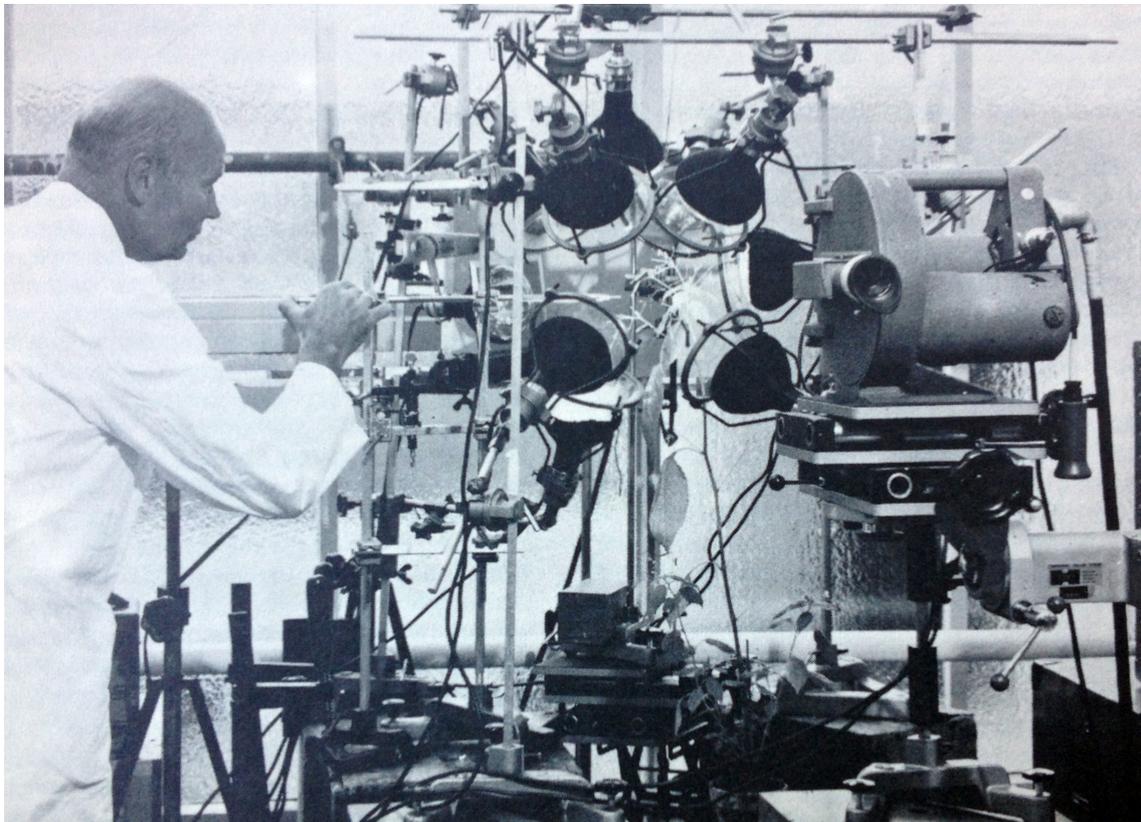


Andreas Bunte

# Library for A-Scientific Film 2012–2015

## Reflection



Norwegian Artistic Research Fellowship Programme  
Oslo National Academy of the Arts

## Introduction

In the artistic research project *Library for A-Scientific Film* I explored the ‘genre’ of Scientific Research Film (SRF) as a format for artistic film production. My research focussed on SRF as established by the German *Institut für den Wissenschaftlichen Film* (IWF)<sup>1</sup>, a leading institution in the field of scientific film. The IWF’s explicit aim was to make films *for* science that utilise the medium as a tool for the production of scientific evidence for an expert audience. These films are distinctly different from films *about* science, and documentaries, which use film as a means of communication for a general audience.

Based on my previous work in film and film installation – dealing with historical events and phenomena such as the advent of electric light, or church architecture from the 1950s – this artistic research project is a continuation of my exploration of the artistic appropriation of cinematic genres located at the margins of the documentary, such as police documentation footage, the chronicle, or photogrammetric motion studies.

In this written reflection of the project, I will summarise the specificities and characteristics of the genre of SRF in order to then discuss how I dealt with particular aspects of it in my practical experiments – that is in three films/film installations: *Two Films about Pressure*, *Suspended Duration* and *Safe Disassembly*. In Chapter 3, I will lay out the different modes of dissemination of these projects. In Chapter 4, I will review a selection of movements and theories that have provided inspiration and entry points for a critical reading of the genre and my appropriation of it, and in the final chapter I will gather some concluding remarks on my project and provide an outlook for the further trajectories of this project.

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<sup>1</sup> The German Institut für den Wissenschaftlichen Film (IWF) in Göttingen played a key role in shaping the genre of SRF. It was founded in 1956 and closed in 2010. During the 60 years of its existence it produced roughly 8000 films, developed special film equipment, such as new high speed cameras with up to 4 M FPS, and new methods of microscopic photography. It also published a number of books, guidelines and contributions to periodicals in which the theoretical foundations of the genre were laid out and discussed. Both the films and texts published by the IWF were key resources in the context of my research. In comparison to other concepts of SRF, developed i.e. by the French Service du Film de Recherche Scientifique, or the British Industrial and Scientific Film Association, the IWF provided the most strict concept of SRF.

# 1 Research Area / Scientific Research Film

According to Gotthard Wolf, the founder of Institut für den Wissenschaftlichen Film, SRF takes measures ‘to adjust the visual means of film to scientific purposes’ (Wolf, 1967, p.173). SRF predominantly attempts to make things visible that are otherwise not perceivable for the human eye. This is achieved mostly through slow motion, time lapse and microscopic enlargements. By means of so-called ‘Bewegungsdauerpräparate’ (Wolf, 1967, p.16) – permanent preparations of motion – the IWF aimed to collect encyclopaedic accounts of the entirety of motion on the planet. Subjects of the ‘Bewegungsdauerpräparate’ range from the passing of a singular grain of sand through a sieve, the currents on a riverbed to the course of human somersaults. They were collected in the *Encyclopedia Cinematographica* (EC), which, by the time it closed in 2011, held more than 5000 ‘Bewegungsdauerpräparate’ in its archive. The objective of the archive was to provide filmic records for acute and pressing research questions of the scientific community, as well as to establish a phenomenological basis for future research questions, not yet posed at the time the ‘Bewegungsdauerpräparat’ was created.



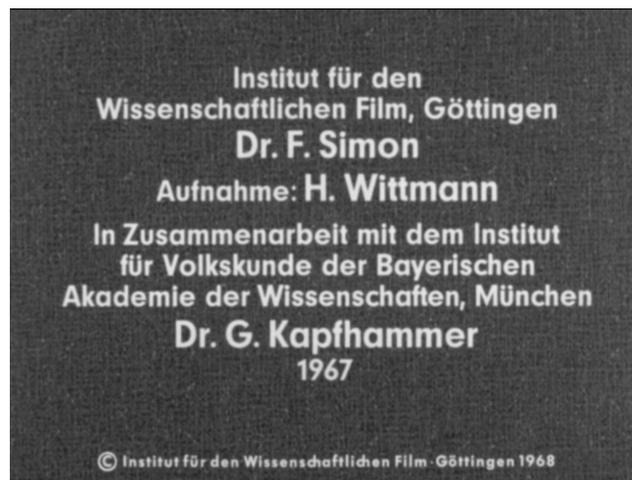
Stills from various IWF productions

With regard to such scientific utilisation, the films of the IWF seek to exclude all elements and constructions that may produce a sort of ‘surplus’ or ‘excess’ of information and distract attention from their actual subject matter. They aim at keeping the emotional impact of filmic sequences to a minimum, and foster a rational and considered reading (Wolf, 1967, p.173). In this sense, the proceedings captured in SRF are to be observed, not experienced.

According to Wolf, this can be achieved by replacing what he calls the ‘allusive cinematic composition commonly used in feature films’ (1967, p.173), with a filmic grammar that excludes redundancy and metaphorical connotations and instead focusses on ‘pure presentation’ (Wolf, 1967, p.172). In order to approximate this ideal – which I will in the following refer to as *mere showing* – the structure of a film must be simplified as much as possible and key aspects of the film’s production must be

recalibrated. The grammar of SRF is formed *ex negativo* defined by what it seeks to avoid. For example: ‘No music may be used in order to get attuned’ (Wolf, 1967, p.173). Synchronous sound recordings are only appropriate where sounds are ‘an integral part of the pictorial events’ (Wolf, 1967, p.173). In general, ‘audio commentary is to be avoided, so as not to encourage interpretation’ (Wolf, 1967, p.173). In the positioning of the camera ‘subjective angles are to be avoided’ (Wolf, 1967, p.173). ‘Proceedings must be depicted in a manner that causes the moving image to correspond with a thorough scientific description’ (Wolf, 1967, p.10). Documenting motion processes in their entirety, and maintaining their exact chronology has priority over considerations of the vividness of the account (Wolf, 1967, p.28), and ‘colour film in general is only used if it is absolutely necessary’ (Wolf, 1967, p.25).

In addition to these clear guidelines, the IWF specifies a number of more vague rules: The choice of lenses must take into account possible aberrations and possible misrepresentations of actual dimensions and proportions. The change in scale and optical distortions resulting from the use of different focal lengths must be given particular attention during the editing process (Wolf, 1967, p. 51). The frame rate has to be appropriate for the subject matter (Wolf, 1967, p. 50). The ‘lighting’ shall not produce emotional effects (Wolf, 1967, p.173), while the directing has to consider ‘the dangers of dressage’ (Wolf, 1967, p.173).



Examples of Intertitle and credits from IWF films

However, because not all possible illusions and misinterpretations can be anticipated and eradicated during the process of filming, the IWF also developed a number of ‘tools’ for post-production. These ‘tools’ are primarily means of contextualisation such as intertitles, an accompanying brochure, and credits. In the context of IWF film productions, intertitles are mainly used to distinguish different takes from each other and inform the viewer about relevant technical parameters such as the magnification factor and frame rate, as well as modifications in the experimental set-up. More comprehensive contextualisation is provided in a 10–20 page leaflet that accompanies each film. It contains technical data as well as information about location, date, time of the recording, weather conditions, etc. Beyond this, it provides additional information about the scientific theme and a bibliography, and also points out potential misreadings of the footage.



Leaflet accompanying IWF films

The basic principle that governs the IWF's idea of the medium of film is based on what Lorraine Daston and Peter Galison have described as the concept of 'mechanical objectivity'. In their book 'Objectivity' (Daston and Galison, 2010) they examine the genesis of 'scientific objectivity' in the 19<sup>th</sup> century and its relation to scientific image production. According to Daston and Galison, the ideal of 'mechanical objectivity' emerged with the invention of the photographic camera. Replacing human observation with a mechanical process, the camera allows nature to inscribe itself onto a film strip free from any interference by subjective human perception.<sup>2</sup> In much the same way the IWF considered film a medium that under ideal circumstances, and if handled correctly, could produce 'pure presentations', characterised by what Wolf calls 'maximaler Wirklichkeitsgehalt' (maximal reality content). The above-mentioned rules that the IWF established aimed to ensure that the degree to which the pure depictions of the filmic apparatus are compromised is reduced to a minimum.

