices in the 'talkies' at the right level and not pitched or slowed down.

The material properties influenced the visual and aural appearance of film as well as their interplay. In that sense the soundtrack ceases to be a merely abstract component of the film image and acquires its own material aspect. Kittler also notes the similarity between the audio tape and the film-roll in regard to the media's temporal structures of continuity and disruption: 'Not only are time reversals possible (...) but also stop tricks, cuts, and montages (...)' (Kittler, 2010:190). As a historical record sound film then adds a temporal layer to the disjunct historiographic work of film.

As another, parallel timeline, and through a photographic procedure, the soundtrack is printed onto the filmstrip as an image. In the Deleuzian sense, the sound belongs to the visual image as 'the out-of-field' component (Deleuze, 1989:237), which is what we actually see on the film strip: the soundtrack printed next to the visual track, thus remaining off the frame of the projection field. Between-the-images (Bellour) is a fine black line that separates the audio from the visual track.

The image in movement that gives us a sound thus does not belong to a written narrative, but is rather a hybrid structure, somewhere between composition and synthesis. Soon after the process was invented there appeared methods that used the montage techniques to modify, edit, splice, loop and manipulate the soundtrack. In their manifesto on sound, the Soviet filmmakers Eisenstein, Pudovkin and Alexandrov proposed a use of sound-on-film that does not merge the sound with the image, but is rather used in 'the contrapuntal use of sound vis-à-vis the visual fragment of montage' (Eisenstein, 1988:114). A contrapuntal composition of film's elements sound, image and movement is at the core of the filmic form. In *Fugue* – hence the title – such compositional technique is foregrounded. 'Sound, treated as a new element of montage (as an independent variable combined with the visual image)' (ibid) could then produce – maybe in analogy to the third layer of meaning elaborated in the *Kuleshov effect* – a method of constructing a film in juxtaposition.

The hybridity of the soundtrack between written (*phonographic*) and image (*optical* sound) narrative through film becomes even more apparent in the experiments in which the image that gives the sound is painted or drawn directly onto the celluloid. These drawn sounds employed animation techniques, directly applied onto the celluloid, or photographed onto the film strip using an optical printer.⁷⁷

⁷⁷See James (1986)

3.1. Sound and Psychotechnics

Motion studies, montage theory and optical sound originate from similar structural experiments. They were contemporary practices that happened to appear in an experimental scientific-artistic setting, especially in the early years of the Soviet Union. Motion studies, neurological experiments, and synthetisation of sound all took place at the same time and in the same laboratories. Artists and scientists seemed to inspire each other on the same philosophical grounds. At the same time as Pavlov was researching the brain, Pudovkin was filming the *Mechanics of the Brain* and Meyerhold was teaching actors biomechanical exercises in order to teach the body to function as a brain, while yet another group of experimental technicians worked on the synthetisation of sound. The temporal and spatial conjunction of these experiments with motion studies is by no means accidental. It is rather the consequence of a similar method applied with different means.

Smirnov (2013) describes this artistic-scientific environment that 'produced numerous extraordinary discoveries' (ibid 155) and cites Eisenstein et al., who were then pushing towards a sound film that would use a *contrapuntal* method of constructing sound (ibid:156). In that sense sound and image retain some independence, each remains an autonomous track, but at the same time they combine on the film strip. They accompany each other, but not necessarily in a harmonic way. Sound can rather be used as a counter-track to the visual, while the synchronicity of sound and image maintains their compositional coherence.

This technique of sound-on-film was soon used to create synthetic sounds, that is, sounds that had been emulated through drawing directly onto

celluloid. Drawn sound is thus a technique that is directly related to sound-on-film technology. The recording of sound as an optical track onto celluloid, makes this track visually analysable, and in a next step sounds can be reconstructed synthetically by drawing onto the celluloid strip.

Arseny Avraamov's work on the synthetisation of sound began with an 'empirical approach. He found that any repeated pattern would produce a distinctive sound. Pitch was controlled by the frequency with which the shape appeared on the film and volume by the length of exposure, for example the grayer the print, the quieter the sound' (James, 1986:81). The direct application of photographic techniques on the film strip led to a technique to modulate sounds optically and acoustically. Avraamov's experiments prove that – despite the contrapuntal arrangement on the filmstrip – the separation of image and sound is obsolete when the material that brings them into being is actually the same (celluloid), and the difference simply lies in the process of reading and translating. In both cases – with film and the celluloid synthesiser – light reads the image as a source of information from the film. The difference is just that in the film projector the first lamp shines through a lens that magnifies the image on the strip onto the screen, while in the synthesiser the lamp shines through a waveform printed on the film and is read by a photo-sensitive receiver, which then converts the impulses into an electrical signal, which is then amplified and sent as sound waves through a speaker. As described in the previous chapter, this is a technique that I employed in the film *Fugue*. The movements that are recorded onto the filmstrip are also printed on the side of the optical soundtrack. Thus the light that reads the soundtrack in fact reads part of the image, which then becomes audible. What you hear is what you see. And what you see is what you hear.

Despite his experiments in the field of synthetic sounds, Avraamov was involved in the research into recording technics and the acoustics of industrialised life. He researched sound in relation to the mechanic and the factory, most notably in his work *Sound of the Sirens*, in which he installed a tuned steamwhistle organ and used the whole city of Baku as an orchestra. I mention this because it draws on the idea that the synthetic is always relative to its surroundings and the material device employed in its production. In an industrialised modern surrounding, sound devices are not necessarily different from the machines in the factory. And so a celluloid film strip can also be a sound modulator.

Sound is also brought about by the movement of the film. Sound forms and is informed by the body in movement. Synthetic sounds make the body – the human body of the musician as well as the sound body of the musical instrument – superfluous, just as the body is made superfluous in industrialised working environments. Machines took over the work of the orchestra – ‘capable of synthesising any sound and producing music according to a special graphical score without any need of a performer’ (Smirnov, 2013:33).

However, this synthetic aspect is different from the notion of the dematerialised body in the motion studies as described in the previous chapter. Because it is synthetically created, the body does not disappear, or de-materialise, but was in fact never there at all.⁷⁸ Synthesised sound no longer has any ‘natural’ source. It becomes audible as pure amplified electrical information. Smirnov

⁷⁸A notion which becomes apparent in the creation of synthetic voices: see Levin (2003:33), where he quotes a newspaper headline from 1931: ‘Synthetic Speech Demonstrated in London: Engineer Creates Voice which Never Existed’.

also draws on the Soviet composer and sound engineer Yankovsky and places his work and research 'outside the sound spectrum', for the reason that it doesn't aim to imitate existing instruments but rather produces synthetic sound by placing information on the strip that is neither ornamental nor figurative (geometric), but instead resembles 'fluent rainbows of spectral colours in sound' (ibid). The synthetic element is both material and aural. A synthetic sound is hence produced synthetically out of synthetic materials and sounds synthetic; in short, unnatural.



Fig. 13: Daphne Oram at work, date unknown.

Daphne Oram, who worked with a similar method in the Oramics synthesiser in the 1950s and 1960s, described how she would draw certain waveforms in order to recreate certain sounds (fig.13). 'If it is a "musical" sound it will have some resemblance to a repetitive pattern; if it is a "noise" it will usually have little that is repetitive' (Oram, 1972:23). Note that increased complexity resulted in more noise or a decreased musicality. Oram could detect which forms

sounded more interesting and also which rhythms could be fabricated through repetitive patterns. But she also detected that the pure synthetic recreation of a sound wave 'would be unnatural and far too "electronic" in its nature' (ibid: 100). In the musical synthesiser that she invented she therefore emphasised the inaccuracies and indeterminate factors that 'will creep in' when drawing the wave patterns freehand onto the celluloid, 'for "straight lines" will not be quite straight, undulations will have a "freedom" within the overall form and there will be imperfections' (ibid:101). Only when the technologies of film and sound were split apart did artists like Oram began to use the machines to synthesise sound exclusively; at this point the machines became musical instruments, and just as Oram describes this, the authentic and compositional aspect was reinscribed into the procedure of making music with these machines (fig.14).

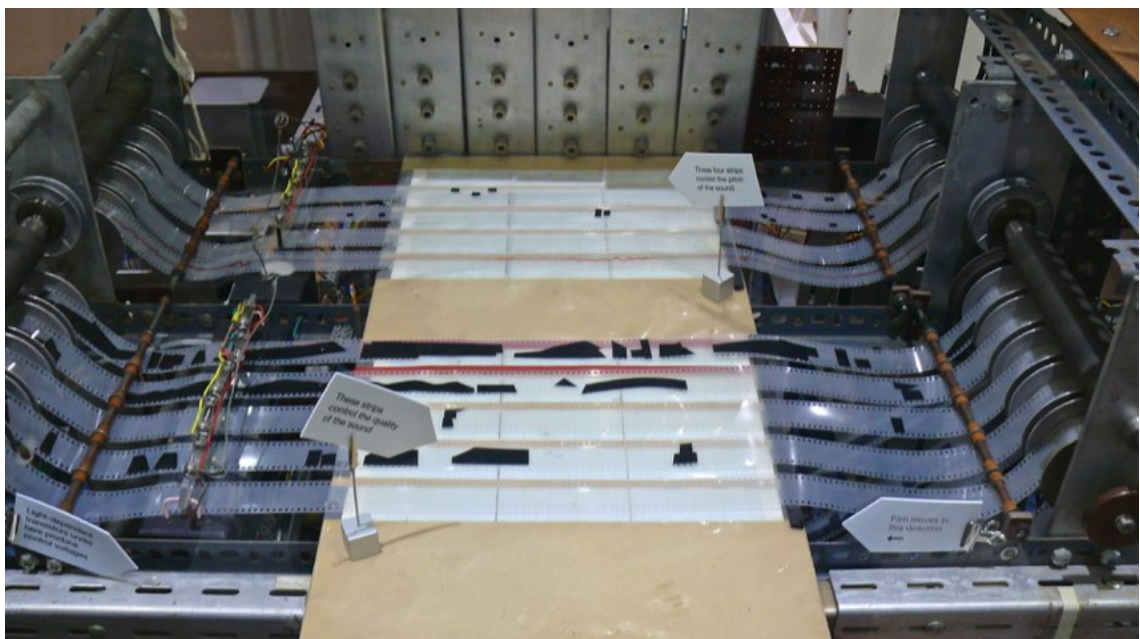


Fig.14: Oramics machine on display at the British Science Museum, London 2012.

Do I create a form and find out how the form sounds, or do I wish to create a certain sound and search for the form that would make this sound? In fact, the artists who worked with this technique, for example Oskar Fischinger, often

played with such an ambiguity.

3.2. From Sound-on-Film to Nazi Animations

As Leslie (2002) notes, Fischinger had been open to experiment with multi-sensual perceptions, such as the synesthesia of colour and sound. Kracauer describes Fischinger's films as if they were not really intended as films – as if they were not just synesthetic, but instead utilised photographic film for a different purpose, an artistic one, with the intention of ‘... resort[ing] to film not as a photographic medium but as a means of setting imaginative designs, preferably nonobjective ones, in motion. On the whole, these films are not even intended as films; rather, they are intended as an extension of contemporary art into the dimension of movement and time’ (Kracauer, 1961:186f).

On a formal level it is surely interesting how the new technologies of sound-on-film and colour were used in experimental and abstract films in the 1920s and 30s. But it is also remarkable how they brought about a conjunction of the filmmaker with the photographic industry and film production syndicates. The author (artist) as producer is in a sense employed to test the material. Her studio and the scientific lab described in the previous chapters are used to stretch the material properties. The outcomes can then be used by the photographic industries to improve the film stock. Taken from the laboratories of the Soviet Union and re-inserted in a Western capitalist environment, a certain ‘race for sound-film’ led to a variety of competing technologies, with the result that companies began to give film stock to experimental filmmakers who they hoped would test (and therefore advertise) their materials.

The idea behind sound film seems to stem from the same desire that led to colour film (which I will discuss in the following chapter) – namely the desire to come closer to reality and to emulate in the space of the film-theatre a more realistic or naturalistic sensual experience. But it is still a contradictory development, torn between the intention of creating a more spectacular cinematic experience and the sensual reunion of a body and her voice or an object and its sound. In the Germany of the late Weimar Republic in the early 1930s, it was soon discovered that this spectacular aspect certainly could be employed to control an audience's attention. '...the perceived need to condition the cinema with sound demonstrates an overlap between ideological and commercial impulses to present the cinema as a controlled space as well as a spectacle of consumption' (Birdsall, 2012:159). In this regard it is not surprising that such experimental formal approaches as Fischinger's could be found in 1930s commercials. Both the use of visual music⁷⁹ and the use of early colour systems such as Gasparcolor (see Leslie, 2002:283) were utilised by the industry in their cinema advertisements. Fischinger's first colour film advertisement was a film called *Kreise* in 1933.

In analogy to the history of colour film (the subject of the next chapter), there was a fusion of industrial and commercial interests with the political aims of the state, which employed sound-on-film in feature films, the news reel programmes and so-called 'Kultur' films used for propaganda purposes. 'The reconceptualisation of cinema spectatorship under National Socialism was thus conceived in terms of a cinema of experience that would entertain and dazzle, but also employ a controlled rhythmic pace' (Birdsall, 2012:157), and

⁷⁹For example: *Alle Kreise erfasst Tolirag/Kreise* 1933, Oskar Fischinger, Ger 1933; *Muratti greift ein*, Fischinger, Ger 1934; *Muratti*, Fischinger, Ger 1934

sound was specifically utilised for that purpose. The interest in the ‘absolute’ cinema experiments were soon abandoned, since their spectacular value and artistic languages were not compatible with Nazi ideology. ‘Until the end of the 1930s most animation films⁸⁰ from Germany were commercial films, whereas the kind of commercial changed more and more during the Nazi period – away from luxury items to more common products such as the “Volksempfänger” and to rules of conduct’ (Wegenast, 2011:9).⁸¹ Once the technical reunification of image and sound, body and voice was accomplished, further experimentation was disregarded. I will describe this process in more detail in regard to the component of colour in the following chapter.

⁸⁰Furthermore, such abstract and structural experiments were regarded as animations.

⁸¹My translation: Bis Ende der 1930er Jahre waren die meisten Animationsfilme aus Deutschland Werbefilme, wobei sich die Art der Werbung während der Nazizeit immer mehr wandelte – weg von Luxusgütern über allgemeine Produkte wie den “Volksempfänger” bis hin zu Verhaltensvorgaben...’

4. On Colour

*'Colours themselves act. They make visible an aspect of reality, which would remain unnoticed without them.'*⁸²

After movement and sound, in this chapter I analyse the role of colours in film (how they *themselves act*); the complex socio- and cultural-economic structure that applies to colour's contribution and participation in colour film; and the history and archival politics that it implies. Similar to the technical transformation from still to moving photography and from silent to sound film, a historical caesura can be indicated with the introduction of colour into film. In this chapter I look at this process of how colour and film came together on a material level. Again I do so in a turn towards a prehistory of the present, as I aim to unravel 'the process of becoming and disappearing' (Benjamin, 1977:45). This seems particularly relevant since historic colour film seems to have a special influence on the formation of memory structures.

Historical colour film appears to work to both support and de-construct collective memory and the ways history is encountered in the present. Material aspects, in this case colour, may reveal and maintain historical entanglements when they become readable in the present. Early coloured film pictures, once liberated from the archives, insist on access to the contemporary, because they set themselves in relation to nowadays' mainly coloured filmmaking. 'For every image of the past that is not recognized by the present as one of its own concerns threatens to disappear irretrievably' (Benjamin, 1968:255). While they appear amongst contemporary images, their specific colours render history visible in our very present, when they transgress times and media formats.

⁸² Die Farben handeln selbst. Sie machen einen Aspekt von Wirklichkeit sichtbar, der ohne sie unkenntlich bliebe' (my translation) (Grafe, 2002:19).

Thinking about their role in film in terms of the participation of colours in the construction of history allows me return to Haug's notion of the aspect of labour in the process of memorisation, what she has called the 'collective memory-work, with the emphasis on collective and memory and work' (Haug, 1997:132). Here I will argue that it is particularly the material properties of colour film stock that do such work on and with film. And I will argue that it is the work of the contemporary viewer to recognise such movements of transgression in the present.

The process by which film images obtain their particular colour schemes reflects time and location-specific hierarchies and hegemonic political structures. A certain colour palette locates images within a certain time.⁸³ Or the lack of colour might aim to historicise film material.⁸⁴ I claim that colour can herein obtain the ability to move in-between past and present, transgress temporal borders and also boundaries between documentary and fiction, when the colour range refers to a different time frame than the material was actually shot.⁸⁵ Since the synthetisation of dyestuffs in the nineteenth century, it has been possible to distinguish between colour and natural colour. This story synchronises with the invention of film; the chemical industry began with the synthetisation of dyestuffs and the industrial production of photographic emulsions. Film colours are chemical substances that break away from naturalistic representations of colour. Colour film merges different chemical products together. Hence there is a shift in the conception of nature, reality and

⁸³ like a polaroid that resembles a snapshot view into the 1980s

⁸⁴ like a certain style in contemporary Egyptian street photography that aims to look more like Bill Brandt's London from the 1940s.

⁸⁵ like with filters or special effects that try to make digital video look like film

time, all of which one could say *materialise* in colour film stock. In this chapter, I will explore how such an interrelation between colour, naturalness and reality produces history and reproduces memory patterns. I do so by moving backwards, progressively unravelling each structure, the colour film stocks and their colouring processes, in order to analyse how its material shifts interact with time-specific social developments. I will claim that colour film provides an index or anchor point in the past from which the present in colour can be understood differently.

The research on the history of film colours began during work undertaken in collaboration with Mareike Bernien. In 2009 we wrote a short text about the figure of the China Girl. *China Girl* is the colloquial term for a test image that has been used since the 1930s to calibrate colours and skin tones. The colour test image usually consists of a white woman's face, a colour bar and the name of the brand. These images are used in film labs to adjust the colour range and to match the tonal density between different takes. The women in these pictures are mostly workers from the set, technicians or script girls. They look at the camera for a few seconds (or a few feet of film stock), but become visible in the film itself only as a technical value.⁸⁶

The China Girl states that what we see appears to us as natural and normal: she thus inscribes an ideological category into the film material. The interplay of make-up, film stock, lighting, and projection builds a certain colour range that gives the parameters and definitions of devices and their use. A colour range is inextricably linked to the prevailing conditions of production and social practices that produce the dyestuffs, cosmetics and technical devices. Since the beginning of film these colour ranges were based on the

⁸⁶ See also Morgan Fisher's seminal film *Standard Gauge*, US 1984.

normalisation of white skin. 'The apparatus was developed with white people in mind and habitual use and instruction continue in the same vein...' (Dyer, 1997:89) The *skin of film* (Marks, 2000) is white, but we need to think of whiteness not only as a materialised category. Its materiality is structurally embedded in the devices and products of film (in cameras and film stocks). 'Stocks, cameras and lighting were developed taking the white face as the touchstone' (ibid:90).⁸⁷ As a test image that anchors standard values in the images that follow, the China Girl takes over policing duties. She controls and guards the range and look of a film's colour space. Invisible yet inscribed as a colour value of the images, the China Girls circulated through all kinds of colour film processes. *Technicolor*, *Kodak* and *Agfacolor* all produced their several China Girls. They are the imprint and precondition of a material order that they simultaneously help to produce (fig.15).

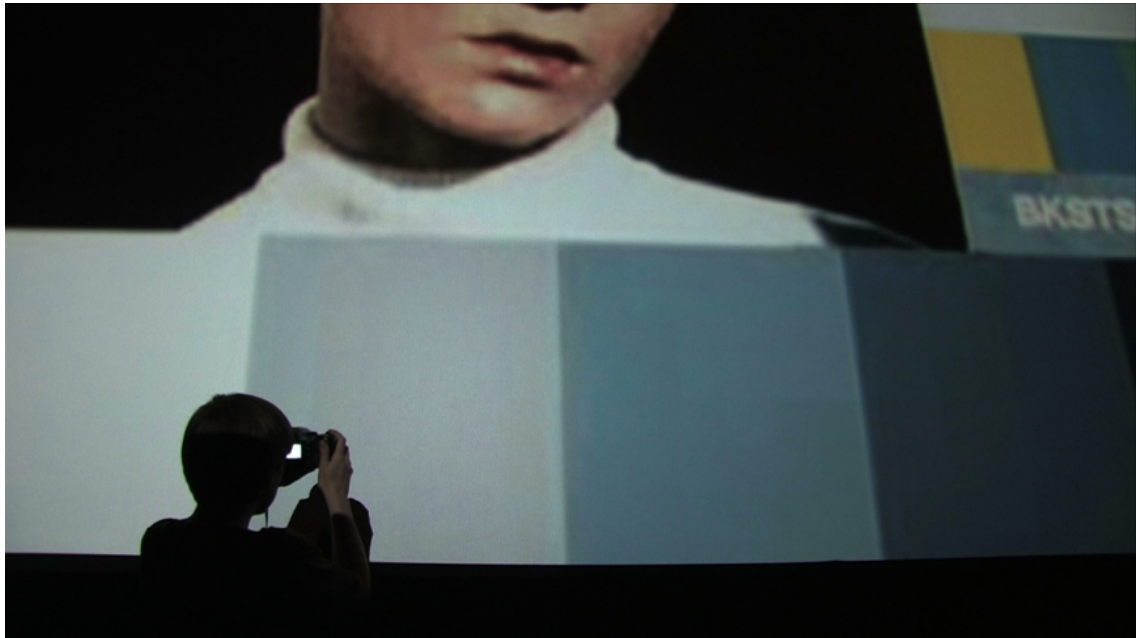


Fig. 15: Letting China Girl appear on the big screen, filmstill *Red, she said*, 2011.

