

From Above

The Vertical Perspective in Ursula Biemann's 'Remote Sensing' (2001)

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Abstract

This thesis investigates how vertical perspectives and the satellite technologies that produce them are situated in Ursula Biemann's *Remote Sensing* (2001).

In this 53-minute long video essay, a range of satellite images, animations of satellites, and other found footage that relates to satellite operativity can be found. These images are juxtaposed with up to four other frames in split-screen presentations, and sometimes have script layered on top. In between, on top of, and next to these images, we see Biemann's own footage from interviews she conducted and locations to which she travelled. Via all these images – some moving and some still – the video essay investigates the multiple trajectories and motivations of women who migrate to work in sex industries globally.

The way in which the video essay utilises found satellite imagery and highlights important aspects about satellite operativity sits very timely within the increasing visibility of vertical perspectives in the form of drone and satellite imagery and virtual visualisations of the earth (Google Earth). The ubiquity of machines that offer perspectives from above calls for critical terms which can effectively address such visions of the world, the way in which they are produced, and the ends they serve. These terms, I argue, differ greatly from those found in the earlier perspectival paradigms in art history – in which linear perspective has occupied a dominant role – as elaborated by Erwin Panofsky, Hubert Damisch, and others.

Following Donna Haraway's notion of "situated knowledges" both as a method and theoretical framework, this thesis argues that Biemann's *Remote Sensing* situates vertical perspectives and the technologies that produce them in a technological framework as well as within the specific cultural and political context: notably that of women in parts of Southeast Asia, South Korea, and Eastern and Central Europe, who migrate to work in the sex industry. In this way the specific forms of satellite vision presented by Biemann's video essay are made pertinent in relation to a feminist analysis of migrant women's labour. This a result of negotiating and reimagining the possible conceptualisations of satellite vision between border restriction, global mobility, and the visibility of these women. Instead of perpetuating a rhetoric that situates satellite vision as a penetrating gaze which offers infinitely mobile and all-powerful surveillance, the video essay offers technical details which instead present satellite vision as embodied, vulnerable, and partial. From this position, the situated knowledge of the satellite – in all its partiality – can be stitched together with the interviews with current and former sex workers, women's rights and anti-trafficking activists, as well as live camera action scenes from the daily activities of these women into a counter-geography. This counter-geography gives visibility to aspects of globalisation which often go under the radar: clandestine networks, illicit border-crossing circuits, as well as some of the multiple grey areas between being forced into sex work and choosing sex work.

This counter-geography operates in highly experimental ways which embrace the overall difficulty of representing clandestinity, grey areas, and migrant subjects. As such, I argue that Biemann exploits and reimagines the limits and possibilities of the video essay by a range of postproduction effects that destabilise the types of objective truth claims often associated with traditional documentaries, as well as by multiplying, fracturing and experimenting with the screen space. Concerning the latter, I argue that her use of vertical perspectives along with split-screens and composite images disrupts the rationalising of space associated with conquest and colonization.

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1 Introduction

On the one hand, Ursula Biemann's *Remote Sensing* (2001) is concerned with the social and personal micro-perspectives of lived lives in times of conflict; on other, the video essay throws us into the complex terrain of satellite technology, remote sensing, and border security. Via these technologies there seems to be a particular emphasis on the perspective from above, or what I choose to call vertical perspective so as to distinguish it from the linear perspective which has occupied a dominant role in art history.¹ This thesis is an investigation of how *Remote Sensing* (2001) presents and situates vertical perspectives and the technologies that produce them. Accordingly, it is also an investigation of how the pervasiveness of visual technologies that offer and inform new visions of the world may call for new conceptualisations of perspective.

Ursula Biemann is a Swiss artist, curator and theorist. Her earlier video essays (1999 – 2005) have been focused on gendered and ethnic geographies and politics of mobility, locating her points of interest in the grey zones and borderlands produced by the intersections of nations, globalised capitalist interests, surveillance technologies, and the movement of bodies and goods across these borderlands. From this early body of video works, this thesis will look specifically and mainly at *Remote Sensing* (2001), and while extrapolating from some of Biemann's other works in order to further investigate these topics.