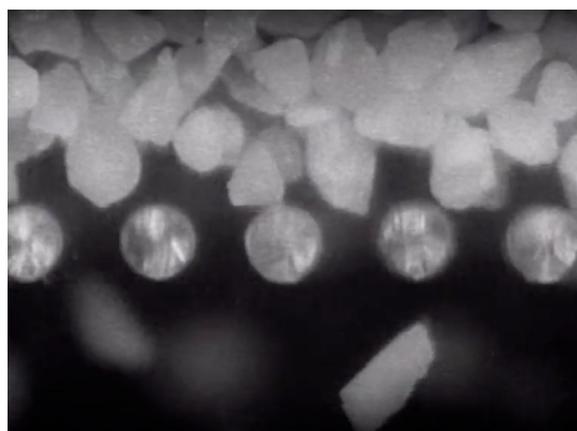
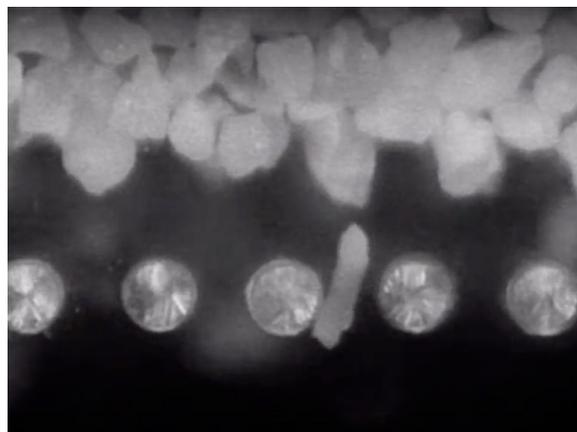
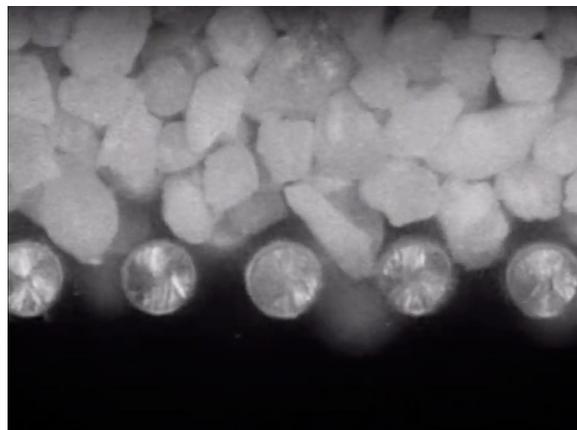
The guidelines postulate that there is one appropriate way of giving a factual account of a certain event and that following them enables the filmmaker to adopt this approach, bestowing the status of 'scientificity' upon the resulting film. What I was not so aware of in this – and what became more obvious during the archival research – is that the IWF's claim to *mere showing*, the elimination of redundancy and the limitation of the scope of interpretation, cannot be achieved by following the rules and restrictions for scientific film production alone: SRF's matter-of-factness is not defined unilaterally by its relationship to *pre-filmic reality*<sup>3</sup>. Rather, it is constructed out of a sophisticated

2 In the prologue to their in-depth investigation into the history of objectivity Daston and Galison tell the story of the British physicist Arthur Worthington. Since 1875 Worthington had studied the disintegration of liquid drops by means of a particular set-up: 'He lit his laboratory with a powerful millisecond flash – poring over every stage of the impact of a liquid drop, using the latent image pressed into his retina to create a freeze-frame 'historical' sequence of images a few thousandths of a second apart.' (Daston and Galison, 2010, p. 11) For almost 20 years Worthington 'relied on the images left on his retina by the flash' (Daston and Galison, 2010, p. 13), translating them into drawings and etchings serving as scientific evidence of the symmetry of drop disintegration. In 1894 Worthington 'finally succeeded in stopping the droplet's splash with a photograph.' (Daston and Galison, 2010, p. 13) This and the following photographs proved that his previous symmetrical depictions of the disintegration process were wrong, and that in fact drops disintegrate asymmetrically, chaotically. This produced what Daston and Galison call the 'shock of objectivity' the realisation that human perception is prone to error, and that photography provides the means to subtract this factor from the equation.

3 I follow here Eva Hohenberger's definition. See Hohenberger, E. (1988) *Die Wirklichkeit des Films, Dokumentarfilm, Ethnographischer Film – Jean Rouch*. Hildesheim: Georg Olms Verlag. (pp.28 – 30)

weighing of interests in which the form of the filmic document is generated from the permanent conflict between the conditions on the site of filming, its intended representation in the filmic image, and the potential interference of unsolicited metaphorical narratives. It presents itself as the result of a complex organisation of information that relies heavily on a network of accompanying predominantly language-based measures.

Accordingly, the means of SRF cannot just be understood as a filmic grammar – in the sense of a set of structural rules that enable the production of an utmostly objective and realistic account – but as a more complex organisation of information that has certain suggestive aspects, which present the syntax of IWF at times more as a *rhetoric* that artfully implements its means to lay out its claims of scientificity. The anti-narrative efforts of the IWF and their consequences for film production became the central concept, which I investigated in the practical experiments of my research project. The films I made between 2012 and 2015 take the formal and theoretical framework of the IWF's concept of *mere showing* as their starting points.



Stills from IWF film *Verhalten körniger Stoffe auf Wurfsieben*, 1954

One of the central problems of this concept of filmmaking is that to *merely show* things and processes frequently produces visual accounts that are – in terms of IWF standards – highly equivocal if not cryptic. Without contextualisation, the shots of bacteria, sand grains, or animal movements can be extremely inconclusive, even for experts, despite all the measures towards clarity taken in the filming. The overall concept of the IWF tries to negotiate this problem through the above-mentioned contextualising means, the use of intertitles, voiceovers and accompanying text. Its attempt to contextualise the visual account through these means, its urge to delineate applicable from inapplicable readings must be seen as one of the central aspects of its claim towards producing objective filmic accounts.

In my films I pick up on some of these contextualising means. However, instead of using them as tools to narrow down the scope of interpretation, I sought to deploy them in a way that maintains – even strengthens – the vagueness that occurs through *mere showing*. In other words, I worked on making films that *show* processes, but that, in contrast to their historical paragons, experiment with how voiceovers, intertitles and original sound can be implemented as means that do not seek to dispel doubt, but actively nurse ambiguity and openness.

## 2 Filmic Experiments

### Two Films about Pressure

The first two films I realised during the research period (comprised as the series *Two Films about Pressure*) take the topic of physical pressure as their point of departure. They concern themselves with man-made facilities that recreate the high- and low-pressure conditions that occur in nature. *Unterdruck/Low Pressure*, 2013, investigates the topic of low pressure in the context of a former low-pressure chamber for GDR athletes<sup>4</sup>, while *Künstliche Diamanten/Synthetic Diamonds*, 2013, focusses on high pressure conditions created in the laboratory of a GDR mineralogist specialised in the production of synthetic diamonds.<sup>5</sup> Both sites and technologies are linked by a common historical background, as they were both in use during the GDR regime, and both their fates were strongly affected by the fall of the wall and the reunification of Germany. In the context of my artistic research project, I wanted to see how approaching such a layered topic in the manner of SRF would structure a specific outcome.

4 The hypobaric chamber shown in *Unterdruck* was built in the late 1970s in Kienbaum near Berlin to allow GDR athletes to benefit from training in high altitude conditions. As the geomorphology of the GDR did not provide these atmospheric conditions, the SED (leading party of the GDR) decided to produce them artificially so that GDR athletes could prepare for the prestigious sports competitions with the West without having to travel outside of Socialist countries. Kienbaum is one of the two largest decompression facilities in the world, it can simulate the atmospheric conditions of an altitude of up to 4,000 m above sea level. The experience of being in the mountains is reduced to a very small, almost inconceivable, detail: the lower amount of oxygen in the air – an effect that can be utilised to enhance the body's performance. A top-secret facility at the time, the site was abandoned after the peaceful revolution of 1989.

5 The recordings were made at the *Vollstädt Diamant GmbH*, a company established by Professor Heiner Vollstädt, a mineralogist, who began his research on the production of synthetic diamonds in the GDR 40 years ago at the *Zentralinstitut für Physik der Erde* (Central Institute for Physics of the Earth). Since the late 1970s the production of synthetic diamonds had become a prestigious project for the GDR government, which was supposed to end the state's dependency on diamond imports from the USSR or the West. Vollstädt was not the first scientist to achieve the synthesis of graphite into diamond, but – due to the political agenda of the GDR – he was forced to invent his own techniques for implementing this task, for the state stipulated that he use only GDR resources. After the reunification of Germany the *Zentralinstitut für Physik der Erde* was discontinued, and around 1993 Heiner Vollstädt bought some of the old machinery and transported it to a disused Russian military camp outside Potsdam, where he continues the production of synthetic diamonds as a private enterprise.

In *Künstliche Diamanten* I explored my interest in the use of the voiceover in SRF. While the imagery shows the procedures related to the transformation of graphite into diamond, the voiceover dissociates itself from the particularities of the proceedings by speaking in more general terms about labour, its relations to society and to geological processes. It briefly recounts the history of Vollstädt Diamant Ltd., the site where the film was shot, and comments on the political implications of diamond production in the GDR.



Slow Frequency Series  
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# Andreas Bunte

## Two Films about Pressure

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Poster for exhibition at Or Gallery, Vancouver

I aimed to create a multi-vectorised filmic structure in which text, sound and image function as independent, non-complimentary sources of information. I wanted the film to produce an ambiguous thematic field, in which the main subject is reflected obliquely through multiple other topics. In order to establish such a thematic field it was necessary to disperse the focus, and to balance out the different vectors, so that minor points could become actual topics and vice versa. The images present movements related to the production of synthetic diamonds, but they do not provide any insight into how the transformation of graphite into diamond actually takes place, for I decided that the film should not attempt to show what is hidden to the human eye, but stick to documenting those aspects of the process that are visible without the support of technical means. My aim was to capture the production of synthetic diamonds – actually quite a spectacular process – through the observation of mundane labour performed to facilitate the transformation.

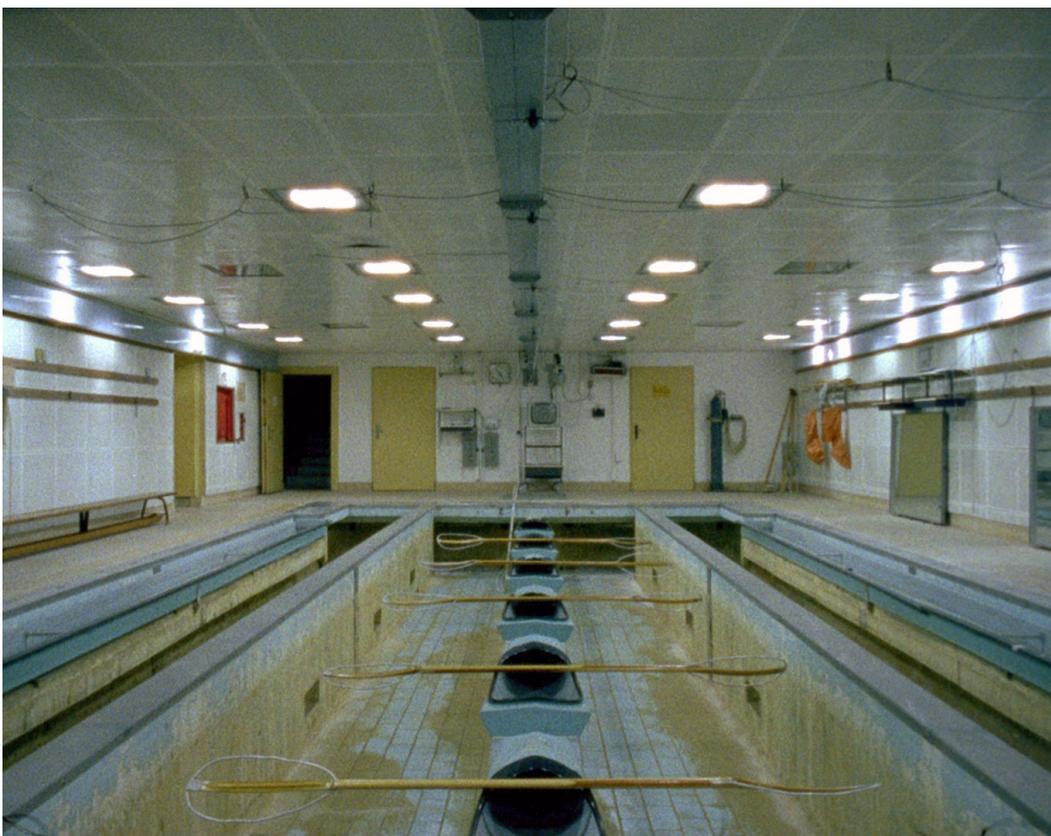


Stills from *Künstliche Diamanten*, 2013

Vollstädt Diamant Ltd. does not look like a high-tech laboratory, but rather like an outdated, medium-sized mechanical workshop in which the production of diamonds unfolds as a series of banal actions: positioning elements, weighing materials, levelling, waiting, operating machines. Ultimately the finished diamonds are extracted using an old butter knife, a worn-out hammer, empty pickle and mustard jars, etc. Many of these objects and proceedings look very familiar and at times hardly technological, though their implications with regards to both – the natural genesis of diamonds as well as their man-made cultivation – could not be more removed from our daily life. This ambivalence is supported by the brief comments of a voiceover, which addresses diamond production not only as a form of labour but also as a geological spectacle, a historical as well as contemporary practice, and ultimately, as science and commercial business.