⁸⁷ Dyer continues: 'The resultant apparatus came to be seen as fixed and inevitable, existing independent of the fact that it was humanly constructed.'

Following this research, in 2011 we made a video, *Red, she said*, that dealt with the history of early colour film in the US and the introduction of *Technicolor*. In particular the video deals with the colonial entanglement of the making of dyestuffs and their application on celluloid. In the video, we used re-enactments and re-projections of colour film footage to access diverse cultural knowledge. We also employed methods and means of performance such as walking through a projection and colourising and highlighting single elements in a projection. We experimented with modes of translation between images and speech with the intention of accessing the structures and methods that define the use of colour in films. Finally, we looked for non-visual knowledge within historical film footage, a knowledge that might have been archived not in speech or text but instead in movement and gestures, as in a dance scene in which the dancer is controlled and directed by her red shoes⁸⁸(fig.16).



Fig.16: Performative montage inserting The Red Shoes in Red, she said.

Filmstill, 2011.

⁸⁸ The Red Shoes, UK 1948

The people who step into the projections produce relations between the archival footage and the present in the sense of a re-reading. They work to highlight what had been historically overlooked. The three voices talk at several points in the narrative about how colour came to exist in film. They do not possess definite roles or positions within the narrative, and nor do their words seem to have a direct connection with the images. Thus the video comes to revolve around its topic both at the level of sound and of image. With *Red, she said* we wanted to find a way of understanding what colour does in film that is neither solely symbolic or aesthetic nor purely technical. In order to do this, in *Red, she said* we proceeded to apply colour ‘performatively’ and let the voices speak in a seemingly free associative manner.

As we performed the research for *Red, she said* concerning the colonial history of dyestuffs and the way in which they were introduced into the film picture, we came across another colour film process that was developed during the Nazi period in Germany. In 2012 we continued the research with a focus on *AgfaColorNeu*, a colour film stock that was introduced in the late 1930s in National Socialist Germany. This time we faced a different technical process, one which involved different historical as well as technical considerations within the archive of colour films and the specific colour range at play. *Red, she said* aimed to emphasise the role of colour as a colonial product and thus the colonial pre-determination of cinema that occurs through its colour palette. By contrast, *Rainbow's Gravity* (2014), with its focus on the historical entanglement of Nazi propaganda and colour film, imposed a slightly different focus: the research became more historically specific, but at the same time it aimed to tackle the ideological implications of image-making technologies at large. The film tries to come to terms with the presence of the

colour film footage that I researched in the archives. In the following I discuss and interrogate the role of colour in Nazi film⁸⁹ considered as a contemporary witness (*Zeitzeuge*), which further explores the discussion of material agency as it has been laid out before. This analysis serves as an extended discussion of the issues encountered during the making of *Rainbow's Gravity*.

In analogy the analysis of movement in Chapter 2, I focus my attention on colour as a material component of the film, eschewing film-semiotic analysis. Thus it becomes crucial to know what role the various modes of filmic production – and in particular those related to the distinctiveness of colour – played and continues to play in relation to memory politics and material historicity.

Cinematographic colouring systems have established and continue to stabilise different colour regimes. Colours seem to bring the film reality closer to a 'natural appearance' and thereby to strengthen the bond between film image and reality, but at the same time colours also single out certain aspects of the image, dislocating and dehistoricising its elements.

From the beginning of cinema, colour was brought into film as a necessary labour. Shifting the focus from their plain colourful appearance to the actual production of colours, dyestuffs and colour films could therefore help to explain the contradictions in the spatial and temporal appearances that colour causes us to experience. The contradictions manifest themselves in different ways – for example in colour correction systems or light spectrums and the different sensitivities of film stock.

⁸⁹By Nazi films, I refer to the films that were produced by Germans and on behalf of Nationalist Socialist Germany between 1933 and 1945 (see Leiser, 1974).

4.1. Towards Nature : Historical and technical frame⁹⁰

In the nineteenth century early chemical industries turned the production of colours and dyestuffs from natural manufacturing to synthetic industrialisation. With the appearance of ‘a rainbow of synthetic colours’ (Leslie, 2005:9) a parallel world was created that inherited the structures of the ‘new worlds’ of European colonialism. All the products that had been synthetically invented – and film is one of them – and all of the objects of the new developing consumerism demanded their own colours, which served at once to naturalise them within a world of objects and to make them special, into something extraordinary – into objects of desire just waiting for their consumers. This rather functional aspect of colour – its role in making the objects of consumerism more appealing, while at the same time subordinating them to a definite social purpose – embedded colours in a synthetic world of objects.

Synthetic dye stuffs that were invented around 1900 were used in combination with other plastic materials invented around the same time, such as nitrate celluloid, which was used to produce stock for film and photography. Cinema in 1900 was thus far from colourless. Colours were added to the celluloid after the black and white film was developed. They were drawn onto the strip and appeared on the screen, and this – as I have pointed out in the previous chapter – constituted an attempt to re-animate them. The techniques of tinting, painting and stencilling black and white film established their own

⁹⁰ An earlier version of this has been published in (Bernien/Schroedinger, 2012). See Appendix 5.

dramatic colour language. Night scenes became tinted blue, for example, and romantic scenes tinted red.

Like other low-wage jobs that came about at the time, such as those of typist or telephone operator, the work that was required to provide black and



PREPARING THE PATHÉ COLOUR FILMS.

Fig. 17: Pathé film factory, tinting and toning. Date unknown.

white film with colour was done mainly by women.⁹¹(fig.17) It was a poorly paid job and was physically stressful. The workers leaving the factory in the Lumières' famous film from 1895 were women workers (see fig.2). In the film factories they would paint, stencil and tint each frame manually. Through the hands of the workers, the images were brought into combination with colour. The synthetic aniline dyes were highly toxic and would leave marks on the

⁹¹ See for example Mahar, 2006: pp. 21: 'Like most work assigned to women, the tasks performed by women in the photography trade required what was assumed to be feminine skills: dexterity, neatness, and the ability to perform detailed, routine, fairly low-skilled tasks... Alleged feminine dexterity also made coloring films a woman's job.'

workers, so that the colours would not only bind to the celluloid but also to the bodies of women who handled them.⁹²

On the technical side, because the dyes were applied as it were 'posthumously', there remained a kind of deficit in the coloured impression of the film itself. Lagging behind, the colours vibrated on the objects and created a pulsating movement of their own.⁹³ One example of such posthumous application stems from the very beginning of cinema and records the serpentine dances of Loïe Fuller. 'The frames were tinted by application of coloured paints directly onto each frame of film stock. The short strips capture the mobilisation of material, the swirling forms and transforming colours of coils and fans of material as it is twisted by girls performing their butterfly and serpentine dances' (Leslie, 2013:35). In Fuller's dances the dyes applied onto the film show an uncontrolled collaboration between the colours and the object moving on film. These applied colours perform the link between the moving fabrics and the black and white film stock (fig.18). This material collaboration hides and at the same time creates the performing body of the dancers. And while the bodies of the performers draped in coloured fabrics perform a transformation from serpent to butterfly, it remains unknown who is actually performing these dances, a notion which equally transforms the performing body from subject to object and back, because as Lista (1995, cit in Garelick 2007) and others have pointed out, all films that allegedly show Fuller doing variations on her serpentine dance in fact show others imitating her. She is making variations of herself, obscuring not only her body with the coloured

⁹² I will return to the notion of the female worker in the film factory below, when I talk about the women who worked at the *Agfacolor* factory in Wolfen, Germany, where I also describe the health issues in more detail.

⁹³ See Bergson (1988) as mentioned above

fabrics but her identity through multiples (or epigones). She then only becomes visible as versions of herself.



Fig. 18: Loïe Fuller's Serpentine Dance with hand-tinted single frames. ca. 1907

With the introduction of the *Technicolor* process – amongst other processes – in the early 1920s, women's working hands were replaced by a chemical emulsion on the negative film itself, so that exposure resulted in a direct colour imprint. The goal with these 'direct' processes was to reproduce colour values that were as true to nature as possible. 'Color thus became incorporated into

the cinematographic process and “naturalized.” Of course, the intense colors of early *Technicolor* did not even come close to anything one might ordinarily regard as natural; however, they were still far more “natural” than previous dye-transfer processes, inasmuch as they were no longer perceptibly “superadded” to a black-and-white print.’ (Misek, 2010:26) On the one hand ‘natural’ meant that the colours would aim to match the perception of reality, and at the same time that there should appear a more direct link between object and image, one that was not procured by hand in the manner of make-up. ‘Natural’ colour film strengthens the bond between image and reality through a chemical emulsion and thereby anchors a ‘real’ look in the image. The manual labour of colour, in the use of stains and stencils, was thus transformed into an immanent material relationship.

The first feature-length film in *Technicolor* is *The Toll of the Sea*, from 1922. Like many of the early colour films⁹⁴ *The Toll of the Sea* is located in a far away and exotic elsewhere: colonial Hong Kong. In this ‘elsewhere’ the Western colour palette had a sort of colonial undisclosed space in which to test the colour range.⁹⁵ The procedure, known as *Technicolor* process 2, was based on two colours: red and green located on two separate strips of film. In 1922 *Technicolor* was still in the testing phase and the colours were often shifted. Blue was shown as almost brownish and white skin tones appeared pink. Within the Western film setting constructed to resemble an ‘elsewhere’, these

⁹⁴ For example *The Black Pirate* (1925), *Legong – Dance of the Virgins* (1934) or *The River* (1951)

⁹⁵ Note the implicit analogy to the experimental sound film artists in the previous chapter. Here, the testing ground for the material is not the studio of the artist, but is rather negotiated within the film sets themselves, which are constructed so as to suggest the imaginary landscape of the elsewhere.



Fig. 19. *The Colonialists in The Toll of the Sea*, 1922.

colours could be tested without the risk of their becoming too much and so slipping into the obscene. Grafe writes in *Filmfarben* (2002:20): 'In all considerations on colour film the colourful emerges as a nightmare',⁹⁶ which film history exiled to the place of the exotic or carnivalesque. That is why these early experiments are often set in an 'elsewhere': so they would not be a risk for 'here'.

The story of *The Toll of the Sea* is adapted from *Madame Butterfly*, an opera by Puccini from 1904. The setting is moved from Japan to colonial Hong Kong. The main character, Lotus Flower, played by Anna May Wong, appears in a cinematic space overflowing with colours. She enters this space like an ornament, which is indeed exactly what is desired by the colonialist. But her

⁹⁶ My translation: 'In allen Überlegungen zum Farbfilm taucht als Schreckgespenst das Bunte auf'.

white lover obeys the bourgeois order and decides to return to the United States without her. Lotus Flower remains tied to her own, distinct colour space: desired, but kept at a distance (fig. 19).

The colour spaces of *The Toll of the Sea* overflow with saturation. The clothing of the figures as well as the spaces that surround them are immersed in colours. Although the chemical emulsion is meant to guarantee a link to reality and a true reproduction of nature, the red-green combination links inevitably with the fictional, fantastic and magical. The sense of colour as 'make-up' remains, but is transferred to the figures that inhabit these colour spaces, who now appear artificial and exoticised. Feminised fantasy figures associated with botany or wildlife, their names tell their own story: *Lotus Flower*, *Toy Sing*, *Rose Li*, *A Flower of the Orient*.⁹⁷ For Wong, Lotus Flower was the first in a long line of roles where she played the stereotype of the 'China Doll': the Asian woman who sacrifices her life to the unattainable love of a white man. The tradition of the spectacular that characterised the hand-tinted colours in early cinema thus transitions into the exoticised characters of the first *Technicolor* films.

In these films the chromophobia – a term coined by Batchelor (2000) – of the West, a fear of corruption by colour, manifests in the continuous bond of colour to the feminine, exotic and primitive as well as queer and pathological figures. Colour is simultaneously desired and marginalised. Certain bodies are attached to specific colour spaces, while at the same time others can keep them at a distance. By this means bodies are organised in a *here and*

⁹⁷ Wong in *Bits of Life* (1921), *Drifting* (1923) and *Old San Francisco* (1927)

elsewhere:⁹⁸ in a male, realistic figure, in serious black and white; and in the colourful feminine figure (of desire); in the Occident and the Orient.⁹⁹

The first *Technicolor* process of the 1920s was soon replaced by another. Its successor, first released in 1928, offered improved visual quality. As opposed to the limited red-green spectrum of previous films, the new process used a camera that simultaneously exposed three strips of black-and-white film. The three negatives that resulted were used to produce three printing matrices, which in turn were used to print a full-colour projection print. The new *Technicolor* process demanded high film budgets, because of the added lighting, the triplication of the necessary quantity of film and the expense of producing dye transfer projection prints.

The studios could not purchase the cameras but could only rent them along with the camera technicians and a 'colour supervisor'. For many of the *Technicolor* films produced from the mid-1930s until the end of the 1940s, the co-owner of the company Natalie Kalmus became – by contract – the colour supervisor. Kalmus was known for the strictness of the colour regime implied by her concept of 'colour consciousness'. 'A super-abundance of color is unnatural, and has a most unpleasant effect not only upon the eye itself, but upon the mind as well' (Kalmus, 1935:142). As a colour consultant she conducted her work with a view to controlling the exaggerated abundance of colours within the film production process. Colour still needed a control

⁹⁸ Godard/Mièville in 1976 made a film called *Here and Elsewhere*

⁹⁹ See also Jaikumar (2001) on *Black Narcissus* (1947): 'The coherence of an imperial narrative is predicated on the continuation of the colonial place as a backdrop (...). However, the threat of narrative collapse is averted by a visibly modernist preoccupation with the (imperial) self and the film's redemptive theme'(ibid:58f).

authority – this didn't change with the new process – but with colour and material becoming increasingly identical, as the emulsion was now situated on the celluloid strip from the very beginning, the relationship between control and testing ground shifted. Increasingly it came to be negotiated within the film sets themselves. 'The design and colors of sets, costumes, drapes, and furnishings must be planned and selected just as an artist would choose the colors from his palette and apply them to the proper portions of his painting' (ibid:140). And although the material still needed to be controlled, the film sets were now designed according to the requirements of the material and not the other way around. And yet colour still 'lagged behind', since it was applied to the costumes, props and sets. Even Kalmus understood her role as that of a sort of guide to realism. She applied her knowledge of what the material required to her idea of how colours should be used on set. In these conditions, with high levels of brightness and heat, the controlled studio environment became a laboratory of material reality.

4.2. *Rainbow's Gravity*¹⁰⁰: Synthetic Colour, Synthetic Memory

In the early 1930s, at a time when Hollywood production studios were bound to contracts with three-strip *Technicolor* – which was a material highly demanding of light and electricity – the research towards a single strip mono-pack colour

¹⁰⁰ Obviously the title *Rainbow's Gravity* refers to Pynchon's novel *Gravity's Rainbow*, of which Kittler noted: 'And since 1973, when Thomas Pynchon's *Gravity's Rainbow* was published, it has become clear that real wars are not fought for people or fatherlands, but take place between different media, information technologies, data flows' (Kittler, 1999:xli).

film process resulted in a sort of 'race for colour'.¹⁰¹ This race began in the early twentieth century with the manual work of tinting and toning described above, but at the beginning of the 1930s there were quite a few different colour film stocks around, all of which were duplex colours: *Agfacolor* (1932), *Gasparcolor* (1933) and *Kodachrome* (1935) were the most common. *AgfaColorNeu* followed in 1936.¹⁰² As noted above, experimental filmmakers were given these colour film stocks to test the material under development, and they produced animated commercials and synesthetic avant-garde animations.¹⁰³

AgfaColorNeu was developed in the mid-30s in the laboratories of the Agfa company. Its production begun in the Agfa film factory in Wolfen in 1936. *AgfaColorNeu* is named as one of the first subtractive single strip (mono-pack) film stocks worldwide. The development of such a single strip colour film resulted from the demand for a film stock that was cheaper and less materially wasteful than *Technicolor*. *AgfaColorNeu* was characterised as the colour film process that would supersede *Technicolor* on the grounds of cheapness and convenience.¹⁰⁴ The Agfa material promised easier handling, suitable even for amateur use and outdoor shoots, and the first experiments in motion picture film were made at the Summer Olympics in Berlin in 1936.¹⁰⁵ The mono-pack process became increasingly prominent, and further research resulted in the

¹⁰¹ *The Race for Colour* is the title of a BBC1 documentary, broadcast in 2012, which investigates 'who actually came first in the race for colour?'

¹⁰² See Industrie- und Filmmuseum Wolfen (ed), 1999:9.

¹⁰³ See: *Tanz der Farben*, Hans Fischinger, 1939, filmed on Gasparcolor, or *Zwei Farben*, Wolfgang Kaskeline, 1933, a commercial animation for Ariston Cigaretten.

¹⁰⁴ See Finger (2001:13)

¹⁰⁵ See Koshofer (1988:89).

first feature film *Frauen sind doch die besseren Diplomaten*¹⁰⁶ in 1941. Despite this alleged success story, *AgfaColorNeu* was not only a product of the 'race for colour' in the film industries, but also had fundamental connections to the history of the chemical industries in Germany from the late nineteenth century onwards. The production of photographic chemicals originated in the synthetisation of dye stuffs in the nineteenth century and the rise of a synthetic supplement industry, especially since WWI, with an 'increasing concentration and trustification of the chemical industry ... ' (Leslie, 2005:143). The beginnings of the industrial production of this mono-pack colour film stock is contemporary with the Nazi period in Germany. Hence colour film was not simply accidentally invented within the framework, but was rather *a by-product* of the German economy of the 1930s.

The Agfa film factory in Wolfen is referred to as the birthplace of single strip mono-pack colour film. Throughout its history, from 1909 until it closed production in 1994, the Agfa factory in Wolfen had been a workplace for mainly female workers. The workers there were involved in so-called unskilled labour that didn't demand great physical strength. Of course this was a deliberate misapprehension, since the work, which took place in almost complete darkness, and involved significant exposure to toxic chemicals, was surely physically demanding and exhausting. 'Operating perforating machines, operating selection machines, packing up; everything needed swift woman hands. (...) They had to have an incredible finger dexterity, yes, and I do not

¹⁰⁶ Women make better diplomats, Georg Jacoby, Ger 1941.

know if men could have done it as well'.¹⁰⁷ Film stock production takes place in the dark. The work itself remains invisible and in the hands of women. Drawing on Roberts (2012), 'factory work has been systematically expunged from cinema', and Nazi cinema was no exception to this, although work obviously played a distinct role within the Nazi propaganda apparatus. There was actually a lot of footage of the Volkskörper working for the Third Reich. One film scene from a newsreel programme shows Red Cross nurses packing presents for German POWs; a close up shows a book titled *Chemie erobert die Welt*.¹⁰⁸ The footage shows how the workers are playing their part on the home front and within the National Socialist machinery (see fig.20).



¹⁰⁷ Ingrid Edner, former doctor in charge at the ORWO film factory. Interview in a TV documentary, *Original Wolfen Die Geschichte einer Filmfabrik*, Anna Schmidt, Dirk Schneider, MDR/2011. In 1964 the factory and products were renamed ORWO, to distinguish the Socialist GDR factory from the West-German company Agfa. Note that this quote is from a woman who worked there in the 1960s up to the early 1990s. and not during the Nazi period. See also footnote 112 below. The role of the film factory as a women's factory had been the subject of several documentaries, not least because the factory and the workforce remained virtually the same until it closed down in the early 1990s. See also note 90 and the similarity in the description of the work.

¹⁰⁸'Panorama – eine deutsche Farbmonatschau für das Ausland 1944/45', Deutsche Wochenschau Berlin

*Fig. 20: Nurses pack parcels for German POWs on the homefront, filmstill
Rainbow's Gravity, 2014*

The way in which work patterns were documented during the Nazi period indicates a sort of glorification of factory work as well as a glorification of the de-humanised working body. The (women) worker is made fully subject to the national project of war production. Rabinbach, considering the motion studies of the nineteenth century in relation to the 'reactionary modernism' of the Nazi period, draws similar conclusions. He refers to the work of the German right-wing engineer Arnhold: 'National Socialism had demonstrated that "it is possible to unify man and machine, that they must not assault each other"' (1992:285).¹⁰⁹

However, we don't see the actual production of the film stock in the factory itself. Such material productive labour did not end up in the colour film archives, or indeed in any archive at all. A feedback loop, in which *AgfaColorNeu*, defined as a 'material witness' present on the Nazi film sets, was itself used to film the production of the film stock, was never made.¹¹⁰ And yet, despite this, information on what the working movements looked like can still be ascertained, most of all from the machines that are still exhibited in the former production line, which has now become a museum.¹¹¹ Their sounds, rhythms and designs hint at the absent body of the worker:

¹⁰⁹ See also Karl Arnhold, *Senseless work is Un-German* (1936) in Rabinbach (2013)

¹¹⁰ There is actually documentary footage, as well as photographs, from the GDR period, most notably in a (black and white) commercial film about the factory titled *Film and Faser*, GDR 1960, 26 min. But also this film struggles with the problem of having to portray work that takes place in almost complete darkness and thus mostly shows the work around the actual production.