1.1 *Remote Sensing* (2001, 53 minutes)

Satellites, satellite images and the technologies of "remote sensing" – a general term for data collection from aerial, stratospheric or ionospheric distances – are images that construct this video essay. These images are mobilised and activated through varying and experimental strategies throughout the work. There is a variety of satellite images that occupy the whole or parts of the sometimes split-screen. In some instances, these satellite images are commented on by the voice-over, other times they are presented in relation to other types of images, for

¹ I borrow the term vertical perspective from Hito Steyerl and Eyal Weizmann, which they conceptualise as distinct from horizontal and linear perspective. See Hito Steyerl, "The Politics of the Vertical Perspective," in her *The Wretched of the Screen*, (Sternberg Press, 2012); Eyal Weizman, "The Politics of Verticality," *OpenDemocracy*, 23.04.02, accessed 15.11.14, https://www.opendemocracy.net/ecology-politicsverticality/article_801.jsp.

instance a television screen, found footage of a rocket launch, or mathematical graphs indicating electromagnetic wavelengths and radiation patters. Though not directly taken from satellites these other images are implicated in the satellite's systems. For example, wavelengths and radiation patters allow satellites in orbit to send signals to televisions on the ground. Among the images in *Remote Sensing* – some still and some moving – there are also animations of satellite parts and visualisations of a satellite's orbit around the earth. In the next few paragraphs, some of the key topics and observations about *Remote Sensing* will be presented in order to introduce the work.

In the video essay, the images on the screen have been re-worked and organised in such a way that the screen is “no longer a unified space.”² Different strategies of splitting the screen into two, three or four frames, superimposed images and layering informational script over other images challenge the possibility of paying attention to all the information at the same time (fig.1). As Angela Dimitrakaki rightly observed, “the split-screen sequences get interrupted by one-frame sequences that allow us to focus on one particular visual event.”³

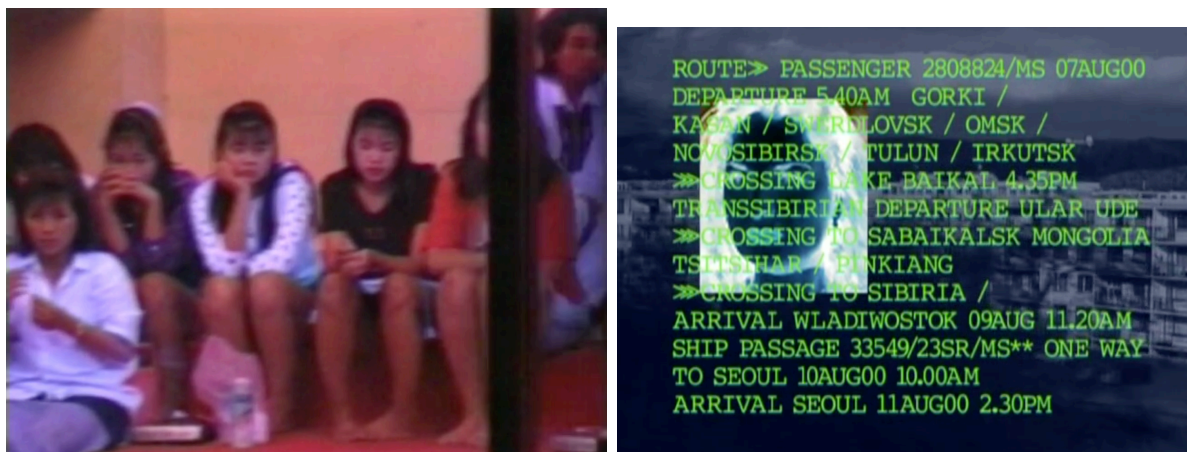


(Fig. 1: Still from Ursula Biemann's *Remote Sensing* (2001). Photo courtesy of Women Make Movies)

² Angela Dimitrakaki, “Materialist Feminism for the Twenty-First Century: The Video Essays of Ursula Biemann,” *Oxford Art Journal* 30, no. 2 (2007): 217.