As a result of this heightened complexity of the relationship between word and image, pressure is presented as embedded in a specific historical and political situation from which it cannot be isolated.<sup>6</sup> By using this approach I turned the physical phenomenon into a wide thematic bracket for reflection on a historical, political and material reality and complicated explanations about the processes depicted in the filmic images rather than clarifying them.

<sup>6</sup> In his book *We Have Never Been Modern*, the French sociologist and philosopher Bruno Latour criticises the modernist concept of knowledge production for dividing reality into different specialist categories. Politics, science, economy, ecology all cultivated a very specialised, exclusive perspective. Latour argues that this specialised frame of reference is not capable of grasping the true complexity of the world. He proposes a more integrated approach that accounts for the multifaceted structure that every phenomenon is integrated into (Latour, 1993). The way that *Künstliche Diamanten* and *Unterdruck* account for the phenomenon of pressure can be seen as informed by Latour's idea.



Still from *Unterdruck*, 2013

While *Künstliche Diamanten* investigates how contextualising means can be utilised to produce a multi-vectored filmic structure, *Unterdruck* examines how film can show a process without necessarily providing an account of change. In order to do so, *Unterdruck* plays with the concept of adequacy/inadequacy in the filmic means, for example the ‘adequacy’ of the timing of a shot. In the ‘Bewegungsdauerpräparat’, the duration of a shot is determined by the duration of the process that it attempts to capture, as these *permanent preparations of motion* always aim at documenting processes in their entirety or in representative sections.

In *Unterdruck* I applied the concept of ‘Bewegungsdauerpräparat’ to the subject matter of architecture, despite the fact that the abandoned pressure chamber is void of any movement, except for a few flickering neon tubes. Hence determining the duration of the shots became a crucial factor, as the subject matter did not hold immediate clues for when to begin and end filming a sequence<sup>7</sup>. I therefore decided to base the duration of the shots on my attention span on location, and kept the camera running for the period in which I assumed the individual shots could be of interest. The resulting duration of the shots was not altered in the edit. So, rather than using external factors like the choreography of a camera movement or the re-evaluation of the timing in post-production, my spontaneous on-site decisions became the frame of reference for the duration of the shots.

What is common to all scenes in this film is that they, at first sight, document a seeming ‘non-event’, the absence of movement, or change. What I was looking for with *Unterdruck* was a way to address the persistence of architecture – something that is normally hardly considered a process, because it does not involve perceivable durational

<sup>7</sup> This question could have likely been avoided through a choreographed camera movement, for example a tracking shot or pan determining the duration of the shot. However, in *Unterdruck*, I keep the camera static, so that the stagnation inside the pressure chamber is accentuated rather than concealed.

change – as an event. Persistence is commonly only recognised as a time-based phenomenon through its opposite, the process of decay, the traces of which not only refer to the extremely slow process operating against architecture's duration, but also dialectically emphasise architecture's 'still-there-ness'. However, the actual occurrence of the process of either architectural persistence or decay evades human perception as well as the gaze of a 'scientific' camera.<sup>8</sup> *Unterdruck* nonetheless attempts to create a 'Bewegungsdauerpräparat' of this process capturing significant sections of the duration of architecture and relating them to the time span of humans (indicated for example in the ergometers or running tracks, the calendar), to that of political systems, and to extend even further to the time frame of geological formations, such as a 4000 m high mountain that the building attempts to simulate.<sup>9</sup>

In both films, *Künstliche Diamanten* and *Unterdruck*, I treat the use of sound with particular attention. After years of making silent films, I was interested in playing with the IWF's dogma of using sound only if it adds significant information to the images. I wondered which type of sound would not do that – add important information to a scene. And whether silence could be understood as information, too. Could a lack of sound be articulated as something that is added and not as the result of a subtraction?

The soundtrack in *Künstliche Diamanten* derives from the recording of an analogue optical soundtrack with no sound information on it. The process of digitising the silent, analogue soundtrack produces artefacts, which become audible as the typical crackling of analogue film projections. I use this crackling sound, which on a technical level is a mere aberration, to emphasise silence as an added layer of information, and to create an abstract acoustic space from which the voiceover can emerge.

8 Superflex' *Modern Times Forever (Stora Enso Building, Helsinki)*, 2011 attempts to make this dimension of architecture visible through the use of CGI animations. The films make visible 'what would happen to the Stora Enso building as an architectural and ideological symbol over the next few thousands of years, if only time would affect the building.' (Superflex, 2011) The work was commissioned for IHME Contemporary Art Festival in Helsinki, Finland in 2011 and was presented as an outdoor screening in Helsinki Market Square so that one could view the original building simultaneously with its screened rendering. The film compresses 5000 years into 240 hours. As opposed to a time lapse recording of the 5000 years, the film seems to present a series of real-time recordings or rather renderings of different stages of the decay process. By various means (i.e. a shaking image as if the camera was handheld, slow moving fog, or the soundscape) the film suggests the passing of real-time. Ultimately, *Modern Times Forever* does not show the actual process of decay, the crumbling of the architecture. What it provides the spectator with is traces of events that happen elsewhere, presumably in the time gaps that the edit creates. These considerations are based on a short excerpt that can be found on the Superflex website. The whole film was only shown once, during the above-mentioned exhibition.

9 Lindsay Bremner has suggested considering architecture as agents that mobilise natural materials, minerals, water and energy in ways that alter the way the earth system works. She therefore considers buildings geological formations. Bremner describes i.e. Tempelhof airport in Berlin as such a geological formation, which in her account is 'a massive, 1.2 km long outcrop of limestone in the middle of Berlin, containing many other geologic materials and strata.' (Bremner, 2013) In her view, Tempelhof is a significant change of the geomorphology of the earth because the Nazis transported tons of limestone from the south of Germany to Berlin, as it didn't exist naturally in the Berlin region. In another article Bremner writes: 'In creating conditions of habitability, our species has interfered with earth materials to such an extent that new geological conditions have emerged, many of which will play out for thousands, if not millions of years. We have transformed the earth's geomorphology, its surface, its atmosphere and its climate so radically that some are calling what we have done a new geological era, the *Anthropocene*. Large buildings are hotspots in this transformation.' (Bremner, 2014) Like the mountain of limestone – a geological formation created by the Nazis – the pressure chamber reacts to a geomorphological deficit by building a structure that in Bremner's view represents a geological agent. The decompression facility in Kienbaum, however, performs a more complex role, as it is not only driven by a certain aesthetic principle, but also attempts to create the pressure conditions of the high mountain range at a low altitude, close to sea level.

In *Unterdruck* I take a different approach. The sound track consists of different humming sounds that were recorded in each room of the facility during the filming. The soundtrack makes audible what represents silence in this particular building, or rather the absence of sound from sources other than the architecture itself or the standby-mode of the technology integrated in it. According to the strict rules of the IWF doctrine this soundtrack is void, as it remains unclear where the humming comes from, and how it relates to the things we see in the images.

Except for some flickering neon tubes there is hardly any movement visible in the shots that it can be related to. In the context of *Unterdruck*, however, the humming of transformers or the static of the empty pressure chamber becomes an articulation of the durational aspect of the shots. The passing of time that is the foundation for the existence of the filmic record as well as for the persistence of architecture is otherwise only perceivable in the movement of the film grain. Visual and acoustic 'noise' thus become the only 'signs of life' which relate the temporality of architecture to the durational basis of the shot itself, hereby presenting stagnation as an event.

### Suspended Duration

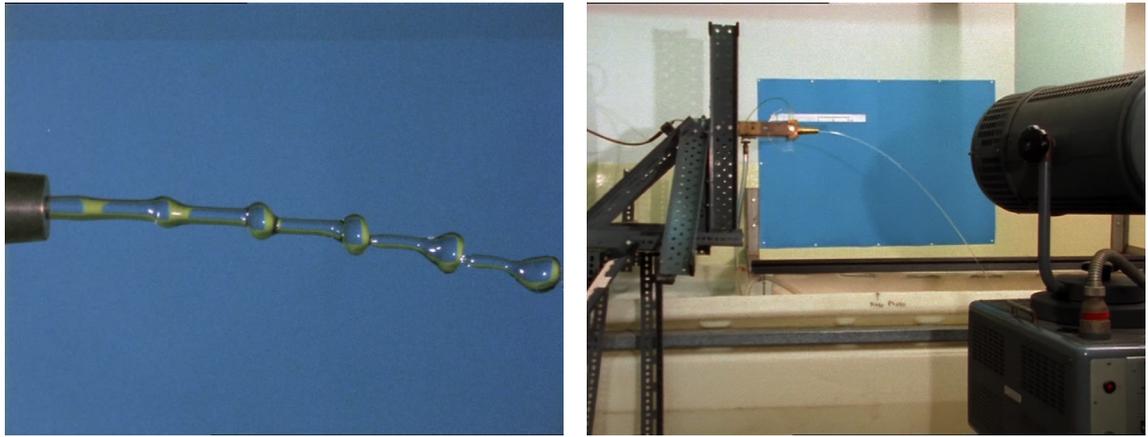
The next film I produced as part of the research project is titled *Suspended Duration*, 2013. It investigates how a film can use the dialectic between *champ* and *hors-champ*<sup>10</sup>, in order to establish the process of its own making as a narration.

The term *champ* refers to everything that is visible in the filmic image. The visible *champ*, however, shows only an aspect of the diegetic world that narrative film aims to establish. Those aspects that are part of the diegetic world but are not visible in the filmic image are referred to as *hors-champ* (i.e. characters that leave the *champ* but continue to speak with actors in the *champ*). It is evident that the films of the IWF do not seek to create a diegetic world. However, even though they aim to present their subject matters as isolated from any context, their records (like any filmic record) inevitably produce a *champ/hors-champ* dialectic. The IWF aimed to minimise if not eliminate this dialectic tension between what is visible and what lies outside the frame. As much as the films concentrated on making the unseen visible in the *champ* their *hors-champ* is neglected as a site of mere production. Therefore I would argue that in many IWF films, the *hors-champ* collapses into what is called the *hors-cadre*, a term that refers to the invisible space of a film's production, i.e. the film studio, the crew, etc.

An example of this is the IWF production *Metamorphoses of a Pulsating Water Jet* (Meier and Grabitz, 1992), which documents the disintegration of a pulsating water jet with the help of stroboscopic illumination. In Meier and Grabitz' account of the experiment the *hors-cadre* is revealed in a series of shots that show the set-up and the studio with all the technical equipment. These shots show the *hors-cadre* in order to explain the technical workings behind the intriguing images of the water jet. They are *off the record* views that contrast the site of production with the actual record of the water jet. *Metamorphoses of a Pulsating Water Jet* presents the relation between *cadre* and *hors-cadre* as a clear hierarchy, in which a main perspective showing the actual experiment is complemented by a side perspective for the sake of explanation.