¹¹¹ Today the site of the factory houses the industry and film museum Wolfen. The oldest production line, dating back to 1909, when the factory was built, has been preserved and transformed into a museum.

Hold, pick up, go back and forth, pack and unpack, arrange and rearrange, transport. Check the correct courses, splatter, twist, clean the rolls, spoon boiler, open and close, cool, press, distil, dyeing tests, roll, compress, renew and reinvent, faster casting, develop, transfer, measure time, reverse, write, note, synchronise, clean, compress, screw, unscrew, pack, control temperature, operate, enlarge, streamline, become more effective, pressure, pass laboratory, assemble, operate machines, try, concentrate, measure, detect, monitor uniformity, develop, replace the coils, machinery parts, stacking, point, instruct, assign, learn, consider the layer of the film.

In descriptions and documentations concerning the work in the Wolfen film factory, the physical conditions of film stock production 'come to light':¹¹²

It was quite dark, you couldn't see anything, only feel. (...) We worked quite in complete darkness, had very little green lighting. You had to always call: Caution! Caution!

The dark room had a certain temperature. Rather cold than warm (...) When I came out I wore glasses, to protect the eyes from bright light.

¹¹² Note that these are descriptions of women who worked at the ORWO factory. As mentioned above, in 1950 the Agfa factory in Wolfen had been renamed ORWO (Original Wolfen). These quotes are from women who worked there in the 1960s up to the early 1990s. Although the procedure and machines remained the same after 1945 (as, I assume, did the working environments and worker movements), this discrepancy needs to be considered. They were not working there during the Nazi period.

My work place was at the Pulvrich photometer. You look into a device with two split lenses, you had to adjust the colour then, those were great difficult conversions (...) It was an easy job apart from the 'Begiesserei' and the smells. We were clean and it was easy work. That's why we were probably a women's factory (...) We're not all sick, of course, many have died from the disease, the sensitive ones, but not all.¹¹³

The production left effects on the bodies of the workers. The workers' hands and whole bodies were exposed to the toxic chemicals. Colour emulsions injured, bruised, and harmed them.

The time spent working was measurable in the amount of material produced. Rules of efficiency and economy could be applied in order to reduce these times. National Socialism reinforced industrialised work. In a way the work descriptions follow a logic implied by the writing of the Gilbreths – a labour process focused on efficiency and the perfection of workflows. The difference with the project of the Gilbreths, despite its own nationalist intention of increasing efficiency for the sake of US-American capitalism, lies in a militarisation, nationalisation and dehumanisation of labour: *The national project of colour film*. The worker appears only in a completely dehumanised setting and fascism rules 'as a type of capitalism' (Leslie, 2005:12). The way in

¹¹³ All quotes from Behnk/Westerwelle, 1995, my translation. During a research trip to Wolfen in 2012, we met a few of the women who were interviewed in Behnk/Westerwelle's book as well as a few other women and we asked them about their workplaces at ORWO. Their recollections of the work procedures were more or less the same as those described in the book.

which National Socialism conceptualises the factory leads to the catastrophe of annihilation through labour.¹¹⁴

The industrial colour film production at the Agfa factories was part of a massive German chemical industry conglomerate formed in 1925 and named IG Farben, which literally translates as 'community of interests of dye industries' – IG Colour. At the time the merger made it one of the most powerful trusts worldwide. It contained such a variety of companies and product lines that they could own and control almost all of the production lines involved in the manufacture and distribution of their goods (for example, commercials for plastic products could be filmed on *Agfacolor* film stock, fig.21).



Fig.21: Animated commercial for the Volksempfänger. They march out of the factory and into every household. Filmstill Rainbow's Gravity, 2014.

During the Nazi period the conglomerate played a major part in Germany's policy of rearmament and in the exactions that were imposed on occupied countries.¹¹⁵ IG Farben was profoundly involved in the carrying out of mass

¹¹⁴ see Rabinbach (2013)

¹¹⁵See Schmelzer, 1969, 61f. Schmelzer writes that already in 1937 the Agfa factory applied to become a 'Nationalsozialistischer Musterbetrieb' (National-Socialist flagship factory) (ibid:63).

killings by the Nazi regime. The company built and ran the Buna factory in Auschwitz and exploited thousands of slave labourers in all subindustries, as well as at Agfa.¹¹⁶ Degesch, a sub-company of IG Farben, produced the nerve gas Zyklon B, which was used in the gas chambers of the extermination camps (see Leslie, 2005:186). The Agfa factory in Wolfen produced all sorts of war-related products, such as synthetic silk for use in gas masks, backpacks and parachutes. This line of goods was the backbone of the Agfa company's contribution to war production (Schmelzer, *ibid*:61f). From 1943 on, Agfa forced women from the Ravensbrück concentration camp to work in their synthetic fibre factory (on which see Schmelzer, *ibid*:80).



Fig. 22: Site of the former satellite concentration camp in Wolfen. According to a local historian, the poplar trees on the left side were planted to commemorate the site in the 1950s. Filmstill Rainbow's Gravity, 2014.

¹¹⁶ See Schmelzer, Von AgfaColor zur Zwangsarbeit, http://www.cbgnetwork.org/Ubersicht/Zeitschrift_SWB/SWB_1997/SWB_01_97/AGFA___Zwangsarbeit/agfa___zwangsarbeit.html retrieved 03/06/2016.

Agfa had a special satellite camp built at the edge of town to place the women from Ravensbrück. Today a building supply store stands on the site.

Were there protests when the store was built in the 90s?

... No. There were no protests.¹¹⁷

What you see there today is: a row of poplar trees along what used to be the fence around the camp. They were planted in the 50s.¹¹⁸ (fig.22)

The workers were contained in the darkness of the production line. The work in the film factory did not gain visibility except in the trivial sense that the film stock was produced and used. Colour film production, considered as part of IG Farben's war production, fulfilled its duty on the home front.



Fig. 23: Partial view of the Wollheim Memorial outside the IG Farben Building in Frankfurt, filmstill Rainbow's Gravity.

Outside the main building of the University of Frankfurt a memorial for the slave labourers of IG Farben was built in 2008 (fig.23). The university moved to the site in 2001. Before, the building had a long and complicated history of

¹¹⁷ From an interview with Claudia Simon, Heimatverein Wolfen, June 2012

¹¹⁸ From the original script of *Rainbow's Gravity*, see appendix 5.

continuity and conversion. The IG Farben Building was built in 1928–31 as headquarters of IG Farben.¹¹⁹ It was built not as a site of production, but as a site of administration. Within this built structure IG Farben could present itself as a model of 'Third Reich' bureaucracy. Its panoptic architecture reflects the paranoid state of satellite expansion; the building's wings spread out like a built hierarchy, bound to the centralised head-management.

The head offices of the Agfa factory in Wolfen, built in 1936–39, have an obvious resemblance to the IG Farben Building. Again, the building had administrative functions as well as laboratories and an auditorium. Today it serves as the town hall of Wolfen. The building also houses the city archives in its basement. The archives inherited large parts of the company's archives when the factory finally shut down in 1993: Amongst them were a student thesis from 1979 about the satellite camp of KZ Buchenwald in Wolfen;¹²⁰ a few archival boxes with personal possessions of prisoners of war; a copy of a newspaper article from 1967 about the story of two former prisoners who came to visit a woman in Wolfen.

In Frankfurt the Wollheim memorial seeks to make the historical inscription to the site apparent –as if providing a caption to the site – while in Wolfen a file in an archive appears too real to deal with; we looked at an archival box of personal belongings of deceased forced labourers, with letters to their relatives and photographs. The encounter with both forms of memorial matter – the indexical designation of the memorial design and the personal belongings in

¹¹⁹It was planned and designed by Hans Poelzig, one of the main figures of German Neue Sachlichkeit (New Objectivity)

¹²⁰ Brigitte Müller, Eva-Maria Proske, Günther Weick: Die Aussenkommandos des KZ Buchenwald im Bezirk Halle, 1979, ifm Wolfen, Nr BA 271

the archive box – shows the complexity of memorisation between distance and involvement. And it potentially bears an analogy to the encounter of historical distance and closeness that we experience with archival colour film. Such an irresolvable situation became crucial for the way we developed an archival and memorial practice in *Rainbow's Gravity*, in a way these two sites of memorisation show both the practice of bringing to light, coming to terms with and the insistence of non-reconciliation that we aligned with the reappearance of the Nazi colour spectrum

In his documentary *I was a slave labourer* (UK 1999), Luke Holland used a short scene of archival colour footage. In the film, this particular footage illustrates the story of Norbert Wollheim, a survivor of and slave labourer in IG Farben's Buna factory in Auschwitz. Holland did not assert any direct connection to the *Agfacolor* film stock that was used to film this scene; and indeed no mention is made even of the fact that the material is in colour. The footage seems to fit naturally in the storyline of his documentary about Norbert Wollheim, who was the first to file suit against IG Farben, seeking compensation for slave labour.¹²¹

In their attempts to establish what it shows, several sources attribute different locations to the footage. The title reference in the National Archives says 'U-Boot Bunker im Bau',¹²² and indicates that this is very likely in Bremerhaven (Northern Germany).

¹²¹ See http://www.wollheim-memorial.de/en/norbert_wollheim, retrieved 23/06/2016. The memorial in Frankfurt is named after him.

¹²² Construction of a submarine bunker, U-Boot Bunker im Bau (no date, Bundesfilmarchiv).

In the scene you see long panning shots over a construction site, two guards in uniform walking up and down, the camera tracking their shot, then in medium shot a group of people unloading a van filled with sand bags. They are wearing the striped uniforms of KZ prisoners and work in a chain. They recognise that they are being filmed. One person looks directly into the camera.

It is the only colour footage that I've come across in my archival research in which slave labourers can be seen.¹²³ Significantly the title of the film does not name the workers, but uses a passive nominative form, 'submarine bunker under construction'. The scene in the film shows what is supposed to remain without image (and here I stress that I don't mean the depiction of the labourer in general). But the footage is in disjunction with the proposition of the *unimaginable*.

This footage pretends to document the economic logic of building and construction during wartime. In that sense it does not stand out from other images from the period. But it seems to actually document something beyond the conformity of the other archival colour footage. While capturing the construction of the bunker on colour film stock, almost as if witnessing something by accident, colour appears as it were at the scene of the crime being committed. We see the crime of slave labour as it is committed – in colour – in this very sequence.

Other records mention that the crimes of IG Farben were indeed captured on the colour film material.

¹²³ This of course does not mean that no such footage exists or existed elsewhere.

‘Very macabre is the fact (...) that also the site of the crime, Auschwitz, was recorded on AGFA COLOR. The director of IG FARBEN, Ambros, responsible for the mass murder at Auschwitz, commented in his letter of 14 November 1942, when the gassings were already underway, that the AGFA “has graciously agreed to develop images of the construction site of Auschwitz on AGFA COLOR-negative films (...)” On 1 March 1943 Ambros thanked the head of the film factory Wolfen, Dr. Gajewski, for the generous support that made it possible “to record the construction of our plant in Auschwitz in coloured pictures and enlargements”. Ambros asserted that the Executive Committee would be very happy, if it were possible, “to depict the construction of the Auschwitz works in perfect form, as it is likely to be for the IG story of very special interest”’ (Schmelzer et al., 1969:68).¹²⁴

Schmelzer comments, ‘the content of these letters is characteristic of the spirit of IG Farben, which abused the colour process for their crimes against humanity’ (Ibid). This accusation may reflect my main argument here, namely that the colour process did in fact participate in the violations of the Nazi regime, and in multiple ways, although I shift here from assigning colour a passive role (of being abused by the Nazis) to an active form (of participation). Colour as an addition to the image participates in and contributes to film’s propaganda value. Furthermore – as implied here – as a *material* presence at the scene of the crime, colour participates in the production of an image ‘in perfect form’.

¹²⁴My translation

The material is believed to be lost. No trace of it can be found today.

Schmelzer only found these letters in the company's archives at the film factory in Wolfen (see Schmelzer, 1969). We will never see what *AgfaColorNeu* witnessed while performing its task: 'to depict the construction of Auschwitz (...) in perfect form'. We have an entry in an archive indicating that the footage existed in colour. And yet, the pictures are not there. The letter only gives a hint of a potential archival entry, but the file remains empty.

This absence/disappearance resonates in the post-war discussion on the un-representability of the Shoah. This discourse is based on Adorno's reflection in *Negative Dialectics* as to 'whether after Auschwitz you can go on living' (1973b:362f). Koch (1989) examines the discussion and concludes that the question about an aesthetics after Auschwitz is either a moral or material question. If we think of the absence/disappearance of what the material *Agfacolor* might have had witnessed – on film and in colour – then we are led to consider too the position of the implied spectator, who 'described a sense of being not quite there, of not playing along, a feeling as if they were not themselves at all' (ibid:363). In reference to the discussion around Claude Lanzmann's *Shoah*, Koch emphasises Lanzmann's image of absence: 'The image, the imaginary ... is the presence of an absence which is located outside the spatiotemporal of the image. Lanzmann remains strictly within the limits of what can be imagined: for that which cannot be imagined, the concrete industrial slaughter of millions, he suspends the concrete pictorial representation. There are no images of the annihilation itself; its representability is never once suggested by using the existing documentary photographs that haunt every other film on this subject' (Ibid:21). Didi-Huberman (2008) and Lanzmann (1985) are at opposite ends of the discourse around the

unimaginable and that which cannot be shown. For both accounts it is nonetheless important to highlight the role of memory structures within the imaginary. I want to suggest that the way we used archival footage in *Rainbow's Gravity* aims to take both positions into account; the position of understanding the image as a material 'silent' witness that needs a contemporary reading and the position of insisting on the impossibility that the images can represent the horrors of the Shoah. To repeat my point about Adorno, to think of the film stock as a material witness rather than a visual representation would suggest a discourse constructed from a different angle. Of the material, and indeed of 'the inhuman part of it', which is, as Adorno says, 'the ability to keep one's distance as a spectator and to rise above things', we can say ultimately, 'in the final analysis', that it is 'the human part, the very part resisted by its ideologists' (Adorno, *ibid*). As a material witness colour film can tell us more than what we see (or don't see).

At the same time, the footage *U-Boot Bunker im Bau* does show slave labour, but we can only see that today. To the people who filmed it, it did not become visible, since this labour didn't appear to them as a violation. An irresolvable distance opens between these two terms: the image that cannot appear and the one that appears only to the gaze of a spectator who can recognise it, because they already know what it is that they are looking at. And, yet again, the point where these two images meet is here: in the fact that both films were filmed in colour. This is what unites the absent, disappeared one with the one that – in a Benjaminian sense – comes to light only in the *here-and-now* of its historic context. The technical aspect of colour in the footage is what makes it first of all notable; then it is what gives both films their *afterlife*.

As I seek to understand *AgfaColorNeu* as a material witness, I'm drawn back to the same questions: Why was particular footage filmed in colour? What difference did it make for contemporary audiences that something was shot in colour? And what difference for the researcher's gaze today? From this perspective, there is always an implication hidden behind the material; and this always has a relation to how the colour material is perceived.

In other footage the role of the material witness appeared in less distinct ways. The colour film material that was produced by the propaganda company (PK) of the Wehrmacht worked with a very plain and blatant form of ideology. We see parachute training and aviators.¹²⁵ There are scenes from the Eastern front that look almost like amateur footage of a summer holiday. But the scenes, in fact filmed in occupied Soviet towns, are designed to show the normality of the everyday life of soldiers on the Eastern front.¹²⁶ You see soldiers seemingly socialising with locals, or repairing vehicles. The footage resembles holiday snapshots of Ukrainian landscapes, fields and meadows.¹²⁷ In every other scene, everyone is constantly marching and moving in unison, creating the image of one single entity. The attempts of the Propaganda Company to portray the heroic Wehrmacht may be misunderstood as organic and natural precisely due to the lack of cinematic effort and amateur manner evident in the films' construction. It seemed as if the ministry of propaganda believed that the colours could singlehandedly convey a propagandistic value. The way they

¹²⁵*Panorama - eine deutsche Farb-Monatsschau für das Ausland* 1944/1945, November 1944, Deutsche Wochenschau Berlin

¹²⁶*Rußlandfeldzug, Südfront*, Sommer 1942

¹²⁷*Als Heeresflieger in Rußland (2) - Amateuraufnahmen in Farbe* by Eberhard Spetzler 1941

were arranged on the film strip – layer upon layer with chemical dye couplers to keep the layers apart – indicates how this concept of a unitary whole was developed and (as it were) ‘synthesised’. The emulsions brought this synthetic (artificial) wholeness into being. The couplers could prevent all the colours seeping into each other, but kept them apart in strong reds and blacks and whites. In a sense, the idea of wholeness, of a whole, natural picture of Nazi reality, is not reached through the seductive element of colour but rather through the attempt to naturalise the synthetic (molecular) construction of colour on celluloid.¹²⁸

Kreimeier (2010:306) describes some of the ways in which ideology was employed by the propaganda company: ‘The mission statement of a society that is understood as a psychic, physical and “sensory-motor” whole, is a fiction, which is based on an extremely reified image of the human and a mechanically-functional image of the human community’.¹²⁹ Colour could then also take on the character of a coating whose purpose was to amalgamate society with a fiction of a ‘whole’. Chemical colours perform precisely this kind of reified image of the human, and in so doing they reproduce a mechanically functional image of society: the ‘Volkskörper’ in colour.

However, this fiction was materialised. It did not remain merely fictional. The physical manifestations of the colours on the film stock do exist. But at the same time these films somehow projected a futuristic picture – a *science fiction*, one might say – into the present of their time, thereby taking part in the

¹²⁸ Taking into account colour’s materiality is to be understood as a sort of a counter-argument to the widely spread idea that Nazi fascism was seducing the masses.

¹²⁹ My translation: ‘Das Leitbild einer Gesellschaft, die als psychisches, physisches und “sensomotorisches” Ganzes verstanden wird, ist eine Fiktion, der ein extrem verdinglichtes Bild vom Menschen und ein mechanisch-funktionelles Bild vom menschlichen Gemeinwesen zugrunde liegen’.

formation of this very present. One could see how the nazified body should look, how it should move, how it should become part of the national body in colour. Nazi filmmaker Veit Harlan called this 'Der Farbfilm marschiert',¹³⁰ as if mistaking subject and object. Does colour make the people march? Does colour give the body a rhythm in which to march?

If you watch hours of this material, as I've done in several visits to the German Federal Film Archives and other archives, the dullness and triteness of the footage's colours leave their imprints on your memory. But not because of the rather boring contents of an alleged normality or even because of the studied visual absence of any form of violation or aggression. Instead, you recognise a sort of rigidity and harshness. Everything looks regulated and conformist. No one was walking; all were marching in unison.

So-called *Colourful monthly newsreels* show a portrait of youth activities before the war. We see Hitler Youth boys training as flight controllers. Uniformed BdM girls dance and thereby their bodies morph into ornamental structures.¹³¹

No one in these films ever speaks: they only rhyme in couplets or shout out declarations. The colours are supposed to subject the image to a similar regime of control and regulation, but instead they seep into one another, resulting in a green-brownish and rather unattractive mud. The colours appear rather as emphasis, as a way of disrupting the viewing. Once again, in particular in relation to the use of flags and uniforms; colour is applied in order to create pictorial conformity, or to highlight the uniform movements and

¹³⁰ Harlan, 1943. as cited in Rentschler, 1996(1):325

¹³¹ Bunte Monatsberichte, 1937

conformity. But in a double take, since the coloured choreographies seem to disrupt the dullness, and aim to create excitement through accentuation, but at the same time they seem to blend into and to reproduce still other forms of regulation and conformity. The sea of red flags is seen as just that: as a sea of red flags.

Watching this today, with the knowledge of what is not seen, of what hides behind colour, makes a reading of this history at times so difficult as to be almost unbearable. I want to look away, but the colour film marches right into me.

In fact, although the films vary in their colour range and explicitness, there was no material that was produced from a non-propagandistic position.¹³² Kracauer comments on the variety of the material shot and edited at the time: 'Rather than suggesting through information, Nazi propaganda withheld information or degraded it to a further means of propagandistic suggestion' (1947:278). This corresponds with my above-mentioned observation with respect to the lack of complexity of the footage – its dull and repetitive conformity. Colour supports the retention of information by distracting its viewer and by making their day-to-day surroundings look more appealing and exciting. In Kracauer's understanding of propaganda, the portrayal of German everyday life during wartime would be just as propagandistic as heroic portraits of aviators. What is thus propagated is not simply Nazi ideology, but the psychological atrophy or regression that occurs under Nazism both at the level of form and content. Colour contributed to both. 'This propaganda aimed at psychological

¹³² 'To be sure, all Nazi films were more or less propaganda films even the mere entertainment pictures which seem to be remote from politics' (Kracauer, 1947:275).

retrogression to manipulate people at will. Hence the comparative abundance of tricks and devices. They were needed for obtaining the additional effects upon which the success of Nazi film propaganda depended' (ibid:278). The ability of colour to attach itself to objects plays a part in the creation of propagandistic fictions, but it also constitutes colour's peculiar potential to bear witness, its contemporaneity in relation to the events it depicts. In fact, as I am going to claim now, it may even be actively involved in the formation and dissemination of Nazi ideology.