³ *Ibid.*

Within these alternating one-frame and multi-frame sequences, a connection is forged between satellite data and the multiple and diverse trajectories of women who migrate to work in the sex industry globally. The artist's own footage from interviews she conducted and locations to which she travelled to investigate this gendered form of migration are presented alongside the found satellite-related images. The interview subjects are diverse including Eastern European sex workers at brothels near the Czech-German border, representatives for women's organisations in Thailand, Filipinas who were tricked by human smugglers and sent to work in brothels in West Africa in order to work up enough money to get their passports back, to name only a few. Footage from the diverse locations are, in some split-screen constellations, visually entangled with virtual and imaginary spaces. At one moment these virtual spaces are presented in the form of travel itineraries – lists of green text indicating the flight plan of a woman migrant along with her biometric information scroll across the screen as a layer on top footage from border checkpoints (fig. 2). The staging of an imagined Burmese brothel in Thailand (fig. 3) is an example of an imaginary place.⁴



(Fig. 2 (left) and 3 (right): Stills from Ursula Biemann's *Remote Sensing* (2001). Photo courtesy of Women Make Movies)

Many scholars have emphasised that the relation between women's migration and satellite data is established already in the first scene of the video essay.⁵ *Remote Sensing* opens with a vertical perspective; a sepia coloured satellite image of an unidentified location – a river delta somewhere in the world – appears on the screen. The image moves, zooms in and rotates in a

⁴ Pamela C. Rosi, "Film Review: Performing the Border, Writing Desire, *Remote Sensing* and *Europlex*," *Journal of International Women's Studies* 6, no. 2 (2005): 181.

⁵ See for example Barbara Mennel, "The Global Elsewhere: Ursula Biemann's Multimedia Counter-geography," in Jaimey Fisher (ed.), *The Collapse of the Conventional: German Film and Its Politics at the Turn of the Twenty-first Century*, (Wayne State University Press, 2010), 333; Sharon Lin Tay, *Women on the Edge: Twelve Political Film Practices*, (Palgrave Macmillan, 2009), 159.

disorienting way, revealing less rather than more as it twirls. Biemann's voice-over quickly introduces the image as a satellite image, but rather than speaking about this image specifically the voice-over makes a general statement that from the very beginning creates a tension, a contradiction sustained throughout the work: "Satellite images, the ultimate abstraction of geographies into remotely sensed, and most accurate data, that easily conceal nevertheless, their gendered meaning."⁶ The statement associates the notion of accurate data with the notions of abstraction and concealment, which questions the validity of that very accuracy. What is needed to "... fill in the missing data," the voice-over continues, is "... a ground-up view ... that will capture the complexity of lives ... including the reason for all those trajectories, the reason why women trace their routes across the land the way they do."⁷ This tension between the questionable accuracy of remotely sensed data gathered from above, and the messy complexities that exist in the details on the ground is one aspect of the work which many of the articles that address the video essay mention.⁸

In Biemann's own words, the connection between satellite data and women in the sex industry has to do with the ways in which images and media technologies impact what can be said, done, imagined, and visualised.⁹ More specifically, she states that when satellite data make their way into "our daily lives" via "scientific, social and military" interpretation, they reconfigure our ways of imagining the globe.¹⁰ At the time of the video essay's production a growing number of migrants were female, and while economic alliances, globalised capitalism, and border security technologies ensured the easy flow of market goods across borders, bodies were more restricted than ever, with one exception:¹¹ "large numbers of

⁶ Ursula Biemann, transcribed voice-over from *Remote Sensing* (2001), 00:25.

⁷ *Ibid.*, 00:35.

⁸ Mennel, "The Global Elsewhere"; Tay, *Women on the Edge*; Mieke Bal, *Two Move: video, art, migration*, (CENDEAC, 2009), 131.