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<sup>10</sup> My use of the terms *champ/hors-champ* and *cadre/hors-cadre* is based on what Karl Sierek has laid out in his text *Filmwissenschaft*. (Sierek, 2009, p. 133)



Stills from *Metamorphoses of a Pulsating Water Jet*, 1992

With *Suspended Duration* I became interested in finding out whether it is possible to address the hors-cadre in its relation to the filmic reality without falling into the dichotomy between a main and a side perspective featuring so prominently in *Metamorphoses of a Pulsating Water Jet*. Furthermore, I wanted to investigate if such an encompassing filmic structure would allow me to activate the hors-cadre as a ‘narrative’ space in which the process of the film’s making plays out as its story.

The film shows quotidian activities such as the unpacking of shopping bags, the use of a soap dispenser, the disentangling of headphone cables or the opening of beverage cans. Instead of presenting these movements in their usual contexts, I staged them in a laboratory-like setting and recorded them against black and white grid backgrounds. Such grid backgrounds are used in scientific motion studies or photogrammetric records to facilitate an exact reading of the spatial requirements of particular movements. The historical paragons of this idea are the photographs of Edward Muybridge<sup>11</sup>, who deployed measuring grids to enable a direct reading of the spatial dimensions of movements. At the turn of the 20<sup>th</sup> century, Lillian and Frank B. Gilbreth developed the genre of *motion study* into what they called *time motion studies*.<sup>12</sup> The Gilbreths made extensive use of measuring grids for their filmic documentations of work motion sequences in factories, which capture the details of workers’ activities and their body postures while simultaneously recording the duration of these for further analysis, and in search for ‘the one best way’ of producing.<sup>13</sup>

11 The work of Étienne-Jules Marey would be another important point of reference with regard to scientific motion studies and the beginnings of motion picture, however, unlike Muybridge, Marey didn’t use measuring grids in his photographs.

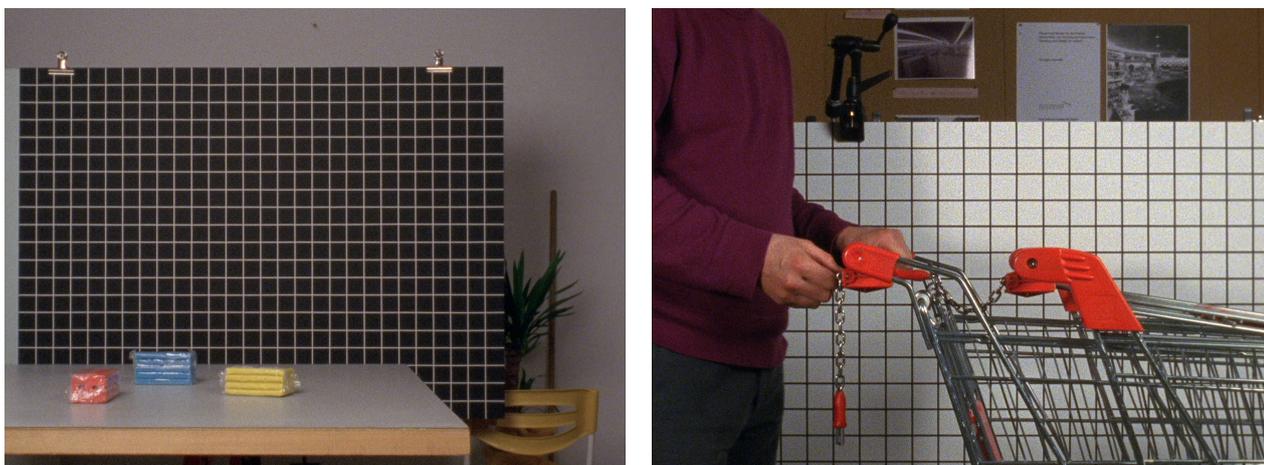
12 The time motion studies of the Gilbreths shift the attention from the observation of human and animal locomotion to human interaction with objects and machines. For *Suspended Duration* this shift gained particular importance, as the Gilbreths’ idea of motion study treats human and non-human agents as equal parts of a system, whose interaction was to be optimised. In *Suspended Duration* I intended to transfer this non-hierarchical perspective onto the interaction of humans, objects and commodities. This approach reflects the fact that the notion of labour today is not only associated with the production of commodities, but also with their use or consumption.

13 In comparison to Muybridge, who maintains a frontal alignment of the camera with the measuring grid, the Gilbreths’ camera often faces the plane of the grid at an odd angle (*see image*). While this angle of view produces more dynamic and interesting images and in some cases also provides a better view of the work processes, it can achieve these cinematic impressions only at the cost of rendering the benefits of the measuring grid nearly obsolete. As film historian Scott Curtis has argued, the Gilbreths’ films were not mainly conceived as tools for scientific analysis and the optimisation of labour processes, but also – and maybe to a greater extent – as rhetorical devices to promote the potential of the Gilbreths’ particular method of work-motion analysis. (Curtis, 2009, pp. 85-99)



Stills from the Gilbreths' motion studies, between 1912 to 1924

In *Suspended Duration* I use the measuring grids to refer to this history of motion studies and also to allude to more recent technologies such as motion capture techniques for games or movies.<sup>14</sup> However, in my film the grids are not actually deployed to measure movements or to pretend to do so, but primarily to organise the field of vision. In many shots the grid boards do not fill the entire frame, and sections of the laboratory space that the boards are staged in become part of the shots. What might appear to be a framing accident or negligence on part of the cameraman actually fulfils the function of dividing the image into two different areas: the space in front of the grid marks the area of actual 'scientific' interest, in which humans and objects become activated according to protocols of 'scientific' intentionality. In SRF this area would represent the actual cadre.

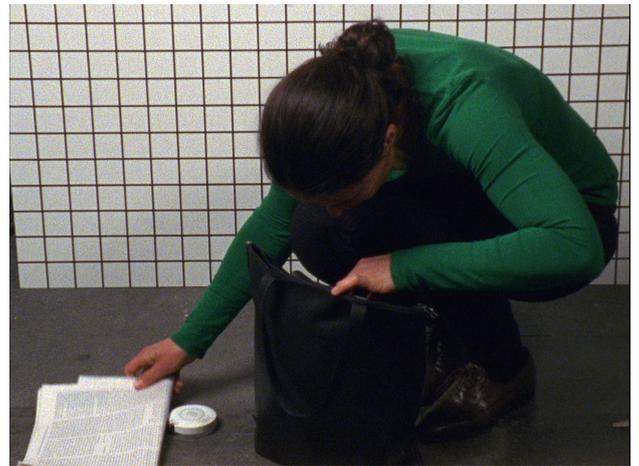


Stills from *Suspended Duration*, 2014

The area that surrounds the grid represents a kind of non-space, a gap of redundancy between the scientific plain and the hors-cadre. In *Suspended Duration*, this zone of transition, which belongs to the cadre as much as it belongs to the hors-cadre, is populated by objects that seem to have been left there by mistake (an office plant, a chair, shelves, a cork board, a broom), or that serve technical purposes (trestles, tripod, film grip, etc.).

14 Hito Steyerl's installation in the German Pavilion at the Venice Biennial 2015 dealt with motion capture technology and its implications, among other topics. Steyerl presented the film inside an architectural cube in which walls, ceiling and floor were covered with a raster similar to those used in the production of video games or other 3D animations. These grid spaces resonate with the grid planes in *Suspended Duration* as well as with the grid spaces in the films of the Gilbreths in that they attempt to provide a universal backdrop against which the spatial unfolding of any given movement can be tracked precisely. Furthermore, such universal space can be exchanged with an infinite number of specific environments. While Steyerl's contribution to the German Pavilion actualises this capacity of the grid space in her film, the grids in *Suspended Duration* appear as material devices, which are flat, incomplete and lack the ability to transcend the actual space of the laboratory.

In contrast to the actual ‘protagonists’, however, which make their appearance in front of the grid area as *generic* objects upon inspection, the objects that are to be seen on the fringes of the grid boards are *specific* objects in service of the film’s production. The ladder is not just *a* ladder (chosen for the purpose of demonstration), but *the* ladder used in the laboratory, and so is the cork board, the chair, and the magic arms holding the grid board. The differentiation of objects into protagonists and bystanders ultimately affects the category of motion itself, which is discerned into actual movement that is subject to motion study and utilitarian movement ascribed to the labour process of producing the film. The opening of Coca-Cola bottles as a filmic experiment i.e. is echoed by the wiping up of an accidental Cola spill. A brief shot of the test person rummaging through her bag preludes the scene showing the disentangling of earphones. Other takes show the re-packing of shopping bags, which inevitably has to take place before another take of the unpacking process could have been filmed.

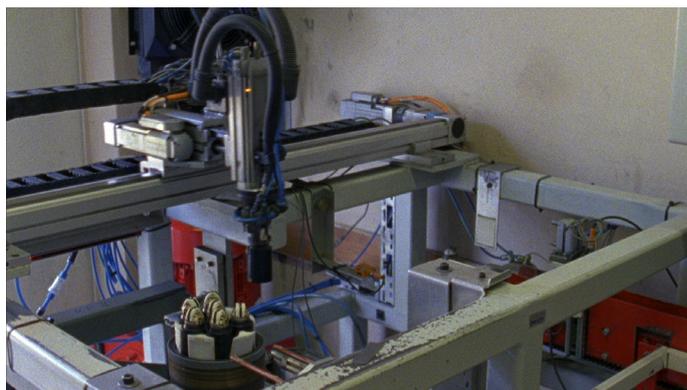


Stills from *Suspended Duration*, 2014

The particular organisation of the frame using measuring grids allows me to embed traces of the film’s production into the image proper and shifts the hierarchy between the intended record and the account of the hors-cadre from a dichotomy into a more ambiguous relationship. The entanglement of a mis-en-cadre within a hors-cadre is further reflected on the audio level. For the soundtrack of *Suspended Duration* I used recordings of the process of production. The fragments of conversation and noises in between the actual takes derive from the proceedings in the ‘background’: some last instructions to the test person before the recording starts, a cheerful ‘very good’ after a take has ended, jokes and unrelated utterances, sounds from the handling of nondescript objects and of the hum of the running camera, which indicates the presence and the active role that the cinematographic set-up plays in the production of the images. My aim was not only to blur the boundaries between mis-en-cadre and hors-cadre, but also to highlight the fact that particularly the concept of ‘Bewegungsdauerpräparat’ is based on a delineation of movements, objects and spaces into specific and generic.

### Safe Disassembly

*Safe Disassembly* is the most recent production of my fellowship project, in which I explore the possibility of producing a ‘multi-vectored’ thematic field without adding information to the images. In contrast to *Künstliche Diamanten* in which a voiceover is added to the images, or *Suspended Duration*, which attempts to complicate the study of motion with traces of its own making, *Safe Disassembly* comes much closer to the original concept of the ‘Bewegungsdauerpräparat’, as it concentrates mainly on the observation of particular motion patterns from a distance. In contrast to the IWF productions, however, it foregoes the attempt to contextualise the process that it depicts, which – given the technical and ethical complexity of the topic – presents another interesting capacity of the idea of *mere showing*.



Stills from *Safe Disassembly*, 2015

Thematically, *Safe Disassembly* explores the process of disassembling cluster ammunition. With the *Convention on Cluster Munitions*, an international treaty signed by 97 countries that ‘prohibits all use, stockpiling, production and transfer of Cluster Munitions’, vast numbers of this type of ammunition became obsolete. In Pinnow, two hours outside Berlin, the demilitarisation division of the Norwegian ammunition producer Nammo has established an operational facility for the disassembly of cluster ammunition. The division called Nammo Buck uses the facilities of a former workshop of the GDR where missiles were serviced and produced for the former GDR National People’s Army (Nationale Volksarmee) and the Russian Red Army.

In order to disassemble large quantities of ammunition, Nammo Buck developed special automated machinery capable of taking apart large numbers of artillery shells safely. What I was interested in with this film was that in contrast to most recycling procedures in which scrap material is ground, melted or otherwise decomposed, the dissection of the complex assemblage that a bomb constitutes plays out as an inversion of the production process: here the recycling product is taken apart piece by piece. The careful deconstruction of the ammunition into individual components resembles an assembly line, while in fact it is a disassembly line. It does not only aim at undoing the steps of production, but also at neutralising the explosive potential that was created through their assembly. Hence, in *Safe Disassembly* I explore the potential of *mere showing* to present the disposal of cluster bombs as a process situated half way between construction and destruction.