The way in which colour moves through these different categories of footage also balances something out; it brings the various types of material together under the new heading of colour footage. Colour was a sort of coating that attached itself to the content. Further aspects of the material disappear behind it. Colour was used as a trick or device, something that, in Kracauer's words, allowed its viewer to see the world not 'as it is' but 'as it should be'. When colour plays this trick, it becomes an accomplice.¹³³ Speaking with Grafe (2002:19), one could say that colour refers to nothing but an idea of reality, 'aspects of reality that would otherwise remain unrecognised'. Colour witnesses, but actively, not just as an accidental passer-by. On the other hand, in *AgfaColorNeu* the colour spaces needed to be controlled, because the colourful, the garish, would be considered scary or frightening (see Grafe, ibid: 20).¹³⁴

¹³³ This refers not only to the use of colour film stock back then, but also to how we can approach the material today. It is always already contaminated by Nazi propaganda. From the production line to the viewing deck in the archives, every single frame must be considered with this in mind.

¹³⁴ See above, 'In allen Überlegungen zum Farbfilm taucht als Schreckgespenst das Bunte auf'.

There are two other films that I discovered in the archive of colour films that seem to have a different, more explicit perspective and something of a pseudo-scientific tone. What seems central to these is the way that they act out modes of documentation and research, making rather obscure use of colour film in order to document or situate a 'scientific' gaze. Both follow a logic of pictorial detection that is peculiar to administrative forms of violence. Camera and colour film stock are made in these films into devices for file systems that illustrate and organise racist and fascist ideological constructs. The shift in perspective that leads from the creation of the national body (and the role of colour in such creation), on the one hand, to the categorisation of what gets excluded from such a whole and purified body, on the other, is, in the event, almost indiscernible. Since these two films aimed to reinforce this body, they co-operate in its systems of oppression.

However, seeing these two films today, I am compelled to witness in colour the daily life and normality of destruction. These films within the archive of colour films fill the blank space of that which remains *unimaginable*,¹³⁵ but which becomes even more apparent in its absence. Or, to put the same point differently, colour as a material witness (registration) forces a particular reality upon us by way of absence.

'Im Warschauer Ghetto'¹³⁶

¹³⁵ See above, discussion around l'inimaginable.

¹³⁶ Bundesarchiv - Filmarchiv, Berlin: 106 m / 9'40"; 16 mm, colour, no sound.

This footage is part of the material that was filmed by the propaganda company of the Wehrmacht with a view towards making a film about the Warsaw Ghetto in May 1942.¹³⁷

The first scenes are shot in a market. Slow tracking shots along lots of different goods, potatoes, onions and people selling and trading homeware. The next scene shows a busy street corner. A red street car with a star of David. The red stands out from the greyish brown and black surrounding. Then on the same street a funeral comes along. Many people follow the waggon with the coffin. Some of them have white arm badges with the star of David. Intermission with a few seconds of what might be a mistake, the camera films some brownish red thing and the sky. Then some children in rags in front of a butchers. The shop window has lots of food and the camera films the children staring at the meat. The camera starts panning from bottom to top. It appears that the boys are posing. The scene is repeated, they now appear to be being directed. They come in from the left side and look at the meat again. A woman in fancy clothes goes into the shop. Then a scene of a lot of people crossing stairs. Extreme camera angle from below. Then a scene on a street corner. A series of shots of small boys and young men looking very malnourished, lying on the pavement or sitting on the side of it and begging. The last sequence shows two men loading a wagon with furniture. The scene is repeated, which, again, makes it look as if it must have been directed.

It is crucial to view and review this material not as a document of Jewish life in the Warsaw Ghetto, but rather as a document of the National Socialist gaze that was directed towards such life. 'For the selection of the filmed aspects

¹³⁷ See <http://www.bpb.de/geschichte/nationalsozialismus/geheimsache-ghettofilm/156549/das-filmfragment-ghetto> (retrieved 27/03/2016).

from the Warsaw Ghetto followed the criteria of the National Socialists, which “perception of reality” of European Jewry should be preserved and remembered in the future’ (Horstmann, 2013).¹³⁸ When we look at the reception and circulation of this footage after 1945, what is immediately striking (if predictable) is the speed with which post-war society agreed to accept these pictures as documents. But Horstmann argues that the reality that we see in *Im Warschauer Ghetto* is a forced one, involving a kind of double take: the Jews were forced to live in the Ghetto, so their lived reality was already forced upon them, and then additionally the film was made by the PK (propaganda company), and so represents reality as seen and conceived by the perpetrators. Not only did the National Socialists capture their own (subjective) reality of the Ghetto, but they also shaped this reality so that it could provide the setting for a film, and in addition to this they filmed the Ghetto as a film set in colour. Why? In order to make it more appealing? To make it look more real? Less real?

The second film I’d like to mention here is called ‘Zigeunerkinder – Dissertation von Eva Justin’.¹³⁹ It is apparently shot on Kodakcolor – the first picture shows the logo *KODAK* – and so it might appear to represent a digression from my argument. However, I think that it is important to mention this film here, since the footage built part of a dissertation and thus claims to represent scientific research. The dissertation is titled ‘Lebensschicksale artfremd erzogener

¹³⁸ My translation: ‘Denn die Auswahl der gefilmten Aspekte aus dem Warschauer Ghetto folgte den Kriterien der Nationalsozialisten, welche “Realitätswahrnehmung” über das europäische Judentum bewahrt und zukünftig erinnert werden sollte’.

¹³⁹ Zigeunerkinder - Dissertation von Eva Justin, Bundesarchiv - Filmarchiv, Berlin: 60 m /5'07", colour, no sound.

Zigeunerkinder und ihrer Nachkommen'¹⁴⁰ – its author received her PhD in 1943. The children she used for her research were deported and murdered in Auschwitz afterwards. She focused her research on the 'contagiousness' (*Schädlichkeit*) they represented for the German national body (*deutschen Volkskörper*).¹⁴¹

The film shows a group of girls and boys playing in a sort of school yard, a nun amongst them. They are supposed to march in a circle, practising some kind of dance routine, but they get distracted by the camera and walk towards it. Then lots of children all look at the camera. The camera, slightly out of focus, pans across the group. The kids keep looking at the camera and then walk towards it. In the next scene there are children sitting on a long table and preparing food. Then they start making jokes and some notice the camera. Laughing. Boys make funny gestures. The next scene shows a group of boys in blue clothes all busy with cleaning their shoes. Again they get distracted by the camera and begin to strike poses and joke around in front of it. One boy is nervously jumping up and down while he is brushing his shoes. The next scene shows long shots of a portrait shot of several boys looking very concentrated while playing a sort of board game. The last boy who is filmed is seen laughing, it seems that he's won the game. The last sequence shows boys sitting high up in the trees harvesting apples and putting them into bags. The camera films from below, the footage is overexposed and out of focus. One

¹⁴⁰ Could be translated as something like 'Personal fates of gypsy children and their descendants who were educated outside of their species'. Notably there cannot be a proper translation of the racist word 'artfremd'.

¹⁴¹ cf. after 'Bemerkungen zur rassistischen Dissertation von Eva Justin unter besonderer Berücksichtigung ihrer Haltung gegenüber den darin – neben den Sinti – ebenfalls als "erblich Minderwertige", "Primitive" und Asoziale" dargestellten Jenischen', ed by SIFAZ, Thomas Huonker, Zurich 2011.

boy falls off the ladder. A second boy is seen. He takes an apple and takes a bite.

The footage seems to expend little effort on proving its thesis and is filmed sloppily, most of it slightly out of focus. I claim that colour film works here in a *chromophobic*¹⁴² sense and is meant to reveal the alleged animal-like behaviour of the Sinti children. Their movements and behaviour are portrayed precisely as the opposite of the regimented unity of the 'Aryan' bodies. The comparison of 'non-Aryan' people with animals had been a theme in Nazi film – perhaps best-known in the analogy of Jewish people and rats in *Der Ewige Jude*¹⁴³ – especially in an allegedly scientific context. And colour could work here as a support element, supplying connotations of wildness, of something rather scary, uncontrollable and feral, or non-human – as the word 'artfremd' in the title of the dissertation already suggests. The colour space just as much as the language defines the domain of racist ideology, here concealed under the heading of alleged 'scientific research'.

4.3. Colour as Jargon

In film, colour and language seem to influence one other again and again.

Another use of colour as a manifestation of the bold propagandist strategies of

¹⁴² See Batchelor (2000), see above.

¹⁴³ *Der Ewige Jude*, Fritz Hippler, Ger 1940. In this compilation film, there is a direct juxtaposition of the Untermenschen and the 'Aryan' body, with scenes from *Triumph of the Will* (Riefenstahl, Ger 1935) and others.

Nazi film production can be found in *Farbe im Film* from 1941.¹⁴⁴ The 14-minute film seeks to introduce the new material, colour film, to the public. A harsh and snappy male voice describes the assets of the new *AgfaColorNeu* process compared to US American processes. He talks about the colours and tries to 'colourise' his speech. Speaking always in comparison, he mentions the true depiction of chlorophyll as the most difficult task. *Growing experience, improvement, equal or even better to American processes, increasingly better and better, significantly enhanced reproduction of reds. Further improvement of colour film technology. Enhanced, enhanced, enhanced ...* The film ends with long extracts from the feature films *Die Goldene Stadt* and *Münchhausen*.¹⁴⁵ The film seems unfinished. It develops in fragmentary rushes, a rough edit.

The film gives an introduction to the new product of *AgfaColor* film. It is packed with speech acts that tell the audience what it is that they ought to see. The voice-over sounds typical for newsreel and informational films from the time. These commentary voices are difficult to translate. But their tone, grammar and vocabulary also work to bring about the effect, already analysed above, of propagandistic manipulation. The language that aims to describe the colours is itself absolutely redolent of fascist conformity. The sentences seem almost untranslatable – they overflow with something that was inherent in the German language of the time and which on reflection is best left in German. Adorno implies in *Jargon of Authenticity* (1973a) that German fascism embedded itself deeply in the German language and way of thought. He argues that fascist

¹⁴⁴ *Farbe im Film*, 1941: 382 m, colour, sound

¹⁴⁵ *Die Goldene Stadt*, Veit Harlan, Ger 1941; *Münchhausen*, Josef von Báky, Ger 1943

ideology is performed within and throughout the language and that the language is thus unable to process or come to terms with it.

Could colour film similarly implement fascist ideology? 'Fascism was not simply a conspiracy – although it was that – but it was something that came to life in the course of a powerful social development. Language provides it with a refuge. Within this refuge a smouldering evil expresses itself as though it were salvation' (Ibid:5). In relation to film, at least as it is articulated in *Farbe im Film*, colour might give refuge to fascism just as language does. And for this reason it seems self-evident that Adorno's concept of jargon should apply not only to language, but also to film as a language, too. Colour links to the quality of 'authenticity' on multiple levels both implicit and explicit. The jargon of authenticity unified German society and encourages its citizens to think of themselves as a chosen, genuine people. 'In Germany a jargon of authenticity is spoken – even more so, written. Its language is a trademark of societalized chosenness, noble and homey at once – sub-language as superior language. (...) The jargon has at its disposal a modest number of words, which are received as promptly as signals. "Authenticity" itself is not the most prominent of them. It is more an illumination of the ether in which the jargon flourishes, and the way of thinking which latently feeds it' (Adorno, ibid:9f). Film relates to the 'illumination of the ether in which the jargon flourishes'. We can think in this connection of the colours that illuminate the projection, or of chemical emulsions on film stock that need light and speed to appear. 'For Adorno, the concepts of authenticity and genuineness were long vehicles of bigoted ideology' (Leslie, 2005:188). If we think in these terms, it becomes apparent that colour as the materialisation of *jargon* was used in many of the films of the Nazi period. For example, there were films that appeared to the viewer as

documentaries, that pretended to depict reality and thus to give an 'authentic' picture of social life.

In *Farbe im Film*, the short film for colour film stock, a 'colourisation' of speech is brought about in such a way that colour comes to inhabit fascist ideology just as language does. Everything points towards a brighter, more colourful, better future. Things are constantly improving, are superior, are getting better and better. The constant improvement is both a technical sign of progress and a semiotic sign of moving closer and closer to an objective. The colour film image seems to get closer to reality, while the everlasting durability of synthetic colours aspires towards eternity. Colour as jargon implies this: it represses the fantastical or delusionary aspect of such progress by means of the authenticity-effect that colour film is uniquely capable of establishing.

This film on colour film lays out a fascist aesthetics and language that would soon spread through all the categories of footage that now form the archive of colour films. Such an aesthetic is not only established through the constant repetition of the same words, the same bodies, the same spaces, but also through things like the tone of voices, the repetitive use of causal chains, the colouring of the film stock; and also – and even more importantly – through the tone of the colours, the repetitive use of the same signal colours – red, white, black – that together make up the Nazi-flag. The colour palette provides the vocabulary of film jargon: the red standard comes to measure all other tones against itself. The film *Farbe im Film* is thus not only advertisement for itself – for colour film as a medium – but also for its own aesthetic; it imprints its own vocabulary on the viewer's retina. This colour jargon established the way that Nazi ideology looked and the way that it looks to us today. Their synthetic

character seemed to promise implicitly an everlasting imprint. These colours would not fade. And thus the material projected into the future a thousand-year-long Reich in colour.

But the multiple employment of colour film – as a link to eternity, as a projection of desires, as reality and as dream – still needed the help of the imagination before it could synthesise what did not and does not belong together: a national community in colour. The Volksgemeinschaft imagined itself through colour.

Colour – as an active part of the dissemination of Nazi ideology – had never been a neutral co-product of the time, but had in addition its part in the activation and re-distribution of what Adorno had identified as the *jargon of authenticity*; a sort of coating of reality that served to reduce its complexity.

What we see is colour as a *jargon*. Too bright, too yellow, too brown. Obscuring the facts on the one hand, distracting from the everyday on the other. Overly cinematic and anti-cinematic at the same time: *The national project colour film*.

Colour film has not only been a jargon of its own; it is also attributed to the idea of authenticity. Along with the construct of an 'authentically' filmed reality comes another question, of how colour was related to the idea of genuineness. Here the material properties of the synthetic play a role, since, in relation to colour, synthetic dyestuffs did indeed promise to be genuine, which is to say, in relation to synthetic colour, that they would last: that they would not fade out. In the history of film that we are now examining, it follows that what is genuine is also synthetic, that is, artificial. This misconception in Nazi philosophy perceives nature and naturalness, the genuine and the authentic, as something

outside of time and 'defined in opposition to the social world' (Leslie, 2005:189). 'Genuinely' the German landscape appears in green and brown shades. In fact the synthetic colour film space does not look unnatural. The 'German forest' filmed on *AgfaColorNeu* did indeed resemble the brownish green central European landscapes.¹⁴⁶ The difficulty that *Agfacolor* had in maintaining green tones seemed to collapse the construct of nature into the idea of the genuineness and preserved uniqueness of the German forest. Whereas 'Adorno rejects the ideological construct of genuineness, by exposing its social determination. (...) [and] embraces synthesis as a proponent of life and nature' (Leslie, 2005:190f).¹⁴⁷ In Chapter 1 I have argued for the historicity of nature, and this seems to be of particular importance at this point, where the object under discussion is the status of archive footage as a distinct *opponent* to the Nazi concept of an a-historical nature.

What we learn from the production of colour film is that the material is itself a synthetisation (i.e. secondness) of nature. This is most noticeable in the colourful commercials for all IG Farben's substitute and chemical products, detergents, plastics, medicines, washing powders, and so on, where the objects gain their life specifically through the colouration of animated sequences. Colours participate in giving life to objects, for instance through a process of re-naturalising substances through colour (see Leslie, 2005:191). Objects and synthetic substances get a 'natural', vivid and appealing look or appearance. Colour is therefore related to the image of an object or a substance and to their surfaces, and it thus normalises or naturalises our

¹⁴⁶*Friedliche Jagd mit der Farbkamera* (Peaceful hunt with the colour camera), 1941

¹⁴⁷'But more than this, to insist on genuineness is to make an a-human gesture, ...'(ibid). Again, I would suggest that an 'a-human' gesture could in fact be a material gesture, in the case that of colour.

relationship with objects. Colour film also establishes a 'natural' relationship with chemical substances and consequently makes us accept chemistry, and synthetic products, as a part of human life.

4.4. Synthetic Archive

The archive of colour films within the collection of the German Federal film archives pretends to apply colour as a new category towards its contents, based on a material-based classification. The collection is at first presented as if it had grown organically. Its account stretches from the early colour experiments made at the beginning of the 1930s to representative *Durchhaltefilme* (perseverance films). By the end of the war, escapist 'heimat-kitsch' feature films by the representatives of Nazi Cinema (Harlan et al.) were produced.¹⁴⁸ However, despite the claims of the archive, this categorisation of materials is not new but formed and informed German film-archive politics from its very beginning.

Colour film bore witness not only as a material component of the film stock, but also because of the way in which colour film itself entered the archive. If there ever was an idea behind the national project of colour film, it was to portray – in colour, and in the most spectacular and extraordinary ways – Germany and its national body. In order to collect this work, the archive was already conceptualised as part of the National-Socialist project. 'The authority to make the decisions on what is important, relevant and worth archiving,

¹⁴⁸ such as *Die Goldene Stadt* (1942), *Die Frau meiner Träume*, Ger 1943, *Opfergang* (1943).

accordingly takes place already in the process of creating the film. At this level, they decide also on access possibilities to the archived objects and contents. (...) Film is not a complete and objective picture of reality, but a construction dependent on the respective power structures, captured on that very film material' (Horstmann, 2010:192).¹⁴⁹ As a synthetic matter, colour's ability to witness was emphatically not related to its ability to document the reality of the time, but was instead determined by its role in the construction of that very reality. The task of filming in colour was not to 'document' so much as it was to depict a 'brighter', nazified world. Since the material was more spectacular when it was in colour – and because the material was rarer and also simply more expensive – it was destined to be archived and preserved. 'There is not only a selection of what movies are of archival value and are included in the archive, but even, from the outset, of which content is considered worthy of being archived and should be externalised into the medium of film, that is to say, is filmed. These politics of representation depend on the intention of those who filmed, who decided on the preservation of certain aspects and also on collective memory acts, while other aspects of non-backup can be doomed to oblivion'¹⁵⁰ (Ibid:201). Colour was used to evoke those collective memory acts.

¹⁴⁹ My translation: 'Die Deutungshoheit über die Entscheidungen, was wichtig, relevant und archivierungswürdig ist, erfolgt demzufolge schon im Entstehungsprozess des Filmes und entscheidet auch auf dieser Ebene über Zugriffsmöglichkeiten auf die archivierten Gegenstände und Inhalte. (...) Der Film ist keine vollständige und objektive Abbildung der Wirklichkeit, sondern eine vom jeweiligen Machtgefüge abhängige, im Filmmaterial festgehaltenes Konstruktion'.

¹⁵⁰ My translation 'Es findet nicht nur eine Auswahl statt, welche Filme archivwürdig sind und in das Archiv übernommen werden, sondern schon im Vorhinein, welche Inhalte als archivwürdig gelten und in das Trägermaterial Film externalisiert werden sollten, also gefilmt werden. Diese Repräsentationspolitik ist abhängig von der Intention der Aufnehmenden, die über die Sicherung bestimmter Aspekte und so auch über kollektive Erinnerungsakte entscheidet und gleichzeitig durch Nichtsicherung andere Aspekte dem Vergessen anheim fallen lässt'.

Horstmann explains that the archive that forms the Federal Film Archive (Bundesfilmarchiv) today stems from the 'Reichsfilmarchiv' that was founded in 1935, and which soon after became part of the 'Kommission zur Aufbewahrung von Zeitdokumenten' (commission for the storage of period documents), which itself was a section of the 'Ministerium für Volksaufklärung und Propaganda' (ministry for public information and propaganda). The reason why we can still access and watch the material today is basically due to the archive politics of Nazi propaganda.¹⁵¹ My suspicion and unease thus has a determinate origin – I did feel haunted by the Nazi past, not only by that of the building,¹⁵² but also by the infrastructure on which the archive itself was based.

Since the archive was itself established by the Nazis, it is crucial to note how the collective memory of the Nazi period evolved in relation to this archive in the period after 1945. Colour has played a crucial role in how the National Socialist period has been historicised since 1945. Consequently colour film has had an impact on how collective memory is materialised.

¹⁵¹ Most of this archive got destroyed during the last year of WWII. However, the recoveries were actually claimed as war booty by the Soviets. They circulated in Soviet cinemas until well into the 1950s, finally ending up in the Soviet film archives and also the film archives of the GDR (see Horstmann, 2010).

¹⁵² The main offices of the German Federal Film Archives are housed in a building at Fehrbelliner Platz, one part of an ensemble of Nazi Architecture. Built between 1935–38 as the headquarters of the Reichsgetreidestelle (Imperial Corn Exchange), today the building houses not only parts of the National Film Archives, but also is still in governmental use – parts of the Ministry for Internal Affairs are housed there as well.