⁹ The image *Earthrise*, taken from the Apollo 8 satellite in 1968 is an early example of how a single satellite image reconfigured the way we see the world. Denis Cosgrove and Laura Kurgan have pointed out that despite of the Cold War climate, this image channelled a notion of "global and planetary unity, whether in universalist terms, humanist ones, or precisely non-humanist environmental or natural ones." See Laura Kuran, *Close Up at a Distance: Mapping, Technology, and Politics*, (MIT Press, 2013), 9. See also Denis Cosgrove, *Apollo's Eye: A Cartographic Genealogy of the Earth in the Western Imagination*, (The Johns Hopkins University Press, 2001).

¹⁰ Ursula Biemann, "Remotely Sensed: A Topography of the Global Sex Industry," *Feminist Review* 70 (2002): 76.

¹¹ See for example Gilane Tawadros, "Re-imagining Europe: Contemporary Art and Ideas in an Era of Globalization," In Barbara Vanderlinden and Elena Filipovic (eds.), *The Manifesta Decade: Debates on Contemporary Art Exhibitions and Biennials in Post-Wall Europe*, (MIT Press, 2006), 168. See also Hanna Musiol, "Transnational Labour and Aesthetic Theory in Ursula Biemann's Geobodies Video Essays," *Working USA: The Journal of Labor and Society* 15 (2012): 25: "Restrictive employment and immigration laws prohibiting illegal work have the effect of channelling female migrants directly into the sex industry."

[migrant] women were nevertheless ushered into the sex industry.”¹² With this in mind, Biemann made it her project in *Remote Sensing* to “explore how these satellite visions of globality are producing a sexual economy in which it has become thinkable to reorganise women geographically on a global scale.”¹³

1.2 Other works

Among Biemann’s earlier video essays, which are often referred to as the *Geobodies* works, *Remote Sensing* is the artwork which most explicitly incorporates and explores vertical perspectives and the technologies that produce them. Nevertheless, it is valuable for this thesis to briefly introduce two other video essays (*Contained Mobility*, 2004 and *Black Sea Files*, 2005) which, if understood in relation to *Remote Sensing*, will help strengthen and nuance the forthcoming analysis of it. Moreover, it is worth mentioning that these two works exhibit similar strategies to those observed in *Remote Sensing*, both in terms of camera action and postproduction: footage recorded by the artist on a handheld camera on field trips is placed in split-screen juxtapositions with found news footage, satellite images, and close-up images of port security software. However, while *Remote Sensing* explores a relation between satellite technologies and female migration for work in transnational sex markets, *Contained Mobility* and *Black Sea Files* are concerned with other transnational forms of migration.

In *Contained Mobility*, the screen is split in two for the 20-minute duration of the work. On the one side, the view shifts between what looks like a computer simulation of a ship entering a port, satellite images of a port, and different interactive maps which indicate the trajectory of a ship across the ocean and the names of parked vessels at a port. Presented on other side of the screen is a surveillance feed from the interior of a shipping container, which serves as the home of refugee Anatol K. Zimmermann.¹⁴ Biemann has noted that although Anatol acts as though he is unaffected by the surveillance, the feed intrudes into Anatol’s unconventional private sphere, and dissolves the boundaries between private and public.¹⁵ Simultaneously, Anatol’s exceptional migratory biography is narrated through concise and informative

¹² Dimitrakaki, “Material Feminism,” 217.

¹³ Ursula Biemann, “Remotely Sensed,” 77.

¹⁴ See Ursula Biemann, “Suspended in the Post-Humanist Lapse: Contained Mobility,” in Ursula Biemann and Jan-Erik Lundström (eds.), *Mission Reports: Artistic Practice in the Field, Video Works 1998-2008* (Bildmuseet/Umeå University/Arnolfini and Cornerhouse Publications), 57.