My approach to the actual filming process on location was to start more or less unprepared, without having in-depth prior knowledge about the site, or the process of disassembly. I was interested in the idea of deriving the course of filming from a confrontation with an unknown process that I mainly have speculative ideas about.

This approach grew out of necessity, as over the course of the pre-production process I encountered great difficulties in obtaining information about the actual processes in the first place. Due to the dangerous nature of cluster ammunition and the involvement of all kinds of military administrative regulations it was not only difficult to obtain information, but it foremostly was unclear for a long time whether I would get permission to film at all.<sup>15</sup> I was intruding into a realm of extreme secrecy and security, and had to subscribe to a number of restrictions as to what could be filmed and how.

Formally, *Safe Disassembly* continues my investigation of the sound-image relationship within the concept of *mere showing*. At first I wanted to use voiceover to quote from patents on cluster ammunition filed to the European and American Patent Office, intending to confront the images of the dissection process with references to the bombs' invention and production. I thought that the high level of abstraction of the technical jargon used in patents could be utilised to increase the level of ambiguity that lies in the disassembly of cluster ammunition. While working on the edit, however, I realised that ambivalence is inherently present in the images, in the thoroughness and sophistication with which the objects are deconstructed. They already provide references to assembly as well as to disassembly and recall everyday work routines as much as they show unfamiliar proceedings. I therefore decided to give no explanation at all.



Stills from *Safe Disassembly*, 2015

However, I structured *Safe Disassembly* with a series of intertitles in order to separate the different disassembly steps from each other. Each of the five charts provides a specific yet cryptic combination of numbers and letters ranging from 1.1 A to 1.5 E. These codes refer to the *UNO Hazard Class and Division system*, which divides hazardous materials into different classes according to the character and predominance of the associated hazards and the potential for causing personnel casualties or property damage.<sup>16</sup> Although the codes do not reveal their specific meaning to the unknowing spectator, they nonetheless can be identified as related to the topic of the film, as in some scenes the same codes can be spotted on labels of boxes or doors.

<sup>15</sup> After negotiating with one company for almost seven months, the NATO administration as the legal owner of the ammunition, denied us a filming permit. I then approached staff at Nammo Buck, who were much more supportive, and gave me their permission to film the process of disassembly. However, in this case too, I needed additional permission from the respective military officials who owned the ammunition. Some did not grant me permission to film the disassembly of their ammunition, while others did, but demanded that particular parts were not to be shown.

<sup>16</sup> Class 1 concerns ammunition and explosives, with 1.1 representing the most severe hazards and 1.5 the mildest. The numbers are accompanied by the letters A – E, the so-called *Compatibility Group Codes*. These indicate storage compatibility for explosive materials.

A further argument not to give any explanations was the fact that the original sync sound recordings provide a rich texture of information that already comments on the imagery. This becomes most apparent in the scene with the bomblet extraction machine, where the noise of various robotic arms and conveyor belts recalls the sound of electronic music. In this particular instance of the production, *merely showing* the sonic side of this process transforms the movements of the machines – actually performing one of the most dangerous parts of the disassembly process – into a ‘mechanical ballet’. Neither the sound person nor I were aware of this quality during filming, because we were not allowed to enter the high security area while the machinery was operating. We therefore had to set up our equipment while the machines were not running and start the recording via remote control from outside the chamber. From the beginning to the end of the film’s production we were dependent on ad-hoc working methods, which forced us to spontaneously make use of the available possibilities. Immersed in the process of filming, many aspects of the proceedings only revealed themselves through repeated viewing of the footage in the editing process – likewise repeated watching offers the viewer the opportunity to enter into a similar process of reconstruction.

### 3 Dissemination

In the context of my research fellowship project, I did not only investigate the filmic form of IWF but also used a variety of modes of dissemination in order to explore their impact on the film’s communication with an audience. Apart from creating particular installation set-ups for exhibitions in art institutions, I experimented with other formats that created alternative contexts to that of art exhibitions.

#### Two Films About Pressure

I presented the films comprised as *Two Films about Pressure* in two different set-ups. In their installation format, the two films are projected simultaneously onto two independent screens standing back to back in the exhibition space. While this mode of presentation separates the two films on an optical level – only one could be watched at a time – it creates an overlap of audio information. In what is called ‘sound spill’ each film gets infused with the other’s soundtrack and expanded by yet another layer of information.



*Two Films about Pressure*, installation view at Or Gallery, Vancouver 2014

*Two Films about Pressure* was also presented in a proper cinematic set-up at KinoKino in Sandness, Norway, where they were played one after another in a looped screening program<sup>17</sup>. This presentation was meant to expose the ‘non-narrative’ qualities that *Künstliche Diamanten* and *Unterdruck* appropriate from IWF to the viewing conventions of the cinema. In contrast to the spatial installation, in which the viewer is encouraged to move around in an architectural setting, the cinematic mode of presentation immobilises the spectator, and in doing so, subjects the films to a different mode of reception altogether. While the freedom to move around in the spatial installation allows the spectator to edit the individual films into her/his own hybrid version of the piece through actual, physical motion, the cinema forces the spectator to sit through the entire film. I was interested in how the particular viewing situations in a cinema could dissolve the viewer’s immersive contact with the film, so that she/he becomes aware of her/his own narrative expectations, the structure of presentation, duration of shots, camera framing, etc.



Screening program *2+1 Films about Pressure* at Kunstnerhuset Auditorium, 2015

In the context of my final presentation, *Künstliche Diamanten* and *Unterdruck* were presented in the cinematic format. Together with *Safe Disassembly* – which was shown for the first time on this occasion – they formed the looped screening program *2 + 1 Films about Pressure*, which was presented at the Auditorium of Kunstnerhuset in Oslo parallel to the installation of *Suspended Duration* at Akademirommet. Additionally, I submitted *Künstliche Diamanten* and *Unterdruck* to the online archive of the German National Library of Science and Technology (TIB) in Hanover, Germany. Most of my archival research was based on the TIB’s collection as it houses the entire archive of films produced by the IWF as well as other Scientific Research Films. This particular mode of dissemination already addresses a scientific audience. In my original project description I had already touched briefly on the idea that the films I was to produce during the fellowship period could be fed back to the realm of education. The TIB now offered the possibility to bring some of my films back into the realm of scientific research.

<sup>17</sup> This presentation was part of the exhibition ‘This must be the place: Pick me up and turn me round’ that took place in conjunction with the research project re:place.

The screenshot shows the TIB AV-Portal search results for the query 'Pressure'. The page features a search bar at the top with the query 'Pressure' and a search icon. Below the search bar, there are navigation links for Home, Subjects, Publisher, and About AV-Portal, along with a Watchlist, Upload, Login, and Register button. The search results are displayed in a grid format, showing 505 results. The results are filtered by Relevance, Title, and Release Date. The first row of results includes 'Chromatographie - 4. Packen einer IWF (Göttingen)', 'Unterdruck', 'Behnsches Rohr', and 'Versuche zur Quellung von Erbsen'. The second row includes 'Andrew Treloar, ANDS at DataCite summer meeting', 'An introduction to PlanOS (Planar Optronic Systems)', 'Closing Round Table - Are pure and applied', and 'Introduction in Audio Retrieval 1 (12.05.2011)'. The third row includes 'Innovative nose protects trains during collisions', 'Wake vortices', 'Verformen von Glas mit Ritzwerkzeugen -', and 'Künstliche Diamanten'. The right sidebar shows filters for Subject (Physics: 205, Information technology: 144, Mathematics: 71), Language (English: 248, German: 240, Silent film: 11), Author & Contributors (Susskind, Leonard: 84, Loviscach, Jörn: 69, Lauth, Günter Jakob: 49), Publisher (Stanford University: 85, Loviscach, Jörn: 69, Lauth, Günter Jakob: 49), License (CC BY 3.0 DE: 172, CC BY-NC-SA 3.0 DE: 71, CC BY 3.0: 61), and Year (2013: 158, 2011: 80, 2012: 71).

Search for 'pressure' in TIB archive with *Unterdruck* and *Künstliche Diamanten* among the results

At first only *Künstliche Diamanten*<sup>18</sup> was accepted, while *Unterdruck* was rejected with the argument that the film did not contain 'enough scientific-technological aspects'. When I suggested to place *Unterdruck* in the aesthetic rather than scientific category 'architecture', the TIB was able to accept both films.<sup>19</sup>

This mode of dissemination intends to confront the films with expectations that they were not intended to respond to. It seems to me that this confrontation becomes particularly interesting as both films appear next to the scientific paragons that served as a template for them, which makes their subtle deviations more noticeable. Ideally the films will also affect how viewers look at the other films in TIB.

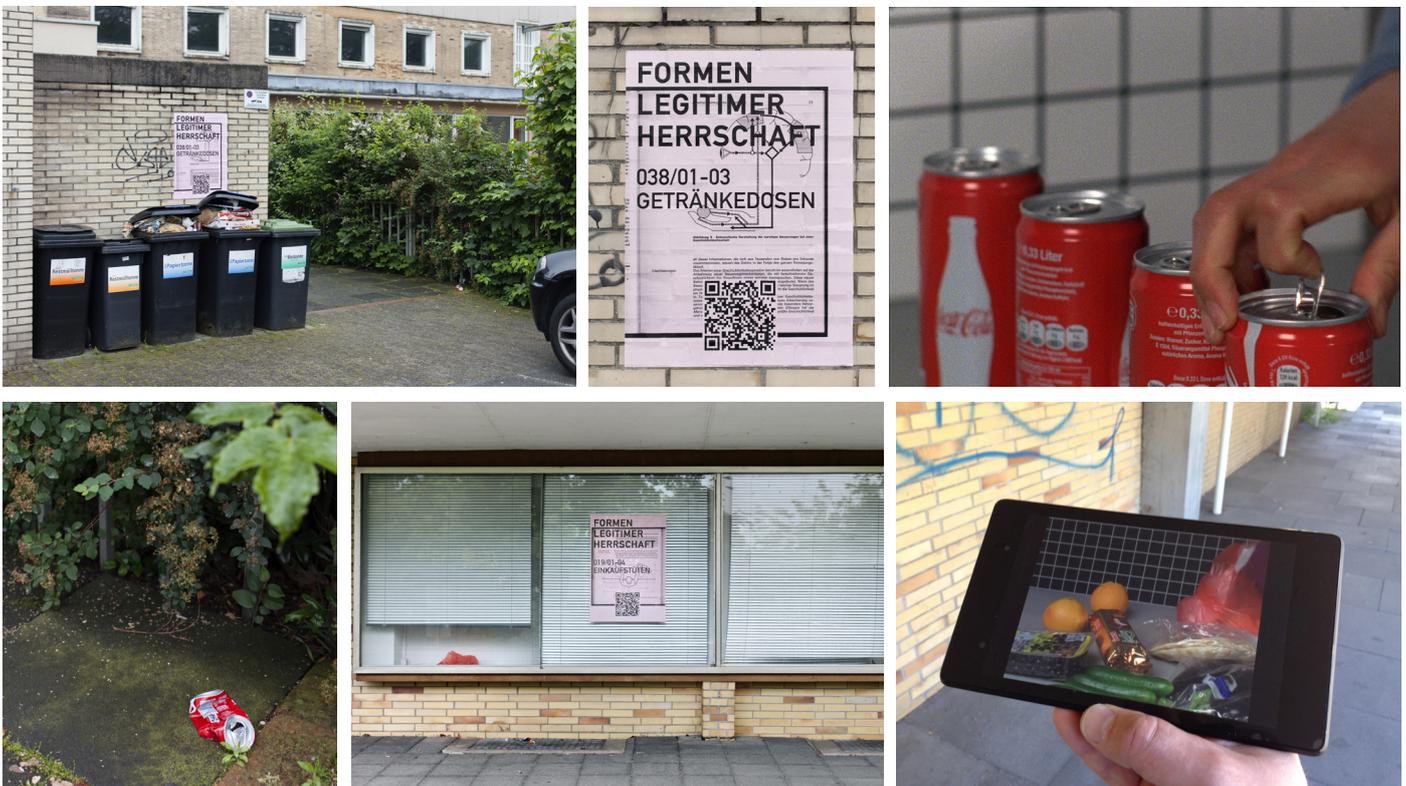
18 <https://av.getinfo.de/media/16145736>

19 <https://av.getinfo.de/media/1615470>

### Suspended Duration

The film material that comprises *Suspended Duration* has been disseminated in two different iterations. The very first iteration of the material is titled *Formen Legitimer Herrschaft* and was presented as a site-specific work distributed as a series of pink posters in an urban situation.<sup>20</sup> Each poster contains graphic elements (from books on ergonomics), text excerpts and a large QR-code, which – once scanned with a tablet computer or smart phone – gives the viewer access to a specific filmic motion study, i.e. the pushing together of shopping trolleys, the disentangling of a rope, etc.