In 1965 Erwin Leiser made a critical cinema version of the propaganda fiction film *Kolberg* (Veit Harlan, 1945).¹⁵³ He added an introduction and contextualised it with a *Wochenschau* newsreel programme of the same week when the film premiered in the cinema, as the title indicates. *Kolberg* is one of the feature films whose propagandist content was, and remains, most apparent. It tells the story of the town Kolberg during the French-German War of 1806/1807. Some of the speeches in the film that try to mobilise the masses and preach endurance and perseverance are taken directly from Goebbels and others. In *Der 30. Januar 1945* these speeches and scenes from bombed German cities are inserted into the original film *Kolberg* (fig.24).



¹⁵³ Der 30. Januar 1945, Erwin Leiser, Ger 1965. Although the film is listed under his authorship at the archives at Deutsche Kinemathek in Berlin, in his autobiography Leiser insists that although he started to work on the project, he discontinued the production, because he wanted the insets to be more drastical. 'Der Atlas waren die Szenen, die ich in den Film einfügen wollte, zu hart, deshalb legte ich die Arbeit nieder, und Lothar Kompatzki führte sie zu Ende. Ich lehne die Verantwortung für die Produktion Der 30. Januar 1945 ab, ...' (Leiser, 1996:53)

Fig. 24: filmstill Der 30. Januar 1945, Leiser 1965

The DVD copy of Leiser's film that I watched at Deutsche Kinemathek is entirely in black and white (or rather pinkish brown), although the newsreel footage in black and white was apparently inserted into the colour film. *Der 30. Januar 1945* is an early post-war example of an approach to education through film. The film suggests a critical analysis, with the purpose of exposing Nazi propaganda strategies to German post-war society. It brings together fiction film and documentary newsreel (Wochenschau) footage – and thus colour and black and white film – in order to expose the gap between war reality and propaganda truth; and it reveals the schizo character of Nazi psychology through the examination of two events that took place simultaneously on 30 January 1945, a film screening and a propaganda speech.¹⁵⁴

The compilation film *Hitler's Hitparade*¹⁵⁵ gathers a whole variety of material from the Nazi period and brings it together in a collage of images and music that somehow tries to reveal the seductive components of the National Socialist period, while at the same time exposing the composition of Nazi aesthetics. Without adding an explanatory commentary or educational voiceover, the authors confront the viewer with all sorts of ambivalent emotions that are connected with Nazi film material. It is certainly an undogmatic attempt to present the collective audience with their viewing past. At times facing these

¹⁵⁴See Rentschler (1996(2):269): '30 January: Vice Admiral Schirlitz speaks on German radio: "The premiere of the color film Kolberg took place in La Rochelle before soldiers of all units in our defense corps. Deeply moved by the artistic presentation of the Kolberg fortress's heroic actions, we add our gratitude for the dispatch of the film on 30 January and pledge that we will emulate the courageous struggle at home." On the same day Hitler speaks for the last time on the radio, urging Germans to hold out to the bitter end.'

¹⁵⁵ *Hitler's Hitparade*, Susanne Benze/Oliver Axer, Ger 2005, 55 min.

montages is funny, at times utterly brutal. The colour film material seems to be perfectly suited for such a practice of bringing to the surface concealed meaning, and for bringing up new meanings and connections, because it gives to an author multiple options in the way of juxtaposition and pattern. The compilation film seems to reflect not only on the Nazi film aesthetics, but also on the 'Hitlerisation' of German TV programmes about the Nazi period that were produced after 1990. The circulation of the material, especially the colour film material, yielded a new spectacular mode of post-Reunification collective memory. In one sequence a scene from 'The Woman of my Dreams' is juxtaposed with a sort of militarisation and gleichschaltung of objects and bodies (See Schultz : 330f). Colour is a participant in the processes of memory formation. But it is a distinctly complex participant, because colour can create confusions in a timeline.

First archive: A timeline disruption evolves through watching different archival containers. I could notice the differences between watching a film print and watching the same material circulated online. I noticed how this material had been edited and re-edited. I could also see how the material had aged, its process of dissolution. I could see how the colours were fading, and how the process of ageing and fading can be stopped and reversed through digitisation. But what does original mean in relation to the film archive? The ageing process transforms the material bound to decompose, decay, disintegrate, dissolve, and break down. Likewise every projection impacts on the footage, adds tramlines and scratches.¹⁵⁶ It is a fragile relationship between conservation, restoration and reconstruction of memorial matter.

¹⁵⁶ Including those from my own viewing

Furthermore, the researcher's gaze is not an objective one. The films that I watched left their memorial traces and made me align my gaze. Knowledge that informed my gaze let me question an original look or an original colour tone. The reference palettes which had been used to re-create that look in the restoration process were either derived from the Nazis, and thereby already ideologically distorted, or they were reconstructed in reference to nearly 'natural' tone range, and thereby equally ideologically disturbed. It could not be my intention to align my colour gaze to that original look. Such a practice would align itself – at least in a way – with a memory politics that understands forgetting as a sort of erasure. My interest was not to find out what had been forgotten, but to understand how the process of coming to terms with history since has been inscribed into the material.

In *Rainbow's Gravity*, we decided on a distinct archival practice. From the visits to the archives, I had learned how the sources looked and which alignments and edits the material had undergone during its circulation and transfers across different formats. Each film role that we found in the National Film Archives under the tags 'shot in colour' between '1933-1945' had its own history of circulation in its particular *afterlife* since 1945. Most of the footage had been transferred to different formats, some of them to video, then digital, some directly from film to digital. Each transfer left its own imprint in the archival file. During transfer another logo or timecode was added to protect it from copying. In each of these transfer processes the colours themselves are given new ranges and values. Hues and contrasts are very different in 1980s video than in an archival duplicate from the 1950s.

This notion of simultaneous temporal assemblages also hints towards a calling into question senses of an original look of reproductive media. The traces of historical imprints, much in the conduct of my research practice of going back in time, can be dissected without returning to any origins. When tracing back how practices of standardisation and normalisation of colour ranges were established in the first place, their impact on the contemporary materiality of film colours becomes legible.

In *Rainbow's Gravity* we decided to highlight these historical traces that are inscribed into the material. The footage that we used doesn't pretend to be original. Images we chose to use in *Rainbow's Gravity* were projected from a digital projector. The historical loop which we aimed to create through projecting Agfacolor film footage into the Agfa factory's production line, includes these material traces of digitisation and format transfers. From all these considerations between the archive and the film shoot, I learned that it is not only my archival gaze that needs re-alignment, but that I have to be attentive and accurate in making decisions concerning how the archive footage could appear in our film – that I had to be careful about what we revealed to the gaze of the viewer, as well as in the choice of objects with which the performers in our film would interact.

For the film shoot in the factory in Wolfen we made sequences out of stills with blacks in between. We brought images together along categories of colours, for example reds. These categories were to reveal new or different connections that might bring to light new or unseen information about the perception and intention of the material. But more than that, it was for us a way of going through temporal processes ourselves, not through historical re-

enactment or as a kind of revelation, but rather in reference to Benjamin's *Origin of the German Tragic Drama*, as stated as a conceptual frame of this thesis: A reverse movement of going back in time and excavating single frames is precisely 'that which emerges out of the process of becoming and disappearing' (Benjamin, 1998:45).

Every single frame is contested. Our practice then aimed to work through the footage and re-ed it, but re-editing on location and fragmenting and collaging images through spatial alignments in the factory setting. The path to the past may then surface as the preconditions of its origin. This path doesn't aim for coherence but fragmentedness, while coming to terms with the incompleteness of memorial matter. 'Production is the matter of our own act of reading (which is also speaking) and an encounter' (White, 2013, 208).

In *Rainbow's Gravity*, we show extracts of film footage that the audience might already know (since it is all readily enough available). They might have seen it in feature films and TV documentaries. There is no new or unseen material to discover. In our film on film we rather wanted to reveal the structure of a collective archival gaze. We tried to deconstruct and fragmentise this gaze that also aims to glue together a social if not national body by means of a collective process of memorisation. Were they not almost fulfilling Goebbels propaganda prophecy and archival strategies? 'Meine Herren, in hundert Jahren wird man einen schönen Farbfilm über die schrecklichen Tage zeigen, die wir durchleben. Möchten Sie nicht in diesem Film eine Rolle spielen?

Halten Sie jetzt durch, damit die Zuschauer nicht johlen und pfeifen, wenn Sie auf der Leinwand erscheinen'.¹⁵⁷

The footage seemed to work against us. It invited us to repeat the formal and aesthetic language of Nazi films. We had to break it apart and at the same time show the dynamics of such repetition.

We then brought the films back to where they came from, the darkness of the production line.¹⁵⁸ We re-projected into a museum that was itself haunted by the past. We projected into the dark space of the production line that which was shot on the film stock, aiming to create a sort of feedback loop that would lead to a steady white noise. The darkness also gave the projections a particular surrounding: black is the only reference. We can see the colours not in comparison with one another, but rather emerging out of a darkness that suggests ways in which they might have been seen and projected differently. Another relevant part of our archival film practice relates to the impossibilities that come along with showing and making something visible. Again, this can relate to above mentioned discussion around the unimaginable, since it contradicts again with expectations we still had that the Nazi film archive would reveal and bring to light something to us. Again, in *Rainbow's Gravity*, this conflicted constellation is applied quite literally, when the images flash up in the darkness of the production line, just in the way that 'image is that wherein what has been comes together in a flash with the now to form a constellation.'

Benjamin (1999(3):462)

¹⁵⁷ 'Gentlemen, in a hundred years people will show a beautiful colour film about the terrible days that we are living through. Wouldn't you like to play a role in this movie? Hold on now so that viewers do not hoot and whistle when you appear on screen' (my translation). Goebbels in April 1945, speaking about the film Kolberg, as cited in Friedländer, 2007:7

¹⁵⁸ Part of the film was shot in the film museum in Wolfen, the former production site of the Agfa factory.

Such a conflicted situation of dealing with archival footage, but not wanting to show the images – again – in their cycles of afterlives in (pseudo-) documentary programmes, but rather show them in a way that includes the complications we have. Such a practice to use archive footage involves a coming to terms with our own personal hopes and insecurities and as well our own biographies. The sort of archive fever, which is not as easy to apply to the footage that we were looking at, since the desires to actually see all this Nazi world in colour, is obviously unpleasant to look at. On the contrary and any desires towards the archives were bound to an intellectual and objectivised approach. We were willing to confront ourselves with our emotional and biographical involvements, we thought to have no other way to make ourselves vulnerable in the process, yet to break through the cycles of representation. The script of the film reflects upon that in several occasions¹⁵⁹ and the way the actors move through the factory and approach the film footage is informed by these conflicts. This applies an idea of depicting and representing the body on screen, that is similar to the body that is heard but not seen in *Fugue*; here you can see the performer fail in their attempts to find their bodies relate to the factory setting or to the hyper natural feminised bodies of the Nazi actors or to the jargon of the Nazi film.

Repeating and recycling the pictures in a sense feeds the material back into a circuit of media circulation, and so back into the settings in which I first encountered them. Since the 1970s and then increasingly since the 1990s, TV documentaries showed colour footage of the Nazi period. 'Under the impression of newly discovered film documents an ever unquestioned

¹⁵⁹ in particular through the repeatedly posted question 'Do you remember these images?' Each time the protagonists have a different answer.

fundamental trust of the broadcasters in the monstrous fascination of the traditional coloured image effects as such replaced more and more previous conflicts' (Schafgans, 2008: 3).¹⁶⁰ These documentaries play with a vague intention of spectacle and fascination, promising to show the previously 'unseen' – such as Hitler in colour – and to colourise a collective archival gaze. There are hundreds of these TV programmes and so-called documentaries that show the figures of the National Socialist regime as fascinating, colourful characters, from private footage of Hitler at Obersalzberg filmed by Eva Braun¹⁶¹ to titles such as 'The Third Reich in Colour', 'The Brown in Colour', 'In which Colour is War?'¹⁶² and so on. And, just as Goebbels predicted, no one is laughing or making fun of them.

Schafgans points out that these history programmes 'certainly do not aim to discuss the documentary and historiographical importance of archival images even under perceptual or techno-historical aspects'¹⁶³ (ibid:4). They seem rather to continue to rework a collective memory and become obsessed with

¹⁶⁰ My translation: 'An die Stelle der Zwiespälte, (...) trat im Laufe der neunziger Jahren unter dem Eindruck neu aufgespürter Filmdokumente mehr und mehr ein immer fragloser werdendes Grundvertrauen der Fernsehverantwortlichen in das monströse Faszinosum der überlieferten farbigen Bildwirkungen als solche'.

¹⁶¹ Die bunte Film-Schau, aufgenommen von Eva Braun, no year

¹⁶² Das dritte Reich in Farbe, 1998, Spiegel TV Reportage, Die "Braunen" in Farbe: Die Kriegsjahre 1939 - 1945, 2007, Polar Film, Welche Farbe hat der Krieg?, Spiegel TV Dokumentation 1995.

¹⁶³ My translation: ' (...) Geschichtssendungen, die gewiss nicht darauf abzielen, den dokumentarischen und historiographischen Stellenwert von Archivbildern unter gar wahrnehmungs- oder technikgeschichtlichen Aspekten zu erörtern, (...) '.

analysing every aspect of the Nazi psyche,¹⁶⁴ implying that the lack of distance created through the affective colour imprint might give immediate insight into the psychotic constructions of the Nazi mind.

Again, the question of which material enters the archive and which material is archived by whom becomes ever more relevant. In addition to the footage from the Federal film archives and other public collections, there is also a lot of other footage in circulation. Shot by amateurs and Wehrmacht soldiers, collectors searched for and found these films on flea markets and in estates. The same footage from the same private archives and collections appears over and over again in these so-called documentaries on Nazi-Germany. Amongst these collectors are war fetishists and neo-Nazis.¹⁶⁵

Its use in these TV documentaries as alleged archive material suggests that the viewer is looking at documents and thus in a way neglects both their history as archival material and their origin in Nazi Cinema. However, we wanted to insist on what it means to put the viewer in a position where they

¹⁶⁴ See Rickels (2002), see Theweleit (1989): While Theweleit merely uses psychoanalysis to come to terms with the accomplishment of masculinity within fascism, Rickels rather implements psychoanalysis in order to draw a connection between modernity and fascism. Through the obsessive analysis in these TV documentaries mentioned here, neither of these aspects is really taken into account. They seem to rather enact the psychotic relationship of Germans with their past by purportedly bringing a distanced memory to the foreground.

¹⁶⁵ Or such footage is shown without critical contextualisation at film-historical events at places such as the Arsenal in Berlin. On this occasion, I'm grateful to Madeleine Bernstorff, who told me about a protest against a screening of films from the collection of the known Neo-Nazi, Holocaust denier and amateur film collector Karl Höffkes at Arsenal in October 2013. See also: https://de.wikipedia.org/wiki/Karl_H%C3%B6ffkes, retrieved 02/12/2015.

have to assume the gaze of the perpetrators.¹⁶⁶ By using this archive material, we also re-project – or rather inter-project – into a history that has already been told over and over again. In several scenes this ‘inter-projected’ footage is turned against the viewer in a sort of countershot. The light of the projector blinds the audience, especially in contrast to the low key lighting of the rest of the film. It’s a quite aggressive gesture that anchors the video right in the present.

In *Rainbow’s Gravity* we aimed to address the ways in which authenticity, naturalism and realism were played out through colour. We paid attention to the inauthentic aspects of this process and to the contradictions that are at work in it: to contradictory concepts of space (such as colour, with its property of simultaneously making things distant and bringing them closer), and of time (whether we understand colour pictures as part of a collective archive of their time, choose to stay outside of this collective memory, or even move to the present). Contradictory concepts of nature, such as black and white, are received as more authentic and ‘realist’, and colour as more fantastical, fictional. But then the counterclaim is presented that colour film shows the world as it is: that it gets closer to reality. These conflicting properties of colours might actually reveal the concept of authenticity as a fiction. They may reverse and confuse the idea of originality and truth.

¹⁶⁶ Which is a problem that is almost never addressed or problematised when footage is used. See Clemens v. Wedemeyer’s exhibition *P.O.V.* (sic!) at NBK in Berlin, 2016 and his video *Die Pferde des Rittmeisters* (2016) in which he uses one-to-one the footage shot by his Nazi uncle on the Eastern front in WWII. Although I consider Wedemeyer’s work as far more complex and self-reflexive than the TV shows, I want to problematise the use of filmstills taken out of context and an implemented reproduction of the Nazi’s gaze in catalogues and other promotional material, for an example see the catalogue of the 62nd Kurzfilmtage Oberhausen in 2016.

Every single frame of *AgfaColorNeu* footage is contaminated with the history laid out in this chapter. Working myself through the footage and re-editing it, and excavating single frames, helped me to maintain sovereignty. At the same time, I became contaminated, too. My memory has changed since, and I see different colours now, or at least I see the same colours differently.

This was reflected in the making of the film, which became at once a coming to terms with colour and with my own biographical involvement in the events with which it deals. In *Rainbow's Gravity*, we made other arrangements and combinations of historical structures. Instead of visual narratives, we tried to apply structural strategies, to create patterns that might divert our audience's attention in relation to the film material. We began to use the archive footage, edit sequences, to produce assembly lines of images.

We synthesised film sequences out of single frames. Single frames become like molecules; we are the chemists that create new substances. Being contaminated, we begin to infect others. We taint the fascist utopian concept of a purity of substances; contaminate the fascist idea of a pure national body. We can't show pure visual registrations of colour on film. We can only show what already has a history of being shown before. You can see contaminated images; you see the digitised scratches and tram lines. You see our bodies in the impossible attempt to escape being drenched in red, green and blue. Too bright, too vivid. Colours burn the eyes.

4.5. Unreconciled Colours : Conclusion of chapter 4

The two videos *Red, she said* and *Rainbow's Gravity* both began with a wish to come to terms with colour in film. This task was carried out by means of two specific historical concretions: that of the colonial triangular trade and that of Nazi Germany.

The project of going back in time, as well as the archeological drive that is present in both videos, brings me back to Chapter 1, and to the question of the temporality of the film stock; colour is not the only hinge that determines film's complicated relation with history.

Colour co-produces an insolubility and also non-reconciliation by seeping into the ground and into bodies as chemicality, as a toxic substance. Film colours contaminate bodies, leaving them intoxicated. A collective memory contaminated with colour indicates a will to live in a state of resistance to reconciliation: A collective memory that is not afraid of colours, a colour consciousness that doesn't want to control people or occupy space.

By this means, and in opposition to a chromophobic narrative that places cleanliness and whiteness above the dirty and the colourful, a colour-contaminated history is told. There is no cleansed ideal of history any more, instead we stand in the middle of a coloured mess of everything that ever happened. The contradictions remain unsolved. And yet, they have to remain unsolved. We still have to be affected by the colours and the feelings of closeness and distance they create in us.

And then I get irritated. I cannot find my anger and my grief in the colourful pictures. These feelings do not resonate in the sensation and excitement of the

colours. They are dull to me. *The green tones are dull, the reds intrusive, an ignorant blue, the brown is a mud. The pictures march into me and occupy the thoughts.*¹⁶⁷ I try to set limits but the colours penetrate the retina. Even if I close my eyes, the colours connect with the present and with myself. This takes place today and no longer in a past tense that is treated as completed.

¹⁶⁷ from the original script of *Rainbow's Gravity*, see appendix 3

Conclusion

'Allegory goes away empty-handed' (Benjamin, 1998:233).

Looking

The image-making procedure of film is left with a dematerialised imprint, left behind, left empty-handed. In the course of this research project I made two videos and one film that each scrutinised a different aspect of film's materiality, namely that of colour in *Red, she said* and *Rainbow's Gravity*, and that of movement and sound in *Fugue*.

As I worked on these films, I searched for forms of resistance within the material. The films and the thesis unfolded from my desire for forms that interrupt the constant reproduction of representations of power. I identified history as the core motor in this reproduction and problematised the visual image within history in terms of its representative qualities, which I read against its material qualities.

Digging

Through making the works and writing the thesis, I wanted to achieve a recognition of film's materiality as a historiographic agent that would suggest a different approach to all forms of straightforward representation. I identified this as a processual method, and used Pasolini's text 'The screenplay as a structure that wants to be a different structure' as the basis for the application of such a method. This concept, of a structure that desires another form, I

utilised as a method to look at film, and as a means to unravel the different layers of historical narrative in film's materiality.

This was commenced with an extensive investigation of film's different temporalities, which I developed in Chapter 1. I looked at a number of films and film performances that challenged notions of film as a time-based medium.

From there I went on to compose a specific take on the material history of film. From a temporal distance I looked at certain historical situations that led to changes in the technological process of film, such as the transition from black and white to colour film, from still photography to the moving image and from silent to sound film. These crucial moments in the history of the material revealed historical entanglements and each showed a specificity in their behaviour towards the passing of time. In particular I examined movement: what part it plays in film and how it is linked to the body in the modern environment of productive labour. I drew connections between certain scientific and artistic practices in the 1920s that were all to some extent based on the study of the movements of the body and used film as their scientific tool. This research process found its experimental setting in the film *Fugue*, which allowed me to have the examinations run through a performing body in front of a camera and thus simultaneously synthesise and analyse movement on film. I found a reciprocity at work here between the practice of recording the body on film and the method in which the movement of the body was materialised. Because people see themselves moving on screen, they move as they see themselves.