¹⁵ Ibid.

subtitles that scroll down in a text box, revealing his post-Cold War state of suspension as a Belarusian with a German ethnicity, whose citizenship and right to asylum have been denied by every country he has entered.¹⁶ By tracking Anatol's journey through multiple European countries the work thematises the many and fluctuating grey areas between borders, citizenship and asylum rights across the geopolitical changes that have reconfigured Europe in the last 30 years. Through the text, Anatol is not presented with having an "original" national or cultural identity. Rather, he is presented as a nomad with an identity that is perpetually mobile.¹⁷ The video tells us he faced legal and social discrimination during his first years, being ethnically German and living in Russia and Belarus (formerly the USSR). He left Belarus after being persecuted for political reasons, and faced legal suspension, detainment in asylum centres, and rejection of asylum and citizenship rights in every country he entered. In contrast to the catalogue of authoritative limitations he is subject to the narrative emphasises Anatol's creativity, as he finds extraordinary ways to cross increasingly surveilled borders all over Europe.¹⁸ Similarly to the way female subjects are presented in *Remote Sensing*, Anatol's migrant identity, loss of citizenship and rights are not accounted for in order to victimize him. Rather the narrative focuses on Anatol's creative abilities to sustain and surpass the increasingly restrictive situations he encounters.

According to Ursula Biemann, "the text" which scrolls down in a box on one side of the screen, "is strictly documentary, based on several hours of interviews with Anatol ..." from which she claims to have extracted his biography with "the greatest possible accuracy."¹⁹ The moving images however, challenge the normative documentary mode, and offer instead an experimental way of working with the intersection between lived reality and fictional representation. About the work, Biemann states that "every image is an artificial construction: a simulated seascape, a visual rendering of digital data, a webcam set up for a staged scene."²⁰

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ The work could easily be compared to the earlier *Green Border* (1993) in which artist Christian Philipp Müller documents his attempts at crossing the borders between Austria and its eight neighbouring countries. A description of this work is provided in T.J. Demos, *The Migrant Image: The Art and Politics of Documentary During Global Crisis*, (Duke University Press, 2013), 13.

¹⁹ Biemann, "Suspended in the Post-Humanist Lapse," 59.

²⁰ Ibid.

While one side of the screen offers a human construct which is read as Anatol because the text below the image contextualises it as such, the other side of the screen offers a contrasting view. There are neither humans nor narration present. Instead it reveals different technologies specialised for maritime navigation and port security. Through the presentation of these technologies, various vertical perspectives appear: some as satellite images, some as animated visualisations, and others as a mixture of the two. In *Contained Mobility* as opposed to *Remote Sensing*, these vertical perspectives are presented through interfaces which have been recorded while a human actor operates them. The operator him- or herself is not shown directly in the video but becomes manifest through the movement of the mouse icon on the interface monitor or through the action of zooming in or out, to name one strategy deployed by Biemann.

Black Sea Files (2005) includes both satellite images that are similar to those found in *Remote Sensing*, and port security images similar to those seen in *Contained Mobility*, but in contrast to the other works, the voice-over does not thematise these vertical perspectives in *Black Sea Files*. The video essay, which is divided into nine “files,” follows the construction of the Baku-Tbilisi-Ceyhan (BTC) oil pipeline. The pipeline, which Biemann traces as a red line on a map, functions as a red thread that allows the video work to explore diverse experiences across borders in the Caucasus area. The investigation of the direct and indirect ramifications of the pipeline construction offers a strikingly transnational approach which addresses labour conditions, voluntary and involuntary displacement of peoples, conflicts, shifting marked incentives, and land ownership. These explorations paint a highly complex picture of the histories, peoples, cultures, and conflicts of the south Caucasus area, and thus offer an alternative to the more simplistic political rhetoric, which in the work is presented through appropriated media images of President Bill Clinton’s pipeline announcement speech (Clinton lead the negotiations for the BTC pipeline) and newspaper headlines. The pipeline, which will transport oil from east to west, is – as phrased by Carles Guerra – revealed as a “powerful narrative line” which carries the interests of Western oil companies and diplomatic relations.²¹ Through the video essay, however, a range of scenes from local life in the Caucasus compete with this hegemonic narrative.²²

²¹ Carles Guerra, “Negatives of Europe: Video Essays and Collective Pedagogies,” in Maria Lind and Hito Steyerl (eds.), *The Greenroom*, (Sternberg Press, 2008), 154.

²² Ibid.