The placement of the posters in the city, near a supermarket, next to a bus stop or above a row of trash cans, aims to cause resonances between the on-screen actions and the live action of people doing similar things in their surroundings. The particular objects dealt with in the films are placed in the vicinity of the posters. A rope, for example, is looped around the branches of a tree, a crushed Coca-Cola can bolted into the pavement, or a lump of modelling clay placed in a shop window. This particular way of disseminating the footage brought the filmic representation, the real life proceedings and the corresponding objects into direct confrontation.



*Formen Legitimer Herrschaft*, Installation view at the public art exhibition *Vor Ort*, Sennestadt, Germany, 2014

This iteration of the project in public space provided the opportunity to experiment with outdoor presentation, which I had also specified as a mode of dissemination for the artistic results in my project description. Early in the development of *Formen Legitimer Herrschaft* I decided to substitute the outdoor film projector with the smartphones and tablet computers that most spectators and passers-by carry with them anyway, as it seemed logical to take advantage of the micro-cinematic devices already at hand.

<sup>20</sup> *Formen Legitimer Herrschaft* was first shown in the context of the public art exhibition 'Vor Ort' in Sennestadt, Germany 25 May – 8 October 2014, curated by Thomas Thiel. Installation views: <http://www.vor-ort.org/en/artists/andreas-bunte/>

In order to show the work publicly I only had to provide the access code to the particular media files stored somewhere on a server.<sup>21</sup> This public mode of dissemination added yet another layer to the ambiguous permeation of cadre and hors-cadre, as the measuring grids in the films were not only surrounded by the visible gap that marked the transition from the abstract scientific cadre to the mostly invisible laboratory space (hors-cadre), but were themselves embedded into an actual urban environment resonating with the content of the film. Thus the question of the relationship between filmic and/or scientific record, experimental reality, actual and non-actual motion, achieved another twist.<sup>22</sup> A draw-back of this version was that people were not confronted with the films incidentally but had to access them intentionally – and that the audio quality lost a lot of its subtleties due to the limitations of the devices and the environmental noise.

As a reaction to this I combined the individual clips that comprised *Formen Legitimer Herrschaft* into one 20 min. continuous edit for its second presentation.<sup>23</sup> Here, *Suspended Duration* is shown as a large projection that filled the entire wall of the exhibition space. The projection is accompanied by a variety of everyday objects – a fire extinguisher, a trestle, an office chair, a piece of iron tube, a canister of windscreen detergent – and a series of posters of enlarged pages from books on ergonomics. While the objects resemble some of the bystanders in the filmic footage, each print examines a particular aspect of the human body in interaction with objects, such as motor skills or muscle fatigue.



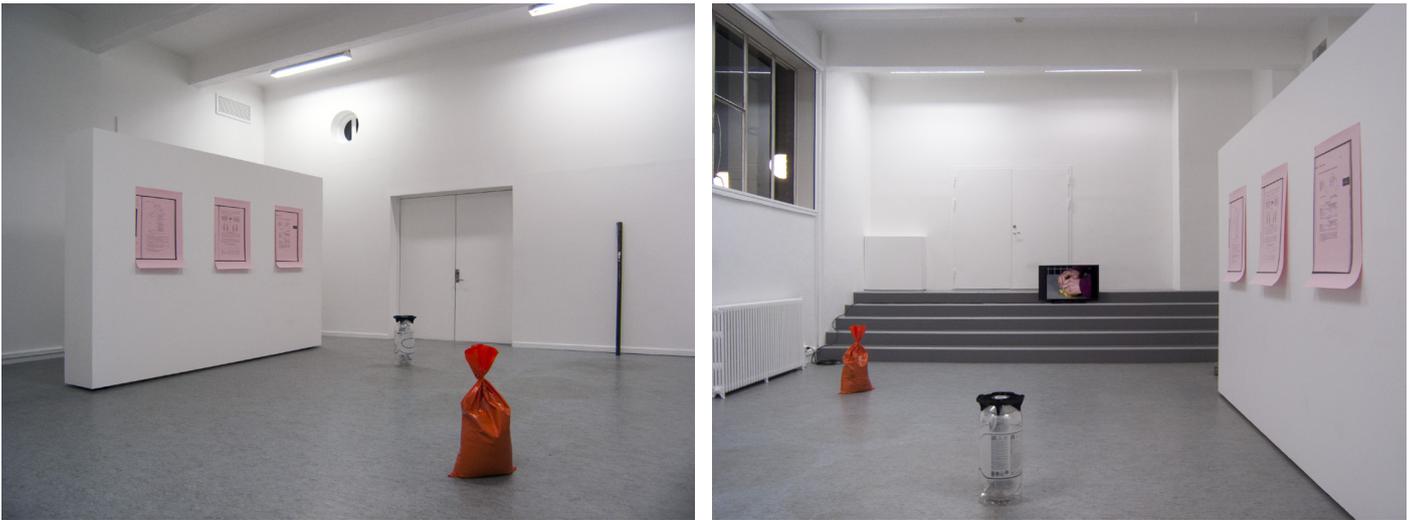
*Suspended Duration* as part of the installation *Lettuce partially emerging from a shopping bag* Kunstverein Lingen, Germany, 2014

21 During the conference *re:place* that took place in Oslo in November 2013, art historian Noam Elcott presented a paper in which he delineated different modes of delivery for moving images and the particular modes of reception that come with them. Even though according to Elcott most viewers are 'platform-agnostic', the particular way in which we engage with moving images determines how we perceive the content. He differentiates between the audience in a cinema approximating the screen space through displacement – by disappearing collectively into the darkness of the cinema space – and the mode of perception that he calls *room space*, which is one of consumption. In the context of *Formen Legitimer Herrschaft* Elcott's considerations became particularly relevant, because many of the subtleties in the films were not perceivable due to the distraction from the environment. The experience of the film thus took place somewhere in between the actual urban environment and the screen space of the smartphone or tablet.

22 A space that is indirectly addressed through this mode of presentation is that of the internet server which hosts the data set that is transferred to the RAM-memory of the device. The German media theorist Wolfgang Ernst has pointed out how digital streaming technologies that pretend to provide a real-time playback from the server are actually based on the buffering of data on the clients' devices. Digital streaming thus permeates the present with an archival structure. Ernst has called this the 'assault of storage logistics on the present' (Ernst, 2011, min. 18-22) This provides an interesting temporal angle to my idea of conceiving the motion studies as inserts into an urban environment as their 'assault' points towards the conflict between the conserved filmic and the actual, ongoing motions.

23 This version is titled *Suspended Duration*, and was first presented in a solo show at Kunstverein Lingen in September 2014 as part of the installation *Lettuce partially emerging from a shopping bag*.

The aim of this set-up was primarily to emphasise how the film addresses the hors-champ through the soundtrack, an aspect that was not so prominent in the first iteration due to the technical limitations in the outdoor presentation. The installation context transfers the division of objects into protagonists and bystanders in a spatial arrangement, in which the props resemble spectators, looking at other objects that have become filmic characters. As real objects they have equal potential to become protagonists in a film, or devices that activate human behaviour in the exhibition space. In the context of my final presentation, *Suspended Duration* is shown in a similar installation format. However, I established a more horizontal relationship between the filmic representation and the real objects by showing the film on a monitor, which itself becomes part of a mise-en-scène as one object among other objects.



*Suspended Duration*, installation view at Akademirommet, Oslo, 2015

## 4 Related Discourses

In the following I will present a collection of ideas and theories that have provided entry points for a critical reading of the genre as well as its appropriation in practical experiments. They are listed in no particular order, as the sources informed the different projects to varying degrees. They can be seen as cornerstones of the field of references and associations that my research focussed on.

### The Infraordinary

In October 1974 the French writer Georges Perec set out on a quest to chronicle what he called the ‘infraordinary’ – to create the most accurate account of ‘what happens, when nothing happens’. In order to do that he sits down in a café at Place Saint-Sulpice in Paris for three days and writes down everything that passes through his field of vision: people walking by, carrying shopping bags, buses and cars en route to other places, pigeons, candy wrappers, metro tickets, etc. His book *An Attempt at Exhausting a Place in Paris (Perec, 1975/2010)* gathers these observations in diary-like descriptions that pay extraordinary attention to phenomena that usually go by unnoticed.

With regards to SRF I was interested in how Perec’s book and the IWF’s *mere showing* of motion both revolve around phenomena that in other circumstances are considered minor details. The growth of mould on bread, the chip formation during the machining of steel or the colours of passing cars and the number of pigeons landing on the roof of

a bus stop are all subjects that seem to have no major plot or significance beyond a very particular framework of investigation. Similar to Percec, although using very different means, the IWF films present us with events whose visibility is based on a shift in attention. By showing these events at length and in minute detail they provide accounts of almost 'unreal clarity'. For that reason I think of it as a perspective that explains as much as it estranges.

In contrast to Percec, who singles out the infraordinary through observation, and the IWF, which re-stages particular aspects of our everyday environment isolated from their specific context, my own films set out to account for the infraordinary as an aspect of the extraordinary. The diamond laboratory, the low-pressure chamber, the motion study laboratory and the demilitarisation facility can be understood as falling into the category of places that Michel Foucault has termed *heterotopias*. They are places in which geological preconditions, everyday routines or the idea of production are 'contested, inverted, or neutralized'.<sup>24</sup> The films highlight the mundane and quotidian aspects that are embedded into these heterotopian sites and circumstances: waiting, operating machines, the persistence of architecture, the unpacking of shopping bags, etc. The extraordinary is presented as interpenetrated by the familiar. By pointing at the entanglement of the familiar with the strange and extraordinary I wanted to create a specific mode of defamiliarisation that works both ways: On the one hand the mundane and everyday becomes defamiliarised through its extraordinary context, while on the other, heterotopia as a 'place outside of all places' (Foucault 1986) becomes familiarised. In this sense I sought to pick up on both Percec's and the IWF films' ways to estrange us from what we see or are surrounded with.<sup>25</sup>

### Bewegungsdauerpräparat and Object Oriented Philosophy

As I have laid out in the introduction, the *Encyclopedia Cinematographica* comprises a collection of 'Bewegungsdauerpräparate' from all scientific fields. In the context of this all-encompassing archive, motion film is reduced to its most fundamental capacity as a tool to conserve and represent motion. Limiting film to the mere storage of motion changes the idea of the medium's function within a larger cultural context. The task of the *preparation* is not to educate, to inform or to entertain, but to conserve and to make available particular samples.<sup>26</sup> These samples of motion do not address a general

24 In Foucault's terms a heterotopia is 'a kind of effectively enacted utopia in which the real sites, all the other real sites that can be found within the culture, are simultaneously represented, contested, and inverted.' (Foucault, 1984/1986, p.24) They are places 'outside of all places, even though it may be possible to indicate their location in reality' which have 'the curious property of being in relation with all the other sites, but in such a way as to suspect, neutralize, or invert the set of relations that they happen to designate, mirror, or reflect' (Foucault, 1984/1986, p.24). Heterotopias represent places of 'deviation', places in which objects and activities of a culture acquire a different meaning.