From this material analysis, I could also detect a complicated relationship of soundtrack and visual track. I identified an interesting interplay at work in the

creation of synthetic sound on film: an interaction between the image-producing device of the projector and the production of optical sound through a light-reading mechanism. Optical sound is a hybrid structure between composition and synthesis. The arrangement of sound and image on the film strip implies a simultaneity that comprises synchronicity. In the film *Fugue*, this again is performed through the movement enacting the sound or vice versa; the ambiguity of direction brings the complexity of the synchronic event to the foreground.

The research on the correlation between film and body culminated in a thorough reflection on the role of colour in and on film. The synthetic chemical aspect of the material was given special attention due to the complexity it provides to notions of nature and history. In this regard, colour on film acquires a contradictory structure, at once aiming to induce a natural look to the image, while at the same time relying for its own production on the manufacture of synthetic dyestuffs. In the video *Red, she said*, this complexity is brought into a performative composition with the aim of making the image participate in its own coming into being. In other words the performer in the image engages with the formation of the image from within the frame. The colours are brought into the film as a retrospective activity.

Through the making of the video *Rainbow's Gravity* I learned to understand that this contradictory structure has an influence on the collective memory. Because the video was composed to unfold the different aspects of colour's materialisation on film, *Rainbow's Gravity* represented the ways in which colour performs the work of memorisation. In its historical entanglement with the Nazi period, the complexities of colour's function as material witness and participant

in the construction of a contemporary picture of nature and the 'national body' came to light.

Bringing all this into the present, in particular through the videos and film, created a sort of new historical narrative. 'New' in the sense that it looked backwards instead of ahead, choosing to *zoom in* on particular stories in favour of contriving any kind of 'bigger picture'.

The Trauerspiel between body and film, between film, science and work

In exploring these micro-histories, I found that film is a structure with a will for transformation. Film doesn't stand still, doesn't manifest itself, but rewrites itself over and over again. Once we take into account the specificity of its material agents, film tells history differently, both because of the nature of its material properties and because of the specific histories of these properties as components of the film image. Three of these components' histories were analysed in the preceding chapters and in the films that they correlate to.

In the case of movement on film, one notion that quickly became apparent was that of collaboration (Pasolini): of collaboration between different components and between moving image and moving body (which itself passes into sound). The temporal structure that is formed in an interdependency of film components establishes the possibility of contestation. Film provides a contested collaboration in colliding movements, sounds and colour ranges.

Because it links the body and science/work, I came to understand film as a discursive practice. Film and movement challenge each other (discursively) in an interplay between the automaticity of the apparatus, the obedience to

mechanised work, the grid of the film frames, and the will to retroactively appropriate history. The production of emotions through habitualised movement reveals a distinct relation to time, since such production is process-based and not result-oriented. This however is an understanding that originated in my own contemporary perspective; it contradicts film's utilisation in the scientific mode. By working within the terms of a discursive practice that assembles a different temporality, there emerges a production of emotionality that is not 'for' or in the logic of capitalist exploitability: 'a "process which does not proceed", a structure which makes of the process its own structural characteristic' (Pasolini:193).

Because film loops and recycles, it offers a different take on history – one that does not reconcile itself with the past. As much as we see in films a disappearing form of 'analogue' materiality, their presence today acquires a new kind of historical reality. Archival and historical material changes the present (and consequently the future), since film is a device that reconstructs and constructs the past. The archival politics and motives for production – why a film was shot in colour – complicate the conception of film as a memory device. If we understand film as a discursive practice, then it partakes as an autonomous participant in historiographic and memorial practices. Film obtains a life of its own. It does not only participate in the construction of reality but builds its own reality. Hence this is a synthetically produced life, and it thus provides a non-linear and re-cycled take on time.

Looking ahead back

Working through the history of film's materiality thus establishes a particular kind of relationship to the critique of representation, a demontage of the image and a re-appropriation of how history is told.

I am, however, aware that this thesis kept on producing and reproducing narrative structures itself, especially in the discussions of the material's uses as a scientific tool, designed to enhance efficiency, as well as in the analysis of the terminus of this 'scientific' efficiency in the dehumanising concept of the body that is so central to Nazi ideology. There were certainly historical loops and narrative recurrences that I would have preferred not to have had to disentangle. On the other hand, the medium of film and the engagement with its materiality gave me the chance to experiment with ways to counter these narratives and historical continuities. I would keep de Lauretis in mind, and repeat her take on using coherence – and incoherence – strategically: 'working, as it were, with and against narrative' (1987:108), in order to be able to articulate a complex structure. In that sense, I have focussed in several situations on the practice of a 'with and against': Bringing a body on film into movement with a will for stillness; letting colour spaces 'invade and occupy' the feelings and thoughts in order to counter precisely an ideological intention of effect. On the basis of my analysis of movements that are resistant to the progressiveness of time, I now imagine a form of artistic production that approaches the negative, a production that insists on the reworking of history. I have aimed to make work that does not move forward. I will continue to refuse to come to terms with the past, but I now see a necessity to work with negativity in a processual way. I spent the time of the research encountering through my own body and feelings the violent aspects of such an inclination to

overcome or, rather, to overbear the past. This journey through film's material history led me to find in resignation and the refusal another kind of goal for a transitory movement that does not move on, but that rather holds to the principle of non-reconciliation with history, and with the bleak predictions that the histories I have discovered foreshadow into the future.

Appendix

1.Script of Fugue (2015)

Fugue

Screenplay by Kerstin Schroedinger

The reanimated screenplay reprinted here deviates from the actual screenplay.

I. A pretext (a situation which has yet to occur)

1. Figure shot. The camera position does not change throughout the film. The camera remains immobile, as if it has not yet learned to change position.

Black. Then white lines or stripes moving irregularly across the frame. Noises occur, they seem to be related to the stripes.

2. A rhythm becomes recognisable, both in the visual and the audible.

3. Intertitle:[00:00:08-00:00:12]

test 1

отказ: preparatory counter-movement

Meyerhold: "... describes the preparation an actor makes before any actual action... It's a kind of gestural prologue, if you like."

4. [00:00:30-00:00:39]

The past has become a habit that shapes every form of present and future new learning.

8. [00:01:53-00:01:57]

Arendt: "You know, what is essential for me?"

9. [00:02:06-00:02:10]

(continues off) "...I need to understand."

10. [00:02:19-00:02:23]

-- End of part 1 —

II. Timer

Metronome, Tennis ball, remote control

Metronome fast beat

Outside (bird's) perspective: While listening to the sound of the projector, we see re-animated images brought into a timeline on a celluloid strip.

III. An element that is not there, that is a "desire for form."

Same camera position. A grid appears and with it an annoying whirring sound.

An automated body moves with the habits inscribed in it over decades of subjection. The movements obey the habit. But this obedience sets free a space of indecision. The body forms a desire to unlearn her habits. Do we desire to be free?

11. [00:02:59-00:03:03]

test 2

посыл: sending off or implementation

Meyerhold: "...is the action itself. Sometimes described as 'realisation'..."

12. [00:03:12-00:03:16]

Arendt continues: "For me writing is a part in the process of understanding."

The sound gives instructions to the body on how to move. Or the movement produces the sound. The ambiguity of the directive is a crucial element in that it makes it difficult to tell whether it is the movement or the sound that is dominating the image.

13. [00:03:25-00:03:33]

The Gilbreths (choir): "Note that the habit saves you from making decisions about the same thing over and over again."

14. [00:03:46-00:03:50]

Anna Gold (fastest typewriter of her time) "I am never tired."

A body that moves within the boundaries of becoming visible. What we see and hear could be traced back to a moving body, but the sounds and images could equally be autonomous. They don't have a human appearance anymore. They become pure filmic sound and pure filmic image. Just like the typewriter, which is not only a word for the machine, but also for the woman doing the job.

15. [00:04:02-00:04:07]

A tragedy!

16. [00:04:14-00:04:19]

She acts under description.

The ambiguous visibility of the body, but hence defining audibility suggests that dematerialisation does not mean disappearance. It is a sort of reclaiming of a lost body, or maybe an attempt to re-appropriate the body within the sound register.

17. [00:04:26-00:04:31]

Repeat.

Form a subversive yet invisible resistance.

Or

Make it re-appear, as what?

Practices: Slowing down? Come to halt? Stop? Dance?

18. [00:04:40-00:04:44]

--- End of part 2 ---

IV. Timer

Metronome beats slowly

V. Same grid and stirring sound, but no body in the frame.

19. [00:05:00-00:05:04]

test 3

Стойка: standing still or fixing

Meyerhold: "It is the rest at the end of any movement."

Metronome stops.

20. [00:05:21-00:05:25]

Rainer replies: "No to moving or being moved."

21. [00:05:48-00:05:52]

Fade in: feeling Gravity's pull

Drawing over the lines of the grid exposes the grid as a source of sound. The sound becomes louder.

5. [00:00:49-00:00:53] (Discontinuity)

Timecode jumps back in time.

The purpose of this training is to 'teach the body to think'.

Meyerhold (off) "Why define such a rhythm for the actor?

It gives freedom within a defined set of boundaries."

6. [00:01:06-00:01:13]

Once the physical action is performed, the emotions will then follow.

7.

I stand up and begin to throw a Tennis ball.

Subtitles while my mouth forms the words:

During the exercise, two actors throw a tennis ball and place the emotional state of their role in their way of throwing or catching the ball. It is an example of Stanislavsky's acting methodology. Here, the actors don't speak text during the scene but form the statement to be expressed through the way that the ball is thrown towards the partner.

8. [00:01:24-00:01:28]

The imitation of life becomes life.

The aim is to have movement at any speed, on the margins of visibility and audibility.

The aim is to break out of the grid and stay within the grid but bend the lines.

Confuse the measurements. Obscure the straight lines. Synthesise the sound.

Modulate the synthesised sound.

Performing as if our bodies could be freed of history. Do we desire a liberated body that moves freely? Do we desire this?

24. [00:06:41-00:06:45]

8. refusal (before the run)

20 seconds of silence. Maybe the film has finished? Impatient noises from the audience. Coughing, someone yawns. Listening to what is not visible.

25. [00:07:00-00:07:04]

-- End of part 3 --

26. [00:07:21-00:07:33]

Empedokles: "For I already have been boy and girl. And bush, and bird, and mute fish in the sea."

The procedure of projection makes it clear that what we hear is what we see and not the other way around.

Silent disagreement, movement in and out of sight, montages of on and off sound.

2. Script of Red, she said

Red, she said.

Script of a video in colour.

Ian: I don't know what I desire and in my imagination it has no colour.

Irene + Mayan: Don't stop. Do not stop.

Ian: It would make sense to give my desire a colour, because it would then have no form, would not become a thing, but would be something that could

be superimposed on the things, that could be attached to objects and would not have to be a thing itself and would not be absent, but present, but without having to have a solid form.

Irene: Today my desire might be blue. Or perhaps you prefer yellow?

Mayan: But the sun is only yellow on paper and sunlight is white light but cannot be painted without colour. I'm not so much interested in painting, also not in the representation of the world. Because when I desire, when I desire in colour, then I would like unrepresentabilities and impossibilities.

Ian: Only intensities pass and circulate and thereby change their colours.

Mayan: I get dressed in the colour of your eyes. Fetishism desires and as it desires, it disconnects the things from their environment and they get a life of their own. And this will be mine.

Ian: And this will be mine. Me in red and the red of your shoes as you dance across the surface. Can a red desire another red? Red shoes commit crimes and seduce.

Mayan: Put me on and I'll teach you to dance and you won't be able to stop.

Irene: She runs down the stairs. Cut, cut, cut. And then out on the balustrade. The camera follows her feet. She leans over a railing and then the falling. The fall colour. The place where the fall stops is the location of the colour.

Mayan: While I would like to give you a violet-coloured kiss on the back of your shoulder, while I feel this desire to do that, the kiss changes from violet to orange, a colour which is kind of funny. The violet is serious, with the seriousness with which my desire usually comes along, but in connection with this place on your shoulder and the unusualness of wanting this kiss just to go up there, is the lousy colour tone gone lost and becomes an orange red or also

a red orange. The colour of fruits. Like apricots, but just like they look in reality and not like the colour, which is named after them.

Irene: Red, she said and no one could resist her.

Ian: If I were a colour, I would not stop dancing in the desire as a longing for another position.

Choir: We need to disconnect red from love. We need to disconnect red from the roses. We need to disconnect the roses from love. We barricade ourselves behind red.

Red as a barricade against a sea of roses, against the icon. Against the order of the world in romance, against the order of the world in couples. Here we stand on the other side of nature. Against desire! Desire against!

1st cycle

Mayan: 1922. The Toll of the Sea is the first feature film

in Technicolor. Colour enters the cinema. It expands. The colours should be shown as long as they remain vacant and unnamed. We see China in red and green. Miracles can happen in red and green. Where there is a red-green desire and we fall in love with Lotus Flower. Technicolor has brought the exuberant colour to the colonies, to give us dreams, to trigger cravings. This desire, however, must remain in China. Red and green are arranged in a here and an elsewhere.

Irene: Technicolor is a company, a brand and a relation to reality. Technicolor is an attempt to come closer to reality. Previously, the colours were fiction.

Stamped, stencilled, tinted hindsight, they were carried into the film. The viewers always knew the location of colour: a retrospective material, that attempted to breathe life into things, pinned to the movements. With the

Technicolor process, watching becomes easier. The colour stops lagging behind but is combined with the objects already on the set. We believe in Technicolor.

Ian: The colours of Technicolor are more real than real, and they can speak both as truth by acting as a signifier, and they can produce counter-realities by producing backgrounds, foregrounds and chasms.

Irene: The colour of truth would be the red of the lips and the shoes and it would be in a Technicolor of approximately 1948.

Ian: The redness of this red has nothing to do with reality, but it speaks to us as truth.

Mayan: This cinematic reality has in my mind a bombastic musical accompaniment. The figures dance through the image spaces of this reality and weigh their bodies always in balance with a painted and draped studio background.

Irene: The most controlled environment of the world, almost like a laboratory.

Mayan: However the colours contain a truth that shows their reproduction as constructed nature. The colours, as they only exist in a Hollywood of approximately 1948. And the reality of this space, the heat and the bright lights and the waste of energy and the heaviness of the camera with three rolls of film, this truth is not present.

2nd cycle

Ian: As I leave the cinema, I see the world in Technicolor. A logo shows the Earth and above the banner in blue. The world is blue and the sky as blue as the news today still are.

Irene: Colours combine, they put not only you and me in relation to each other but instead of negotiate in speech, they thrash us.

Mayan: They make pieces out of us. An affect as a shot or reverse shot.

Irene: A body could be affected by the adding of colour.

Ian: If I dip your hand in a red circle then obtains the colour red a concentration on the levels of your hand, which is then affecting me again.

Irene: Stop.

Mayan: Here I start again. I colourise a memory.. What colour is a memory that is not mine?

Ian: The colours colonise things. They conquer them and discover them, like a paint bucket, that someone pours out over something. The colours colonise things, because they inhabit without asking for permission, and initially refuse to commit to an equal relationship. The meadows are green, roses are red and Nivea tins are blue and when I see a field of blue and yellow cards, I think of Ikea.

Choir: Stop here.

3rd cycle

Mayan: In Europe, they clung to black and white. They love the seriousness and the distance that creates the discolouration of the world. They call it realistic.

Irene: Or neo-realist.

Mayan: Colour can be very risky, almost transgressive. Black and white film is not only a question of money, but also a desire for structure.

Irene: The colours are imported from the colonies to Europe, their names tell: Indigo was more expensive than chocolate. Imperial Blue, India Ink, Saffron,

Jade Lime, Dark Khaki, Curry, Forget-Me-Not, the Spice Route, the Silk Road, trade routes bring Europe the colours.

Mayan: The colour space, as uncontrolled surplus lies in the outside world. There it meets the colonised bodies of colonial films.

Ian: Which are also shot in colour and with sound.

But after the decolonisation the country's own film productions remain in black and white material, colour film is too expensive.

Mayan: In 1977 Godard and Miéville travel to Mozambique in order to collaborate to build a television station. What colours can be used here if they do not want to repeat the stereotypes of a capitalist image production?

Irene: If we shoot in black and white, so we're shooting ourselves in the past. If we shoot in Technicolor we avail ourselves of the means of the enemy.

Ian: How to decolonise a colour range? How to de-historicise a colour range? What colour is an autonomous image?

4th cycle

Irene: It is eight minutes to one. What colour is this time?

Ian: Moving through times and places colour would never remain in a fixed location and therefore would always been already somewhere else, once we had identified and located it.

Irene: The colour arrives as a migrant, as an attribute,...

Ian: ...almost like a character. The time makes us enumerate the colours of things and we must move on,...

Irene: ...because colour won't stay here.

Ian: As apple-red colour could have its next appearance in a completely different context.

Mayan: Apple-red cheeks of the girl with the cherry-red lips.

Ian: So again. The figure changes its colour space and enters another time.

Irene: Technicolorlando!

Ian: In the new time, things are no longer modelled after the colours of nature and colour is free from the places intended for it.

Mayan: Red, green, blue, black, out.

Red, she said.

by Mareike Bernien and Kerstin Schroedinger with Ain Bailey, Mayan Printz,
Irene Revell, Melissa Castagnetto, Ian Joyce

Sounds by Ain Bailey

Colour correction by Sebastian Bodirsky

filmed at 113 Dalston Lane and Rio Cinema London

made with kind support of Elephant Trust London, Kulturbehörde Hamburg,

Akademie der Künste Wien, les complices* Zürich

2011

3. Script of Rainbow's Gravity

Rainbow's Gravity

The film begins with a Flashback. Fade in from black.

I see young women in white dresses.

They revolve around red patterns.

The background is green. It looks sort of like a folk dance.

They create ornamental structures in the pictures,
turning,
rotating
and merging into dots and lines.

Like molecules that join in a dance to connect and thereby create a new substance.

Blonde girls in white dresses dance with blonde girls in red skirts. Turning and turning and turning around.

It's 1944 somewhere in Germany. Scenes from Panorama Wochenschau, a newsreel program to be shown outside of Germany.

Do you remember these images? Who remembers these pictures? Has anyone seen this footage before?

No, I don't remember. At least I don't remember their colours. I might remember this footage, but only in black & white.

My memory is in black and white.

Black & white like in TV documentaries about that time, later. Or black & white as in Schindler's List from Steven Spielberg.

Spielberg said:

"I think black and white stands for reality ... I don't think colour is real.

I think certainly color is real to the people who survived the Holocaust,

My only experience with the Holocaust has been through black-and-white documentaries. I've never seen the Holocaust in colour."

My memory is black/white, although colour footage existed back then.

Black white distances me from the images. It freezes the pictures.

Black white is real but colour is truer. Colourfast is truer than true.

In the mid 1930s, a new colour film process was developed in the Agfa-film factory in Wolfen. AgfaColorNeu.

Three layers of emulsions are superimposed on the celluloid.

Cyan Magenta Yellow

turn into

Red Green Blue

The colours promised to mirror nature, but reflected back fiction.

Starting in 1939, full length color films were shot on Agfa-Color-Neu. In colours truer than true. They don't fade.

Not in a thousand years.

Cut to a woman in a red dress.

Marika Rokk, Ilse Werner, Zarah Leander,

I see Krsitina Söderbaum, her right hand clinging to a bow. She points the arrow at something outside the frame. The cut comes with the shot.

I see a red and white striped target, round. The arrow hits the red.

She shoots again. The arrow pierces the colour. She laughs.

Cut. Now she's riding on a white horse along a beach, wearing a white dress.

Draws the bow and hits the next frame in the next colour.

It's 1943 in northern Germany. The film is titled "Opfergang", which means "journey to sacrifice" and it's made by Veit Harlan.

Do you remember this image?

No

The films promised good weather, nature as nature... but without showing any

reality. The sun always shone.

Colour films made daily life in wartime bearable.

Looking away in colour.

The film material was so sensitive to light, that filming could only be done in sunshine.

Fade out...Meanwhile...

Colours got employed on the home front.

On the home front, thousands of women worked in Wolfen to produce colour film stock. Colours reminded them to endure.

The workers were almost invisible.

What we don't see:

working routines in pitch black darkness.

There was only very little red or green light.

It took thirty minutes or so for the eyes to adjust.

differences in temperature, depending on the chemicals in use.

counter realities of a work that had no place in a film image.

movements of the hands, so skilled that they could perform blindfolded

the smell of the chemicals, coughing,

sitting in the same position for 8 hours, staring at a never-ending strip of film.

Looking for errors.

Sometimes it rained in the factory.

Chemicals dripped from the ceiling onto the heads of the workers.

Today a museum stands on the site of the factory.

In Wolfen, near Bitterfeld, surrounded by chemical industries and abandoned

strip mines. The streets in the former area around the film factory are named: Vistra Street, Film Street, Rayon Street, Workshop Street, Bunsen Street, Cellulose Street.