In a visual logic that is similar to *Remote Sensing* a montage of satellite images, appropriated mass media images and other found footage accompany the artist's own field recordings and interviews. Distinct from her other works, Biemann is herself very much present as an embedded artist in *Black Sea Files*. This embeddedness is apparent in the field interviews and through the use of voice-over, which shifts between a statement oriented mode and a self-reflexive mode. The embeddedness is most prominent in a scene where Biemann has filmed herself while working on postproduction in her studio.²³ Interestingly, the recording of Biemann is shot directly from above in low quality, creating a vertical perspective that monitors Biemann in a way that is visually similar to zoomed-in satellite images, as if she as well is placed under the satellite gaze.

1.3 Research history

In their respective ways all three video essays are loaded with textured complexity which raises qualified questions about visual culture, technology and geopolitics. There are a few academic articles which address Biemann's early body of video works, and the authors have tended to highlight one or two aspects of the video essays, instead of trying to grasp them all. Angela Dimitrakaki interprets a resurrection of a materialist-feminist method within Biemann's works, and accordingly, Dimitrakaki's emphasis is on labour conditions in intersection with gender, migration and globalisation.²⁴ It is also under the banner of labour that Hanna Musiol investigates how the video essays' combination of theory and practice play a "vital role as a labor discourse that produces new topographies of transnational labor," addressing how marginalised migrant subjects "transform the social and material spaces around them" through their labour (in an extended sense), "despite great political and economic odds."²⁵ Brian Holmes' article on Biemann's works puts forward the idea of a new type of institutional critique, which he calls "extradisciplinarity." He argues that Biemann and her activist and theorist collaborators turned "towards an exterior field or discipline," while a notion of reflexivity nevertheless remains, as "an attempt to transform the initial

²³ Biemann's studio reflects the digital medium of her works, and is largely centred around a computer.

²⁴ Dimitrakaki also points out that the work of the video essayist is a form of immaterial labour. Via Hardt and Negri's *Multitude* and *Empire*, she locates both the technologies found in the works and the "consumption of women's bodies into productive labour" as capitalist spaces and argues that Biemann turns to the "multitude of femininity." See Dimitrakaki, "Material Feminism for the Twenty-first Century," in Ursula Biemann and Jan-Erik Lundström (eds.), *Mission Reports: Artistic Practice in the Field, Video Works 1998-2008* (Bildmuseet/Umeå University/Arnolfini and Cornerhouse Publications), 125.

²⁵ Hanna Musiol, "Transnational Labor," 15.

discipline, to end its isolation, to open up new possibilities of expression, analysis, cooperation and commitment.”²⁶

While the body of texts on Biemann’s video essays from the book *Mission Reports: Artistic Practice in the Field. Video Works 1998-2008* and other sources manage to address many of the complexities that the works and the artist’s working methods raise, there is scarce analysis of the actual technologies that have been given such a prominent role in the video works, and especially in *Remote Sensing*. Although theories of globalisation are present in many of the texts, it is considered a general context for the themes of the video essays and not analysed as a technically and mechanically produced condition.²⁷ The texts which do mention satellite technologies, speak about them in very general and abstract terms, either as a part of the expansion of globalised pancapitalism²⁸ or as a digital parallel reality which contrasts the experiences of lived lives on the ground.²⁹

1.4 Context

Art historical context

In an art historical context, Biemann’s works can be situated at the intersection of two general and heterogeneous, yet significant traditions, namely that of experiments with the documentary in recent art, and that of artistic investigations of media materialities and technologically mediated modes of seeing and knowing. The former tradition has been more emphasised in the scholarship on Biemann, which is not surprising as this stage of Biemann’s career coincided with the increased interest for the documentary in art historical debates around the time of Okwui Enwezor’s Documenta 11 in 2002. As Irit Rogoff observed in

²⁶ Brian Holmes, “Extradisciplinary Investigations: Towards a New Critique of Institutions,” in Ursula Biemann and Jan-Erik Lundström (eds.), *Mission Reports: Artistic Practice in the Field. Video Works 1998-2008*, (Bildmuseet/Umeå University/Arnolfini and Cornerhouse Publications, 2008), 155-163.