25 The concept of defamiliarisation is one of the central ideas of artistic practice. Viktor Shklovsky was the first to theorise the phenomenon in his essay 'Art as Device'. What he called *Ostranenie* became the *Verfremdungseffekt* in Berthold Brecht's epic theatre, and it also played a central role in the writing of Georges Percec. Derek Schilling describes Percec's approach to estrangement as a three-fold programme, 'namely to take stock of, question and describe that which "goes without saying". The author's contention is that the unnoticed will regain meaning only if we prove ourselves able to be 'astounded' by it and see with these shared elements a framework of collective memory. Echoes can be discerned here of Berthold Brecht, Marcel Maus and Maurice Merleau-Ponty. Percec borrows from the dramatist the dialectical technique of estrangement by which the banal reverts into the unexpected; from the ethnologist, the need for the minute description and classification of ordinary objects and gestures; and from the phenomenologist, the conviction that the act of describing the world undoes its familiarity to produce wonderment' (Schilling, 2009, p.198)

26 In his text 'Moving Away from the Index: Cinema and the Impression of Reality', the film historian Tom Gunning argues that much more than the indexical aspects of the moving image it is *motion* that creates the specific realism of film. To Gunning the uniqueness of the moving image is its capacity to not only document movement, but to create it, that 'cinema shows us motion, not its portrayal.' (Gunning, 2007,

audience, and they do not have any interest in the personal stories of rope splicers or basket weavers. Things, micro-organisms, animals and humans are only of interest insofar as they represent generic increments of the motion protocols that are to be found on the planet. ‘Bewegungsdauerpräparate’ consistently and programmatically maintain a particular distance to the subjects under their observation. According to Gotthard Wolf, this distance – that scientists put artificially between them and the object – is one of the key instruments in achieving objective results.<sup>27</sup> While this worked well with the natural sciences, material studies, biology and – to a certain extent – zoology, it provoked harsh criticism in the field of cultural anthropology.<sup>28</sup> Critics have argued that the concept of ‘Bewegungsdauerpräparat’ does not pay justice to the complexity of cultural practice, but breaks it up into disconnected, abstract units.<sup>29</sup> As the IWF’s systematic approach demands that any movement has to be recorded in isolation from possible interferences and that the films shall document the specificity and entirety of a movement, they cannot account for the complex interwovenness of such practices within a larger cultural and societal framework.

As much as the critique of the IWF’s ‘Bewegungsdauerpräparate’ approach has validity in the discourse of ethnographic filmmaking, these charges appear in a different light when viewed in the context of recent philosophical developments, such as *speculative realism*, *object oriented philosophy* or *new materialism*. Over the course of my research, I realised that the IWF’s disinterest in people and their individual stories can be read as a preoccupation with other entities and agents as protagonists, ranging from animals and microorganisms to tools and materials. It is evident that the IWF’s concept of motion as abstract choreography, deprived of everything that relates it to personalities or other specificities, stems from a scientific paradigm that has nothing to do with what thinkers such as the American philosopher Graham Harman have in mind. However, films about the machining of steel, or the interaction of grains of sand with the meshes of a sieve, resonate strongly with examples that Harman uses in his text *Object Oriented Philosophy* (Harman, 2010).

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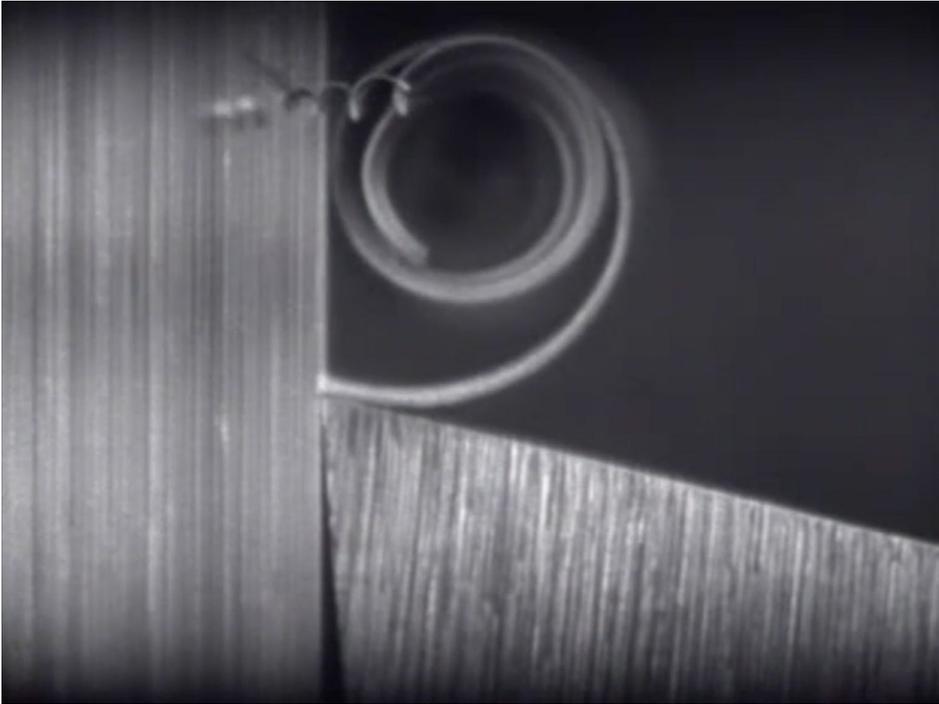
p.44) In this sense he suggests to think about the movement that can be seen in/through film not as a representation of motion but as an actual creation of it. This argument provides an interesting angle to the IWF concept of ‘Bewegungsdauerpräparat’, which aims to store motion in order to allow for its repeated viewing. Because the sole purpose of such *preparations of motion* is to provide motion samples for future scientific study, it could be argued that the concept of ‘Bewegungsdauerpräparat’ is based on a similar shift in focus as the one that Gunning proposes in his article.

27 See Gotthard Wolf, *Der Wissenschaftliche Documentationsfilm und die Encyclopedia Cinematographica*, 1967 p. 191. ‘Emotionale Wirkungen sind bei Wissenschaftlichen Arbeiten im allgemeinen unerwünscht. Sie können ablenken, sie können den Abstand verringern, den der Wissenschaftler künstlich zwischen das beobachtende Subjekt – sich selbst – und das zu untersuchende Objekt legt, um mit ein Höchstmaß an Objektivität dieses rational zu erkennen.’

28 I will not attempt to enter into a discussion of the field of visual anthropology or ethnographic film and its relation to art film in my reflection here, but concentrate on the particular aspects that are connected to the contributions that IWF made to the field. Ethnographic film has its own long-standing tradition to which filmmakers such as Jean Rouge, Robert Gardner, Timothy Ash, or David McDougall have contributed in very different ways. Above all the genre is self-reflexive and experimental in a way that IWF films are not.

29 The cultural scientist Peter Gürge writes ‘Zur Erlangung dieser vermeintlich objektiven Realitätsabbildung wurde jedoch das mit der Handlung unlösbar verbundene soziale und kulturelle Umfeld außer acht gelassen und sämtliche Details, die nicht unmittelbar mit dem zu dokumentierenden Vorgang in Verbindung standen, als unerwünschte Nebensächlichkeiten aus dem „Bewegungspräparat“ verbannt; ein Verfahren, welches die Persönlichkeit der Gefilmten zurücktreten und sie zu anonymen ‘Darstellern’ werden ließ.’ (Gürge, 2000, p.65) Media scientist Eva Hohenberger also criticises the IWF’s anthropological film work as being mostly interested in the enforcement of its rigid methodology and that the specific topics are only of secondary importance. Hohenberger claims that contrary to the IWF’s aim to produce a maximum of ‘Wirklichkeitsgehalt’ its films actually provide scientific abstractions instead of specific ethnographic evidence. (Hohenberger, 1988, pp. 160-173, especially p. 164 and pp. 172-173)

He argues that in 20<sup>th</sup> century philosophy ‘the inanimate world is left by the wayside, treated as little better than dust or rubble. When rocks collide with wood, when fire melts glass, when cosmic rays cause protons to disintegrate, we are asked to leave all this to the physicists alone’ (Harman, 2010, p.94). Throughout his lecture Harman lays out further examples such as snowflakes being lit and annihilated by light, lime stones that are compressed by earthquakes (Harman, 2010, p.94), billiard balls that absorb heat from each other (Harman, 2010, p.100) or an abandoned chunk of plutonium that reflects light into distant space (Harman, 2010, p.102).



Still from IWF film, *Zerspanen von Stahl 100 Cr 6*, 1964

While these examples are primarily in service of Harman’s critique of philosophy’s ignorance of proceedings in the material world, they also comply with his aim to remove humans from the centre of philosophical thinking and instead establish ‘an object-oriented philosophy, a sort of alchemy for describing the transformations of one entity into another, for outlining the ways in which they seduce or destroy humans and non-humans alike.’ (Harman, 2010, p.95) In this light, the IWF’s disinterest in the personality of human agents can be fictionalised as an anticipation of an object-oriented cinema, a cosmological way of filmmaking that treats animate and inanimate agents alike. For even though the concept of IWF stems from an anthropocentric perspective, it holds clues for a filmmaking that awards the movements (or stasis) of other entities an equal amount of attention.

The fictitious potential of IWF’s approach to create universal, ‘non-hierarchical’ accounts is what, over the course of my research, made it seem all the more critically relevant for artistic production. My films experiment with this idea by using objects as protagonists, and in turn reducing humans to anonymous test persons or machine operators providing certain body parts for the interaction with various *things*. The films destabilise established unilateral cause and effect relationships (commonly initiated by humans) that are understood to govern the interaction between human and non-human agents, they leave open who initiates a motion sequence, whether the human agents are handling things or whether objects or other entities such as political or economic systems, force them to act in certain motion protocols. Is it the Coca-Cola can or

the human test person who controls the opening process? Do the machines and their operators have any agency in the disassembly of cluster ammunition shells? Or is it the properties of military explosives that initiate and choreograph the interplay between humans and machines?<sup>30</sup>



Still from *Leviathan*, 2012

### The Harvard Sensory Ethnography Lab

In September 2014 I saw the film *Leviathan* at the 2014 Whitney Biennial in New York. *Leviathan* is an experimental film about industrial fishing off the coast of New Bedford, produced and directed by the two anthropologists and filmmakers Lucien Castaing-Taylor and Verena Paravel from Harvard University's Sensory Ethnography Lab (SEL).<sup>31</sup>

The film fascinated me, and I consequently did some research into this new movement in ethnographic filmmaking, which turned out to be closely connected to the aesthetic concerns and concepts in my own project. Similar to the IWF, the SEL distances itself from the realm of documentary filmmaking as well as from the written document and tries to establish the filmic account as an independent way of producing knowledge.

30 On the last day of filming the sound-recordist and I started to wonder if we had contaminated ourselves and our equipment with dust from military explosives during the three-day shoot, and how convincing our explanation for residues of military explosives on our equipment would sound to airport security officers. From travelling many times with either sound or film equipment, we knew that the security people always swab technical equipment, that means to wipe it with a clean, inert swab to detect residues of explosives. The factory manager eased our minds, saying that it had happened only once in the last 20 years. However they confirmed that if traces of this type of explosives were detected on us or our equipment it would produce a lot of questions, as this material is not accessible for the general public. In the worst-case scenario, it could produce a note in our records that would complicate or prevent our travel into certain countries. We both considered this an example of the agency of materials.

31 According to their own statement: 'The Sensory Ethnography Lab (SEL) is an experimental laboratory at Harvard University that promotes innovative combinations of aesthetics and ethnography. It uses analog and digital media to explore the aesthetics and ontology of the natural and unnatural world. Harnessing perspectives drawn from the arts, the social and natural sciences, and the humanities, the SEL encourages attention to the many dimensions of the world, both animate and inanimate, that may only with difficulty, if it all, be rendered with propositional prose. Most works produced in the SEL take as their subject the bodily praxis and affective fabric of human and animal existence.' <http://sel.fas.harvard.edu> (Accessed 19.10.2015)

Although with very different outcomes, both institutes share a fundamental belief in the particular capacities of observational film. However, while the IWF attempts to eliminate redundancy by means of complementing the filmic account with external written publications or by structuring it with intertitles, the SEL discards all these attempts to direct the ways in which filmic images can speak about the world.