Film colours, they are basically poison. Layers of emulsion on celluloid.

Chemical reactions bring opposites together in order to produce new things.

The chemists couldn't see the war for the molecules.

They didn't want to see. Didn't want to know.

They didn't want to see, if a crime or a fairytale was filmed with this stock.

Putting together and splitting things apart:

The German homeland became a synthetic product. The national body wore clothes made of Indanthren, ate soup out of hard plastic bowls, washed with detergent from Bayer. The products were given colors and faces in the advertisements, all filmed in Agfacolor.

An IG-Farben colorised, utopian world. "But fascist utopian".

Agfa, BASF, Degussa Hoechst, Degesch Bayer, Buna,

Die Interessengemeinschaft Farben.

"The full name of IG Farben is Interessen Gemeinschaft Farbenindustrie Aktiengesellschaft, meaning: community of interests of dye industries, incorporated.

Community of interest: working together for the common good, co-operation.

You understand"?"

Dyestuffs were only a part of IG's chemical production. And chemicals were only a part of IG's total production.

Synthetic dyes explosives pharmaceuticals rubber Synthetic oil, pesticides, gas warfare, and colour film.

IG established a whole industry of synthetic substitutions. Without IG Farben, Germany could not have waged war.

Chemistry merges contradictions and synthesizes what doesn't belong together. A national community in colour.

What we see is:

Two women, draped in fabrics of different colours. ... They look as if torn from ancient Greece or Rome, wearing tunics in green and blue and yellow.

They look somewhat unhappily into the far distance. ... In the upper left corner is a red flag with a swastika. ... Below you can see an Agfacolor test chart.

A test picture from 1935.

It remained invisible for the audience,

but served as a reference for chemists who adjusted the colour range of the film stock. The red of the flag became a standard value.

The redness of this red bled into all pictures that followed.

A second version of this test picture is its negative copy.

All the colours are inverted.

This pictured defined red as red, but through the red Red, black also becomes Black and white truly White.

Red balance instead of white balance.

The red imprints itself upon the retina and also on the memory.

When I look at it long enough and then close my eyes, I see a green shadow.

Each colour got its place on the celluloid. The meadows were from then on green, the sky blue,

the clouds white,

and the roses red,
all other combinations were declared war upon.

Esther Leslie said: "Red was once the colour on the flag of Communist
revolution

and now became the colour on the flag of bloody reaction..."

"Everything was in Gleichschaltung and any form of aberration was subjected
to a fascist regiment."

"Art was subjected to generate the colours of nature."

Fade in, soft focus, close up.

A picture is projected into the room and pans slowly from the lower right hand
corner to the upper left.

Women's bodies carry the colours in the moving image. As dancers, stars of
musicals: the woman of my dreams, 1944

Do you remember these images?...

No, what I remember is the music...

The sound crackles from the faded colour of the optical soundtrack. A woman,
I believe it's Marika Röck, sings and dances.

I hear rustling on the soundtrack.

Now I remember the pictures from this scene, red, black, and white. She
dances the colours of the flag.

She dances and dances and doesn't stop,

She dances through 1938, 1941, 1944, 1950, 1958, 1962, 1988...

I close my eyes. The colours march into me and occupy my thoughts, the green tones are dull, the red tones intrusive, the blue ignorant, the brown a swamp...

During the war the UFA didn't stop producing.

First the buildings were bombed, then they rebuilt them as film sets, then the sets were bombed,

then the UFA studios burnt down. There is a colour film of this.

I want to see this film. I want to see the UFA in flames.

I imagine film sets as ruins

flaming colors which don't collaborate

Veit Harlan would have been not just taken to court but found guilty, and "Night and Fog" would be shown in colour in Germany.

What the films don't show:

The work leaves traces on the workers bodies. Asthma, eczema, swellings, chemical burns,

What the films don't show:

Some of the workers were barely paid. Or not at all.

From 1938 on, forced labourers from the occupied countries had to work in the film factory. Starting in 1943, Agfa forced women from the Ravensbrück concentration camp to work in their synthetic fibre factory.

By the end of the war, almost half of their workers were forced labourers.

Agfa had a special satellite camp built at the edge of town to place the women from Ravensbrück.

Today a building supply store stands on the site.

Were there protests when the store was built in the 90s? ...No. There were no protests.

What you see there today is: a row of poplar trees along what used to be the fence around the camp.

They were planted in the 50s.

Film colours are basically poison.

They bind themselves to the bodies of the workers, and seep unfiltered into the earth. The ground around the film factory is highly contaminated.

The groundwater is polluted up to 2945.

How long does it take for poisonous materials to break down? The colours seep into the images.

Flashback:

This flashback is to a different time. But the colours remain the same.

It is 1945, a soldier from the Red Army hoists the flag of the Soviet Union above the dome of the Reichstag.

The soviet red flag celebrated its victory An iconic picture in black and white.

But the feature film „the fall of Berlin“ that was made out of this soldier's biography was shot in colour, on Agfa Color Neu.

The very same colour film stock that the Soviets received as reparations.

The very same colour palette continuously in use since the 30s.

The standard red re-appropriated by the red flag of soviet communism. Do you remember this red?

Yes, but the pictures are different. What I remember is the red of the TV documentaries from the 90s.

Cut: daily life "Berlin in its fifth summer of war" Cut housewives hoard green brownish supplies, Cut: red scarves march through the picture.

Cut swastikas made of braided wreaths

Cut asphalt coloured monkeys in the zoo,

Cut blond sandcastles built on Sylt,

Cut..

The same scenes over and over again with different commentary:

"Images like never before!", "Now first discovered..." "...as if filmed yesterday."

"The Brown in colour", "The Third Reich in colour"

We see colour pictures that have always been there.

But there was either no interest in them, as they didn't deliver documentary value, or there was no access, since they were locked in archives.

Or they were feature films that you wouldn't recognise as Nazi cinema productions. Because they looked like heimatfilms from the 1950s.

Colours continue

Colours lie

Colours escape

Images of memory gain colour, re-write themselves.

My gaze doesn't want to reconcile in colour but also doesn't want to stay colourless. I want unreconciled colours, a red blue or violet yellow.

It should burn the eyes.

I want a tone that doesn't stop!

Flashback:

This flashback is to the same time, but the colours are different.

Rainbow's Gravity

written, directed, produced and edited by Mareike Bernien and Kerstin Schroedinger

Ger/UK 2013,

34 min., HD video, stereo, colour,

director of photography: Smina Bluth

additional photography: Mareike Bernien, Kerstin Schroedinger

with:

Berit Ehmke, Hanna Bergfors, Mayan Printz, Michał Głazik, Tanja Kämper

sound recording: Birte Gerstenkorn

sound assistant (studio): Olivia Oyama

set design, costumes, make-up: Wibke Tiarks

light: Wassan Ali

catering: Mitch Andrade

soundtrack by Wibke Tiarks

mastering: Miles Whittaker

colour correction: Sebastian Bodirsky

filmed on location at Industrie- und Filmmuseum Wolfen, IG-Farben-Haus

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4. Text Cinenova: Diffracted Landscapes

by Irene Revell and Kerstin Schroedinger

published in Camera Austria No. 130, Spring 2015

What does a feminist landscape look like? Or rather, how does a feminist look at landscape? What if our (point of) view is not a defining one? The landscapes we look at are not to be explored and occupied; but how does our gaze escape these tendencies? Teresa de Lauretis speaks about mechanisms of coherence: she espouses a fundamental suspicion towards narrativity and yet simultaneously argues for its re-articulation, in reference to the narrative strategies in Yvonne Rainer's films.¹ "[F]eminist work in film should be not anti-narrative or anti-oedipal but ... working, as it were, with and against narrative in order to represent not just a female desire ...; but ... the duplicity of the oedipal scenario itself and the specific contradiction of the female subject in it."² This duplicity is meant to be specific in regard to the history of cultural forms and also the contexts of reception. In analogy we assume a suspicion towards narrativity transfers to a suspicion towards a 360-degree pan, a full panoramic picture, a panoptic control scan, amidst other mechanisms of (visual) coherence.

Greenham Common and the Menstrual Hut

The Greenham Common Women's Peace Camp (1981–2000) was a women-only protest against the threatened deployment of nuclear cruise missiles at Royal-Air-Force Greenham Common in Berkshire, England. Numerous works were produced in this context that take activist, documentary, or social approaches. Within the Cinenova collection, the films also make wider connections with concerns of ecology and the (feminist) body, a coming-to-terms with a growing contamination of public (as much as personal) space.³ In her essay on artist Annabel Nicolson,⁴ Felicity Sparrow describes the entanglement of these spaces: "The tension between public and personal space, between introspection and action, were further developed, often collaboratively with other women, like the Menstrual Hut in 'Concerning Ourselves' (1981) which literally created a private meditative space within a public art gallery."⁵ The Women's Peace Camp functioned as such a space of collaboration, being simultaneously inclusive and exclusive, public and private. This tension may, or may not, take form in a paradoxical structure, as much suspicious of spatial incoherence as coherence. Returning to de Lauretis, it is important to consider narrativity "strategically and tactically in the effort to construct other forms of coherence, to shift the terms of representation, to produce the conditions of representability of another—and gendered—social subject."⁶

Sandra Lahire, "Serpent River" (1989)

"Serpent River" is the last work in Lahire's trilogy⁷ that creates a dystopian outlook into a radioactive future made in the aftermath of Chernobyl and the proclaimed "end of history", at the historical moment when the Cold War—with its promises of an endless source of nuclear energy—was falling apart. These three films have a very particular relationship to landscape: totalising through

their pulling-in of collaged references and multilayering, yet not panoptic. As much as Lahire creates this heterogeneous coherence, it remains always partial and fleeting; there is no anchor, no vantage point, no origin, and each repeated viewing feels equally cast away. In “Serpent River” the images seep into one another: blue-tinted floods of water, X-rays, positive/negative, skeleton dances, descriptions of physical labour, ice, crystal ice, blue ice, blasted rock, children, radiated pink, day-for-night, skating on ice, reflections of water, reflections of sun, flames burning images. These are all overlaid and simultaneously shifting from one to the next. The montage is not made with sharp cuts, but the sequences seem to rather taint each other in their superimposition. Colour contrasts hurt the eyes; radiant ashes burn into the retina. The soundtrack remains autonomous; aggressive sounds of cutting through ice. Narrative bits are juxtaposed with sci-sounds: uranium capital nursery school, uranium in the drinking water, formerly a clean town, generous with the hospital, sulphur cycle, Trans-Canada Highway, drilling, the sound of drilling. The film material simulates X-ray plates or is treated physically, contaminated, raw images exposed over and over again, or brought into bright sub-zero winter. “Serpent River” may be the final film of the trilogy, but it does not come to a conclusion. Just as the nuclear activity will stay—there is no end to it.

“[M]atters of practices / doings / actions”⁸

In “Serpent River” this narrative coherency materialises in a diffracted way.

Lahire shows layers of bright colours, both radiating from and X-raying into the depths of the images. We borrow the term diffraction from Karen Barad, who writes that the problem of representation should be placed in “questions of diffraction rather than reflection”.⁹ She cautions how each intra-action (or

striving for coherence, if we may put it that way) always makes a mark; as soon as one attempt at clarity is made, another is occluded. We might say that this understanding of agency complements de Lauretis's notion of narrative coherence, whilst also offering a possible account for the simultaneous suspicion. While Barad draws from Niels Bohr's development of nuclear physics, Lahire uses radioactivity as a formal figure that escapes the patriarchal gaze. Decomposition takes place, not just in the Im frames, but in the context of production, in the aspects of perception. Discontinuity—but at the same time also raising the demand for women artists talking, telling their stories. It can be both: "... feminism understands the female subject as one that ... is at once inside and outside the ideology of gender ...; the female subject is in both places at once. That is the contradiction."¹⁰

A feminist gaze towards landscape can thus be one that doesn't aim to represent what we see, nor does it reflect on the Im image "what is to be seen". Rather, it enables a vision that is diffracted, in more ways than one, with all that the material can offer at stake.

1 Cinenova distributes "The Man Who Envied Women" (1985) and "Privilege" (1990) by Yvonne Rainer.

2 Teresa de Lauretis, "Strategies of Coherence: Narrative Cinema, Feminist Poetic, and Yvonne Rainer", in *Technologies of Gender: Essays on Theory, Film, and Fiction* (Bloomington: Indiana University Press, 1987), p. 108

3 Tina Keane, "In Our Hands, Greenham" (1984); Caroline Goldie, "Greenham Granny" (1986); S. Fonseca, S. Gillie, V. Grut, and J. Holland, "Nuclear Defence 'Living In a Fool's Paradise'" (1984); Lis Rhodes with Jo Davis, "Hang on a Minute / Swing Song" (1983); among others

- 4 Cinenova distributes "Slides I-V" (1971) by Annabel Nicolson.
- 5 Felicity Sparrow, "Annabel Nicolson", LUXONLINE, [http://www.luxonline.org.uk/artists/annabel_nicolson/essay\(2\).html](http://www.luxonline.org.uk/artists/annabel_nicolson/essay(2).html), accessed 3 April 2015.
- 6 Teresa de Lauretis, "Strategies of Coherence", p. 109
- 7 Sandra Lahire, "Plutonium Blonde" (1987) and "Uranium Hex" (1987).
- 8 Karen Barad, "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter", *Signs*, Spring 2003, p. 802.
- 9 *Ibid.*, p. 803.
- 10 Teresa de Lauretis, "Strategies of Coherence", p. 114

5. Re-Reading Chromatic Borders

published in: Sequence No. 3, 2013, written in collaboration with Mareike Bernien

Colour binds

Why is it that we see meadows in green and roses in red? Why are working collars blue and porcelain and walls often white? The connection between a colour and an object seems often natural. And we get confused if there are faults, like a green sky or a red motorway or pink skin. How does colour bind with an object?

A deep blue will be the first object of our investigation. This colour is called indigo, after a plant that migrated from India to Europe, imported from British colonies as a luxury item. „Synthetic indigo was placed on the market in 1897. It destroyed British indigo production in India. By 1913 natural indigo was

almost completely replaced.”¹ Subsequently, indigo was used as a dye for uniforms and work clothing (e.g. blue collar overalls). The denim fabric from which jeans were produced, was also dyed with synthetic indigo. Synthetic indigo was a by-product of colonialism, since its production shifted from natural production to a synthetic industry. Although natural indigo was no longer used, indigo remained as the colour of these clothes. Thus blue work pants speak of colonial relationships as well as being a marker for a certain class and gender affiliation. The colour indigo changes its association from imperial blue to denim. This change reflects also the migration through several levels of exploitation from slave trade, to the working class, and to Fordism. This example shows that there is a bind between an object and its colour. Every age and every place produces its specific colour space. The way in which we accept an object in a certain colour depends on the viewing habits which are determined by time and place. A colour range cannot be separated from the prevailing conditions of production and social practices that produce the colours and stabilise and strengthen their bond to an object. Similar to the way that contexts and locations create colour schemes, film and photographic methods also produce their respective time-specific colour impression. The colour palette of a film in a Technicolor movie from the 1940s is very different from one made in Kodachrome in the 1990s. We locate a Polaroid picture with the 1980s or a slide with the postwar period. Beyond a socio-historical investigation, we also work on an analysis of hierarchies in colour schemes through and by means of colour film. Even in colour photography and colour film, colour and objects bind in a pseudo-natural, naturalised way. The process of how film images obtain their colour schemes reflects time and location-specific hierarchies and hegemonic

political structures. The palette of an Outside (the world) intersects with the possibilities and forms of expression of the film stock. We see the colours of the 1940s mediated by Technicolor for example.

The colour impression of a certain time often joins with the images.

In our work we see colour not as a passive attribute of a thing or of film material. We're not interested in analysing the symbolic charge or meaning of specific colours, but in the relations of colours to one another, the rules to which they obey as well as their material production. We are occupied with colours. They stick to us like a substance that cannot be ignored. This bond is not fixed and immutable, but loose and alternating. Colours migrate, in the truest sense of the word, on the surfaces within places and times. The same colour is simultaneously seductive and transgressive, fictional and determining. Colours set things in motion and so our ideas get re-oriented. How can we un-bind and re- bind colours? How can we disconnect the red from the roses? And how can we disconnect the roses from love? And what is left then? Colour without bodies, and bodies without colour, is that possible?

Synthetic colour, aniline cinema, black and white spectacles.

'Yesterday I was in the realm of shadows. If you only knew how strange it is to be there. This is not life, but the shadows of life' wrote Maxim Gorky in 1896 after he first saw a black and white film in the cinema.² Black and white film and photographs discolour the world and show its outlines and shadow. If Gorky meant this world is but a shadow of itself, then the images lack not only colour but life itself as well. But cinema in 1900 was by no means colourless. Colours were an artificial addition to celluloid. Colours were brought to the screen, like an attempt to breathe life to the images posthumously. The

techniques of colouring black and white film established their own dramatic colour language. Night scenes became tinted blue, for example, and love scenes tinted red.

At the time, the work to provide black and white film with colour was done mainly by women. It was a poorly paid job and was physically stressful. The media inventions of the 19th century and the industrial production of these inventions also created other new low-wage jobs, such as typists and telephone operators, which were specifically for women. (The workers leaving the factory in the Lumière's famous film, from 1895, are women workers). In the film factories each frame would be painted, stencilled and tinted manually. Through the hands of the workers the image combined with the colour. The newly developed chemical aniline dyes were highly toxic and would leave marks on the workers, so that the colours would not only bind to the celluloid but also to the bodies of women. But the resulting colour illusion in the film itself remained in deficit. Lagging behind, the colours vibrate on the objects and create a pulsating movement of their own. In a realist black and white image space, these artificial colours step into the area of the fantastic and spectacular, as if the pictures were having make up applied.

Roland Barthes writes about the coloured image:

'An anonymous daguerreotype of 1843 shows a man and a woman in a medallion subsequently tinted by the miniaturists on the staff of the photographic studio:

I always feel (unimportant what actually occurs) that in the same way, color is a coating applied later on to the original truth of the black-and- white photograph. For me, color is an artifice, a cosmetic (like the kind used to paint

corpses). What matters to me is not the photograph's „life“ (a purely ideological notion) but the certainty that the photographed body touches me with its own rays and not with a superadded light.’³

Whose reality?

The expressed desire of Roland Barthes for a direct link between thing and image, as a kind of extension of its rays, have been fulfilled, in a way, since the early 1920s, in the so-called ‘natural colour film’. Womens’ hands are replaced by a chemical emulsion on the negative film itself, so that exposure results in a direct colour (im)print. With the introduction of the Technicolor process (amongst others) in the early 1920s there was the effort to reproduce colour values that were as true as possible. On the one hand ‘natural’ meant that the colours would aim to match the perception of reality, and at the same time that there should be a more direct link between object and image, which was not procured by hand (like make-up). Natural colour film can be seen as an attempt to strengthen the bond between image and reality through a chemical emulsion and to anchor it in the image. The manual labour on colour, in the use of stains and stencils, had thus been translated into a material relationship.

The first feature length film in Technicolor is *The Toll of the Sea* (1922). Like many of the early colour films (*The Delhi Durbar* [1912], *The Black Pirate* [1925], *The River* [1942]) the storyline of *The Toll of the Sea* is located in a far away and exotic elsewhere. The oriental colour space is viewed as a testing ground of the western colour palette. The procedure known as Technicolor process 2 was based on two colours, red and green. In 1922 it was still in the testing phase and the colours were often shifted. Blue was shown almost

brownish and white skin appeared pink. The colours had to be controlled and contained, while they were not yet fixed. Here in elsewhere (the western film set), the colour can be tested without being a danger of being too much and slipping into the obscene. Frieda Grafe writes in *Filmfarben*: 'In all considerations on colour film emerges the colourful as the spectre' which film history banned to the place of the exotic or carnivalesque.⁵

The colour spaces that are produced here swell over with saturation. The clothing of the figures, but also the spaces that surround them, are immersed in colours. The colours seem to colonise whole areas. Although the chemical emulsion is meant to guarantee a link to reality, and a 'natural' reproduction, the red-green combination also attaches it to the fictional, fantastic and magical. The sense of colour as 'make-up' remains, but moves over to the figures that inhabit these colour spaces. The tradition of the spectacular, of early cinema, thus continues in the camp character of the first Technicolor films. It combines once more with feminised bodies that are frequently fantasy figures associated with botany or wildlife.

China Doll

The story of *The Toll of the Sea* is an adaptation of *Madame Butterfly*, an opera by Puccini. The setting is moved from Japan to colonial Hong Kong. The main character, Lotus Flower, played by Anna May Wong, appears in a filmic space overflowing with colours. She enters this space like an ornament, which is indeed desired by the colonialist, but not allowed to take the promised trip to the United States. Her white lover obeys the bourgeois order and decides to return to the United States without her. Lotus Flower remains tied in her colour space: desired,

but kept at a distance. At the time of the film, Anna May Wong was seventeen years old and was considered one of the first Asian-American women to succeed in rising to be an internationally known movie star. For Wong, *Lotus Flower* was the first in a long line of roles where she played the stereotype of the China Doll: the Asian woman who sacrifices her life to the unattainable love of a white man.