In a recent interview concerning *Leviathan*, Castaing-Taylor criticises that ‘documentary claims to have this privileged purchase on a truthful version of reality – it’s not fiction, this is the real – but most documentaries’ representation of the real is so attenuated and so discourse-based and language-based. We lie and we mystify ourselves with words. Words can only take us so far’ (Juzwiak, 2013). Like the IWF, Castaing-Taylor wants to avoid narration and interpretation and take the audio-visual account seriously in order to let images and sounds speak for themselves. Insofar Castaing-Taylor can be understood to share the idea of *mere showing* and to create films that present rather than represent their subjects. When he continues his statement, a new idea enters the picture, which opened up a new perspective on my field of interest: ‘I think we want to get to a much more embodied, a much more corporeal representation of reality that’s almost a presentation of reality. Reality that transcends our representation, so it’s not reducible to a set of statements of what commercial fishing’s about’ (Juzwiak, 2013).

The idea of a corporeal presentation comes across very well in *Leviathan*.

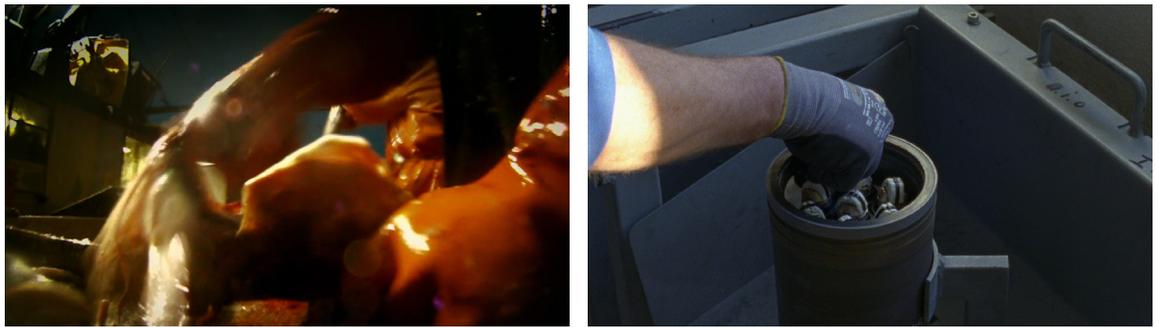
The viewer finds her-/himself on a large industrial fishing ship in the middle of the Atlantic, the camera is in the water with the fish, with the seagulls up in the air, in the cabin with the fishermen. At times it seems as if the camera has been abandoned on deck, running with its own agency, capturing fields of vision that are slightly off, generating accounts compromised by spray water and poor lighting conditions. In contrast to the IWF’s idea about optical precision, the belief that correct lighting, exact framing and a well controlled environment would render the medium neutral and thus the filmic document objective, *Leviathan*’s rendering of events is constantly compromised and distorted.

The seemingly ‘raw’, uncommented account that *Leviathan* provides is obviously not a result of laziness on the part of the directors but by an aesthetic decision that put into practice their above-mentioned conviction that the only ‘realistic presentation’ of reality lies in the corporeal. What Castaing-Taylor calls an ‘embodied, corporeal account of reality’ first of all means the bodily immersion of the filmmakers and their devices into the subject matter. While the IWF reports from a distance, Castaing-Taylor, Paravel and their cameras report from the inside and in physical contact with their subject matter. Their bodily immersion, which is mirrored by the intended immersion of the spectator, is the primary foundation of the film’s presumed ‘realism’. The ultimate reference for the ‘objectivity’ of this corporeal ‘presentation of reality’ is the personal experience of the filmmakers: ‘The way in which the toiling bodies are portrayed in the film as part of the scenarios of life and death playing out on the boat seems to us quite faithful to the realities we witnessed’ (McDonald, 2015, p.410), while the compromised images provide their own rhetoric of realism.

This style of filming does not only render the physical encounter of the camera with the reality aboard the fishing trawler visible, it also allows Castaing-Taylor and Paravel to account for the different agents involved in industrial fishing in a non-hierarchical way. *Leviathan*, as the title suggests, presents people, fish, water, the boat, tools, the camera, the weather, etc. as one large organism. In this sense the film manages to avoid the anthropocentric perspective criticised by Harman and provides interesting new ways

to represent reality. Although the human figure remains a central point of reference in *Leviathan*, its scope of agency is questioned, contested and reframed with regard to that of other animate or inanimate beings. The result is a portrait of industrial fishing that presents human and non-human agents as a network of non-hierarchical power relations.

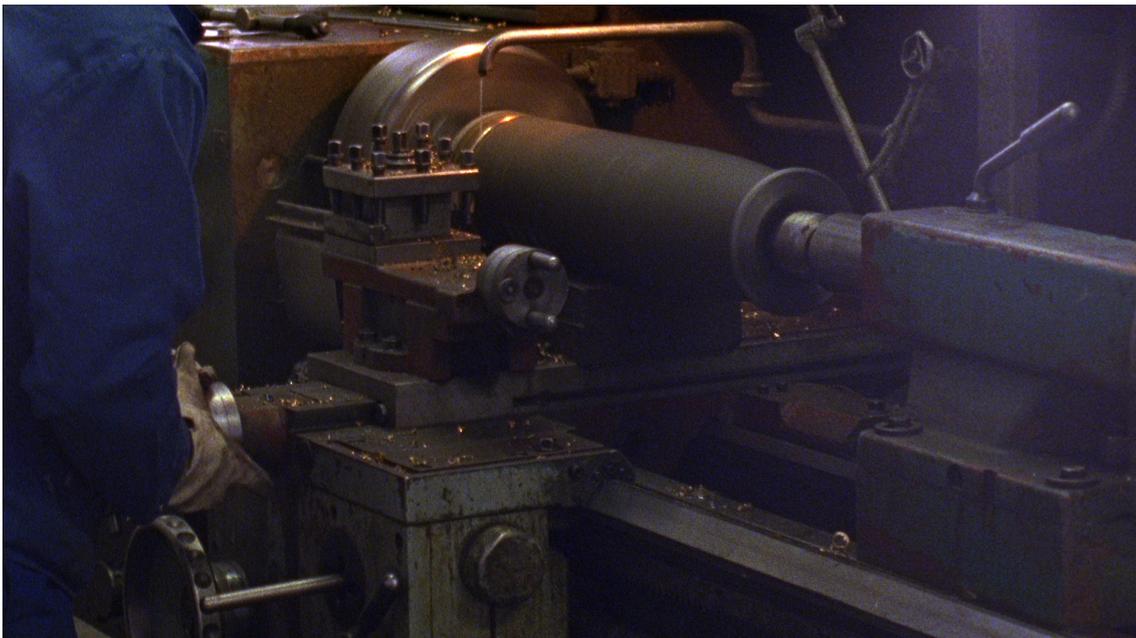
This approach influenced me during the production of *Safe Disassembly*, which similarly to *Leviathan* explores the possibility to present tools, bombshells, machines, military explosives, robotic arms, human workers, architecture, and landscape as part of one large organism that dissects ammunition. The idea was also inspired by the fact that Nammo Buck operates around the clock, in three eight hour work shifts, allowing the ‘metabolism’ to run continuously.



Still from *Leviathan*, 2012 (left) and *Safe Disassembly*, 2015 (right)

At first I wanted to work mainly with close-ups (which I saw as related to the immersive camera work in *Leviathan*), denying clear overviews of the situation. However, the process of ammunition disassembly constitutes – to continue the metaphor – a different, less animated *organism* than *Leviathan*. Whereas in the latter everything is affected by the rough sea, *Safe Disassembly* plays out in a rather static environment that does not have the same physical impact on the events taking place or the camera that records them. Over the course of the first day of shooting I realised that the individual processes became more ambivalent with regard to their purpose once the framing included the larger context that they appear in.

The unscrewing of bombshells, or the lathe facing of copper ring shells, had to be shown as related to the sophisticated machinery, the custom-built carts, robotic arms, forklifts, conveyor belts and workers – all of which are highly evocative of industrial production. The uncertainty about the nature of the various processes was in fact the result of an overview that provided evidence for two contradictory readings. While on the one hand it showed processes in which things were taken apart – digested, so to speak – on the other hand it documented machinery and gear that was similar if not identical to those used for the industrial production of things. In order to generate this friction without actively constructing it – i.e. by editing together a series of close ups that each account for one of the two perspectives – I used a wider framing that produced more *tableau vivant* types of scenes, which provided both aspects simultaneously. Similarly to *Leviathan*, the viewer is encouraged to decode the often quite long takes according to her/his own attention span.



Stills from *Safe Disassembly*, 2015

This account of the entanglement of the individual processes into a larger organism is supported by the use of sound. In many instances the actual process depicted becomes infused with the sounds of processes happening in other places. The soundtrack establishes a continuous record of the facility, permeating the images with reminders of previously seen work stages, as well as the foreboding of others. The sound track at times culminates in a quasi-musical score, highlighting the aesthetic side of the process, like the ‘mechanical ballet’ of robots mentioned previously. Thus the soundscape of *Safe Disassembly* creates an independent acoustic map of the machinic organism, underlining the aesthetic dimension of the decommissioning facility.

## 5 Conclusion / Outlook

My research into the films and concepts of the IWF singled out a number of access points for a critical re-thinking of fundamental aspects of filmmaking. As I laid out in this reflection, the films that I produced over the past three years of my research fellowship explore how concepts such as *mere showing*, ‘*Bewegungsdauerpräparat*’ and *distance* – once unhinged from a specific scientific framework – could be utilised to look at labour processes and human-object relations from a different angle. A core concern was to create open and ambiguous filmic accounts, which raise questions not only about their subject matter, but also about the nature and authorship of the filmic account itself. Different modes of dissemination – such as the submission of films to an SRF archive or outdoor presentation via QR codes – were used as additional means to modify how this aspect can be fine-tuned. The fellowship allowed me to explore a selective set of questions, which I plan to expand on in upcoming projects and commissions.

The first project after the end of my research period will be a new commission for Simon Fraser University (SFU) in Vancouver. The film with the working title *Erosion* will establish water as its protagonist, and explore how it interacts with the concrete architecture of the SFU campus built by Arthur Erickson in the 1960s. The film will treat the campus as a geological formation through which it leads the viewer along with

the currents of water. Thus I will once more take a natural scientific topic as a starting point while following up on my interest in geology in the widest sense. In 2017 I will participate in the public art exhibition *Skulptur Projekte Münster*. My contribution will elaborate further on motion studies and their dissemination of films via QR codes. In this context I will conduct further research into the practical as well as the conceptual implications of this ‘exhibition format’.

Apart from these very concrete plans I will seek to develop strategies that will allow me to incorporate certain narrative tropes, such a dialogue, scripted scenes or animations into the conceptual framework of *mere showing*. I believe that here the work of Jean Marie Straub and Danielle Huillet can serve as an important point of reference, as their approach to dramaturgy, based on ideas of Berthold Brecht, avoids illusionistic play and instead presents the actor matter-of-factly as a human being citing text.

In addition to this I will also continue to base my observational approach on the concepts of *mere showing*, *Bewegungsdauerpräparat* and *distance*. Nourishing openness and ambiguity, which can be seen as the opposite of SRF’s aims, strikes me as a worthy artistic enterprise. To conclude this reflection in very general terms – arguing with American curator and writer Anthony Huberman – it is one of art’s central aims to take science and philosophy’s ‘explanations away, by punching holes into them. Not to confuse everyone but to create another kind of knowledge, almost like a political statement...If you think you understand something art is there to say: the thing you thought you understand, may be you don’t. This way of undoing knowledge is a productive process.’ (Huberman, 2009)

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