In *Queer Phenomenology* Sara Ahmed describes the fictional space of the Orient as an area of projected desire, but also shows that western desire aligns with something that the West itself is allegedly lacking. 'This fantasy of lack, of what is "not here", shapes the desire for what is "there", such that "there" becomes visible on the horizon as "supplying" what is lacking. The Orient becomes what we could call a „supply point”.'⁶ In that sense the idea of the Orient becomes a resource for Western fantasies. *The Toll of the Sea* provides the audience with the resource of colour. An audience that is itself, as David Batchelor writes, afraid of colour.⁷ The chromophobia of the West, a fear of corruption by colour, manifests in the continuous bond of colour to the feminine, oriental and primitive as well as queer and pathological figures. Colour is simultaneously desired and marginalised. The Orient becomes literally a point of orientation. 'We face the desired and seek to get closer. If the Orient is desired, it is both far away and also that which the Occident wishes to bring closer, as a wish that points to the future or even to a future occupation.'⁸ This form of possession by colours is distributed over and over again in the colonial project. Colours seem to be accomplices in this. Bodies are attached to specific colour spaces and occupy them while at the

same time keep them at a distance. So they are organised in a here and elsewhere: in a male, realistic figure, in serious black and white; and in the coloured female figure (of desire); in the Occident and the Orient.

China Girl (test image/policing image/whiteness)

The arrangement of colours defines territories, and assigns the subjects their place in a film, as well as in a social order. Specific colours inscribe racialised and gendered politics and establish a practice that continues in the technical equipment of western film production. China Girl is the colloquial term for a test image that has been used since the early 1950s to calibrate colours and skin tones. The colour test image consists of a white woman's face, a colour bar and the company name. These images are used in film labs to adjust the colour range and to match the tonal density between different takes. The women in these pictures are mostly workers from the set, technicians or script girls. They look to the camera for a short time, but become visible in the film itself only as a colour value. There are several speculations as to how they got their name and why they are almost all women (or dummies). However, the most obvious question – why almost all are white – is not usually asked.

In his book, *White*, Richard Dyer points out that white skin is the colour from which all other colours in the western cinematic vocabulary are derived.⁹ He states that this decision emerged with the history of lighting and made what we see appear to us as natural and normal. The interplay of make-up, film stock, lighting, and projection have been developed in reference to white people, with the depiction of non-whites usually presenting a problem. For example, the parameters for exposure

and light conditions are usually preset for a person with 'a skin reflection level of 36%'. Anything else comes under 'special difficulties'. A certain colour regime defines devices and their usage, a regime based on the normalisation of white skin, which thus solidifies a certain privileged position.

From this perspective, the term China Girl might be less of a reference to the racist stereotype of the China Doll - as Morgan Fisher's film *Standard Gauge* (1984) suggests, with its reference to the highly coloured (exoticised) clothing of the women - and more to China itself, referring to the origin of porcelain, which have been imported as colonial goods from China since the 16th century. Porcelain-coloured skin tone appeared in female portrait paintings of the 18th century (especially in England) as an adequate form for the representation of aristocratic life. The material and its colour symbolise purity and beauty. The porcelain-coloured skin is a fine and pale layer. In its delicacy it is regarded as an insignia of high morality and moral standing. Even here it is clear that whiteness in the Western image production was a constructed political category. Whiteness appears not only as an ethnic category, but also as a sign of higher social class. What was, and still is, perceived as white by no means corresponds to any Caucasian skin toning. Richard Dyer writes about the representation of whiteness in film: 'In the history of photography and film, getting the right image meant getting the one which conformed to prevalent ideas of humanity. These include ideas of whiteness, of what colour – what range of hue – white people wanted white people to be. Optimum reproduction of skin colour is not „exact reproduction... „exact reproduction“ is rejected almost unanimously as „beefy“. On the other hand, when the print of highest acceptance is masked and compared with the original subject, it seems quite pale.'¹⁰

The skin of film is white. So we think of whiteness not only as a materialised category, but it is structurally embedded in the devices and products (cameras and film stocks). The China Girl as normalising test image takes over policing duties. She points the subjects within the pictorial order to their place. She is a blueprint, reproduced in the filmic order which she co-produces at the same time.

Circulation and migration:

Invisible yet inscribed as a colour value of the images, the China Girls circulate through all kinds of colour film processes. Technicolor, Kodak and Agfacolor all produce their several China Girls. They circulate and yet remain invisible, known only among the film labourers. Many of them migrate as collectibles, among graders and projectionists, on the walls of laboratories and projection rooms. They are reproduced, fetishised and tacked again to the beginnings of film roles. Along with the film leader they frame the film, giving an imperative (orientation) for colour, sharpness and shape.

De-bind, de-naturalise (Nouvelle Vague)

Throughout film history, the social fabric and colour spaces have been defined by white skin colour as the focal point of a colour vocabulary, to write racist and normative codes into the film image. But when does film begin to turn against itself? Where can we find cracks and conflicts within the film image? Nouvelle Vague directors and film critics argued for a conscious, materialist way of using colour codes differently, placing the conditions of production themselves as the subjects of their films.

In 1967 Jean Luc Godard filmed *La Chinoise* in a Paris apartment, which seemed to consist only of the primary colours - yellow, blue and red.

In this apartment five French students read Maoist texts and discuss terrorist violence as a means of political struggle. Godard's cynical depiction of these bourgeois kids and an infantile colouring repeatedly point to the playground of revolution. Godard's motto: 'It's not blood that is red' is programmatic for this film. His use of colour is neither naturalist nor symbolic, but rather a material structure of its own. He uses the reduction to three primary colours to obtain a democratic colour space, from where a radical questioning and renegotiation of social positions may take place. The red of the Mao bibles connects to the bourgeois furniture and the barricades. Colours in *La Chinoise* leads to confrontation and conflict, because they cross boundaries of social structures and class systems. Although the colour space provides a field of rehearsal and a renegotiation of the socio-political conditions and their practice, the protagonists remain locked in their own contradictions. The reduced colour spaces also show their desire for a transgression

of their very own bourgeois entanglement. Here, the China Girl could be a fetishised figure in a Maoist projection, represented in the red of the books.

Technicolor in China, migration of a process

A technological shift took place in the late 1970s, when Technicolor sold its dye-transfer-equipment to the Beijing Film Company and Video Lab in China. The machines had served their time in England and the United States, and the technical conditions for processing colours in analogue film had changed. China gratefully bought the old Technicolor process, because it made the country less dependent on foreign suppliers for colour film. Not only images, projections and actors circulate in different contexts and times, but entire film processes migrate. Since the late 1970s many Chinese productions have been

produced in Technicolor, long after it was discontinued in Hollywood, including Zhang Yimou's famous *Ju Dou*, made in 1989.

Ju Dou is set in 1920 in a small village in China during late Feudalism. The setting is a textile dye house, where a story of sexuality and patriarchal oppression takes place. The long fabric panels resemble the three-strip Technicolor stock. In its use and depiction of colour, textiles, and dyeing, the film reminds us that China has been one of Asia's largest dye manufacturers and exporters since the time of the Ming Dynasty China. Trade routes like the Silk Road and Spice Route long delivered Europe's colour supplies. Their names still speak of these routes today: Indigo, Imperial Blue, India ink, Saffron, Curry, Jade Lime, Dark Khaki, Chinese Red... But what does it mean when, in China of the 1980s

and 1990s, a range of colours is established that belongs already to another time (Hollywood of the 1940s) and also to a different context, in particular to a capitalist context? How intertwined are the colour spaces of Technicolor with an image of China in the 1920s?

Interestingly, it is Chinese films in Technicolor, from after the Cultural Revolution, that found international recognition. Many of them turn to

a nostalgic and timeless image of China, and are usually set in the countryside with themes of sexuality and romance. The film theorist Yingjin Zhang speaks of *Ju Dou* as a prime example of the ethnic and erotic exhibitionism that China declared in the early 1990s.¹¹ There seems to some extent a temporal loop at play. In a way, these films repeat an exotic colourful (self-) image of China, which follows on from the earlier Technicolor films such as *The Toll of the Sea*. If the colour film process itself migrates and circulates, does that also transfer to

the memory of a certain imagination? Does that locate China in an „elsewhere“ as well as in the past? Or does this circulation appropriate and transfer Western colour codes?

Fade away

Colours gradually fade on celluloid. They lose their intensity and appearance. Whole film archives turn pink or slowly dissolve. Here film restoration and preservation comes to work to transfer and preserve what can be saved. From 1978 to 1993 the Technicolor Beijing laboratory had the ability and knowledge to make copies and reproduce true-colour Technicolor film. At that time Western archives had to turn to China

to produce copies of their films. In order to preserve not only images but also the time-specific colour palette of a company, a re-thinking of technical and material entanglement with film history needs to be addressed.

One outcome of our research on the policies of colour in cinema, is a video called *Red, she said* (2011) in which we tell a discursive history of cinematographic colouring systems in an actualised framework. We are especially interested in how film colours are involved in power relations and processes of subjectivation throughout film history.

We trace back several cases and scenarios, in which colour grading and colouring become actors that contribute to structure filmic spaces and are able to act within these. Within these spaces we are arguing for a materialist visibility that produces counter-narratives and shifting powers in the relation between subject and object, actor and spectator, author and reader. How have the conditions of entering the frame been transformed along changes in colour film technologies?

By navigating through specific points of film history we want to focus on the characteristics, ideological implications and shiftings of colour in order to deconstruct modes of colour in the cinematic image.

1 Esther Leslie: *Synthetic worlds*. p 78

2 Maxim Gorky. From a review of the Lumière programme, in the 4th of July 1896 edition of the *Nizhegorodski Listok*.

3 Roland Barthes *Camera Lucida* New York: Hill and Wang (1981) p.81 5

Frieda Grafe *Filmfarben, Schriften*, 1. Berlin: Band (2002) p. 20. Our translation

6 Sara Ahmed *Queer Phenomenology* Durham: Duke University Press (2006) p. 114

7 David Batchelor *Chromophobia* London: Reaktion (2000) p. 22-23 8 Ahmed, p. 115

9 Richard Dyer *White* New York: Routledge (1997)

10 Dyer, p.82

11 *Chinese National Cinema*, Yingjin Zhang, Routledge, London and New York, 2004, p. 286-287

6. Archive Merkblatt of films mentioned from the German Federal Film Archive



Benutzungsmedien Film Online

Merkzettel

Als Heeresflieger in Rußland (2) - Amateuraufnahmen in Farbe von Eberhard Spetzler 1941

| | | | |
|----------------------------|-----------------|------------------------|----------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | 1941 |
| Materialart: | VHS / VHS/BA+TC | Filmformat: | 1/2 Zoll |
| Gesamtlaufzeit in Minuten: | 14 | Gesamtlänge in Metern: | 0 |
| Eingangsnummer: | B 64062-1 | Archivsignatur: | 22278 |

Bunte Monatsberichte

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | 1937 |
| Materialart: | Film / st. Kp. | Filmformat: | 16 mm |
| Gesamtlaufzeit in Minuten: | 0 | Gesamtlänge in Metern: | 130 |
| Eingangsnummer: | K 280704-1 | Archivsignatur: | 19623 |

Die bunte Film-Schau, aufgenommen von Eva Braun (MAVIS: 60138)

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | |
| Materialart: | Film / st. Kp. | Filmformat: | 16 mm |
| Gesamtlaufzeit in Minuten: | | Gesamtlänge in Metern: | 1750 |
| Eingangsnummer: | K 140439-7 | Archivsignatur: | 2459 |

Die bunte Film-Schau, aufgenommen von Eva Braun (MAVIS: 60138)

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | s/w | Produktionsjahr: | |
| Materialart: | Film / st. Kp. | Filmformat: | 16 mm |
| Gesamtlaufzeit in Minuten: | | Gesamtlänge in Metern: | 664 |
| Eingangsnummer: | K 140441-3 | Archivsignatur: | 2459 |

Die bunte Film-Schau, aufgenommen von Eva Braun (MAVIS: 60138)

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | s/w | Produktionsjahr: | |
| Materialart: | Film / st. Kp. | Filmformat: | 16 mm |
| Gesamtlaufzeit in Minuten: | | Gesamtlänge in Metern: | 2400 |
| Eingangsnummer: | K 70507-10 | Archivsignatur: | 2459 |

Die bunte Film-Schau, aufgenommen von Eva Braun (MAVIS: 60138)

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | s/w | Produktionsjahr: | |
| Materialart: | Film / st. Kp. | Filmformat: | 16 mm |
| Gesamtlaufzeit in Minuten: | | Gesamtlänge in Metern: | 2400 |
| Eingangsnummer: | K 72129-10 | Archivsignatur: | 2459 |

Farbe im Film

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | 1940 |
| Materialart: | Film / kKp | Filmformat: | 35 mm |
| Gesamtlaufzeit in Minuten: | 0 | Gesamtlänge in Metern: | 382 |
| Eingangsnummer: | K 287735-1 | Archivsignatur: | 25095 |

Friedliche Jagd mit der Farbkamera

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | 1941 |
| Materialart: | Film / kKp | Filmformat: | 35 mm |
| Gesamtlaufzeit in Minuten: | 0 | Gesamtlänge in Metern: | 506 |
| Eingangsnummer: | B 69420-1 | Archivsignatur: | 22599 |

Im Warschauer Ghetto

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | 1942 |
| Materialart: | Film / st. Kp. | Filmformat: | 16 mm |
| Gesamtlaufzeit in Minuten: | | Gesamtlänge in Metern: | 106 |
| Eingangsnummer: | B 37772-1 | Archivsignatur: | 20814 |

Panorama Monatsschau 1-4

| | | | |
|----------------------------|----------------|------------------------|----------------------|
| Filmart: | Dokumentarfilm | Ausgabe: | - / - / - / 1944 / - |
| Farbangabe: | Farbe | Produktionsjahr: | |
| Materialart: | DVD / DVD | Filmformat: | 12 Zoll |
| Gesamtlaufzeit in Minuten: | 60 | Gesamtlänge in Metern: | |
| Eingangsnummer: | B 116533-1 | Archivsignatur: | |

Rußlandfeldzug, Südfront, Sommer 1942 (MAVIS: 575462)

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | 1942 |
| Materialart: | Film / st. Kp. | Filmformat: | 35 mm |
| Gesamtlaufzeit in Minuten: | 0 | Gesamtlänge in Metern: | 597 |
| Eingangsnummer: | K 47399-2 | Archivsignatur: | 3022 |

Tanz der Farben

| | | | |
|----------------------------|-------------------|------------------------|-------|
| Filmart: | Filmart unbekannt | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | 1939 |
| Materialart: | Film / kKp | Filmformat: | 35 mm |
| Gesamtlaufzeit in Minuten: | 0 | Gesamtlänge in Metern: | 155 |
| Eingangsnummer: | K 77859-1 | Archivsignatur: | 2648 |

U-Boot-Bunker im Bau (MAVIS: 566557)

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | s/w und Farbe | Produktionsjahr: | |
| Materialart: | Film / st. DP | Filmformat: | 16 mm |
| Gesamtlaufzeit in Minuten: | | Gesamtlänge in Metern: | 841 |
| Eingangsnummer: | K 116471-6 | Archivsignatur: | 3729 |

ZigeunerKinder - Dissertation von Eva Justin

| | | | |
|----------------------------|----------------|------------------------|-------|
| Filmart: | Dokumentarfilm | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | |
| Materialart: | Film / st. Kp. | Filmformat: | 16 mm |
| Gesamtlaufzeit in Minuten: | | Gesamtlänge in Metern: | 60 |
| Eingangsnummer: | K 133035-1 | Archivsignatur: | 3840 |

Zwei Farben

| | | | |
|----------------------------|-------------------|------------------------|-------|
| Filmart: | Filmart unbekannt | Ausgabe: | |
| Farbangabe: | Farbe | Produktionsjahr: | 1933 |
| Materialart: | Film / kKp | Filmformat: | 35 mm |
| Gesamtlaufzeit in Minuten: | | Gesamtlänge in Metern: | 68 |
| Eingangsnummer: | B 125389-1 | Archivsignatur: | 3890 |

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|---|

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Chapter 4

Bits of Life, Marshall Neilan, US1921

Black Narcissus, Michael Powell and Emeric Pressburger, UK 1947

The Black Pirate, Albert Parker, US1925

Die 'Braunen' in Farbe: Die Kriegsjahre 1939 – 1945, Polar Film, Ger 2007

Der 30. Januar 1945, Erwin Leiser, Ger 1965

Drifting, Todd Browning, US1923

Das dritte Reich in Farbe, Spiegel TV Reportage, Ger 1998

I was a slave labourer, Luke Holland, UK 1999

Ici et ailleurs [Here and Elsewhere], Jean-Luc Godard and Anne-Marie Mièville,
F 1976

Hitler's Hitparade, Susanne Benze/Oliver Axer, Ger 2005

Old San Francisco, Alan Crosland, US1927

La Sortie des Usines Lumière à Lyon, Auguste and Louis Lumière, F 1895

Legong – Dance of the Virgins, Henri de la Falaise, US1935

Original Wolfen – Die Geschichte einer Filmfabrik, Anna Schmidt, Dirk
Schneider, Ger 2011

The Race for Colour, BBC1 documentary, UK 2012

Rainbow's Gravity, Mareike Bernien/Kerstin Schroedinger, Ger/UK 2014

Red, she said, Mareike Bernien/Kerstin Schroedinger, Ger/UK 2011

The Red Shoes, Michael Powell and Emeric Pressburger, UK 1948

The River [*Le Fleuve*], Jean Renoir, F 1951

Serpentine Dance, Loïe Fuller, filmed performances, US 1890s

Shoah, Claude Lanzmann, F 1985

Standard Gauge, Morgan Fisher, US 1984

The Toll of the Sea, Chester M. Franklin, US 1922

Welche Farbe hat der Krieg?, Spiegel TV Dokumentation Ger 1995

Films from the Nazi Period:

Der Ewige Jude [*The Eternal Jew*], Fritz Hippler, Ger 1940

Die Frau meiner Träume [*The Woman of my Dreams*], Georg Jacoby, Ger 1943

Frauen sind doch die besseren Diplomaten [*Women make better diplomats*],

Georg Jacoby, Ger 1941

Die Goldene Stadt [*The Golden City*], Veit Harlan, Ger 1941

Kolberg, Veit Harlan, Ger 1945

Münchhausen, Josef von Báky, Ger 1943

Opfergang [*The Great Sacrifice*], Veit Harlan, Ger 1943

Triumph of the Will, Leni Riefenstahl, Ger 1935

LIST OF FILMS FROM THE GERMAN FEDERAL ARCHIVES

(see also appendix 6)

Als Heeresflieger in Rußland (2) – Amateuraufnahmen in Farbe von Eberhard

Spetzler 1941, colour, no sound, VHS, 14 min, archive signature: 2227815

Bunte Monatsberichte, 1937, 16 mm, 130 m 16min, colour, sound, Archive
signature: 19623

Die bunte Film-Schau, aufgenommen von Eva Braun, no year, 16 mm, 2400m,
archive signature 2459

Farbe im Film, 1940, Bundesarchiv - Filmarchiv, Berlin: 35 mm, 382 m, archive
signature: 25095

Friedliche Jagd mit der Farbkamera, 1941, Bundesarchiv - Filmarchiv, Berlin:
35 mm, 506 m, archive signature 2259918

Im Warschauer Ghetto, 1942, Bundesarchiv - Filmarchiv, Berlin: 106 m / 9'40";
16 mm, archive signature: 20814

Panorama - eine deutsche Farb-Monatsschau für das Ausland 1944/1945,
1944-1945, Vol. 1-4, Deutsche Wochenschau Berlin Archive signature 3691

Rußlandfeldzug, Südfront, Sommer 1942, Bundesarchiv - Filmarchiv, Berlin: 35
mm, 597 m, archive signature 3022

Tanz der Farben, Hans Fischinger, 1939, Bundesarchiv - Filmarchiv, Berlin: 35
mm, 155 m, archive signature: 2648

U-Boot Bunker im Bau, no date, Bundesarchiv - Filmarchiv, Berlin: 16 mm, 841
m, archive signature: 3729

Zigeunerkinde - Dissertation von Eva Justin, no date, Bundesarchiv -
Filmarchiv, Berlin: 16 mm, 60m, archive signature: 3840

Zwei Farben, 1933, Bundesarchiv - Filmarchiv, Berlin: 35 mm, 68 m, archive
signature: 3890

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Baku: Symphony of Sirens. Sound experiments in the Russian Avantgarde, double CD and booklet, ed. by Chris Cutler, ReR Megacorp, London 2008

Ekstasen der Zeitenmischung, Klaus Theweleit, Ger 2007, audio play

Oramics, Daphne Oram, double CD and booklet, Paradigm Discs, London 2007

P.O.V., Clemens von Wedemeyer, exhibition NBK Berlin 2016

Reel Time, Annabel Nicolson, UK 1973, Variable Duration, performance with sewing machine and projections

The Infernal Dream of Mutt and Jeff, Zoe Beloff, installation, Site Gallery Sheffield 2011

Trauerspiel 1, Performance by Ian White, Hebbel-Am-Ufer, Berlin, 13/03/12

Workers Leaving the Factory in Eleven Decades, Harun Farocki, installation, Generali Foundation Vienna, 2006

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