²⁷ Moreover, satellite and drone technologies have not been widely discussed in social and cultural theory, at least not yet. In some of the celebrated books on globalisation, such as Arjun Appadurai’s *Modernity at Large: Cultural Dimensions of Globalization* (University of Minnesota Press, 1996) or Jameson and Miyoshi’s *The Cultures of Globalization* (Duke University Press, 1998), Lisa Parks comments that “the satellite does not even make it into the index.” See Lisa Parks, *Cultures in Orbit: Satellites and the Televisual*, (Duke University Press, 2005), 7.

²⁸ For Dimitrakaki’s reading of *Remote Sensing*, her materialist reading defines the economy as the axis around which other concerns are analysed. She also sees satellite technologies in capitalism as a mediator for immaterial labour, and thus renders it an abstract rather than specific force. It is therefore relevant to also note Rosi Braidotti’s claim that “... Hardt and Negri (200, 2004), or the Italian School of Lazzarato (2004) and Virno (2004), tend to avoid science and technology and not to treat it with anything like the depth and sophistication that they devote to the analysis of subjectivity.” See Rosi Braidotti, *The Posthuman*, (Polity Press, 2013), 43.

²⁹ See for example Mennel, “The Global Elsewhere,” 350.

2004, listing Documenta 11, Manifesta 2004, and the 2003 Istanbul Biennial as some of her examples, many large scale exhibitions presented works of art that “inform” in a “seemingly factual way,” yet with a “slight remove from reportage.”³⁰ Within this framework, T.J. Demos compares Biemann’s video essays to the works of similar-minded, yet differing artists of moving images, such as “Harun Farocki, Amar Kanwar, Dario Azzellini and Oliver Ressler, Hito Steyerl and the Otolith Group.”³¹ What generally connects these artists, Demos argues, “is to link documentary functions to imaginative scenarios, in order both to retain video’s representational relation to social reality and to nuance its meanings via carefully elaborated constructions.”³² As such, the works problematize the “stultifying conventions of traditional documentary ... and sensationalist media” and offer instead an experimental mode of representation which re-organises ways of seeing and interpreting.³³ On the same note, Maria Lind and Hito Steyerl observe that the notion of the documentary today is defined by a “perpetual doubt; a blurred and agitated documentary uncertainty,” in other words a distrust in truth representations catalysed by the crisis of modernity, propaganda wars and increased media literacy. For some artists – and I count Biemann as one of them – embodying this uncertainty becomes a productive force rather than a limitation, as it contributes to “creating new zones of entanglement between the aesthetic and the ethic, between artifice and authenticity, between fiction and fact, between documentary power and documentary potential, and between art and its social, political, and economic conditions.”³⁴

As will be elaborated in the fourth chapter of this thesis, Biemann’s works should not solely be contextualised within this increased documentary presence in the art world, which is often conceptualised as a “documentary turn” limited to the last 15 years or so. As video essays, *Remote Sensing* and Biemann’s other works exhibit some important continuities – and discontinuities – with earlier moving image works, such as the essay films of Chris Marker and certain earlier European Avant-Garde films and ideas of the late 1920s.³⁵

³⁰ Irit Rogoff in Amy Charlesworth, “On Reporting, the Documentary and the Aesthetic in Ursula Biemann and Angela Sanders’ *Europlex*,” 30 May, 2013. <http://www.ibraaz.org/essays/66#top>

³¹ T.J. Demos, *The Migrant Image*, 209.

³² Ibid.

³³ Ibid.

³⁴ Maria Lind and Hito Steyerl (eds.), *The Greenroom: Reconsidering the Document and Contemporary Art #1*, (Sternberg Press/Center for Curatorial Studies Bard, 2008), 16.

³⁵ Marker’s collaboration with Alain Resnais on *Nuit et brouillard/Night and fog* (1956) is acknowledged by many as the beginning of his practice as a film essayist.

Ideas to connect images to critical philosophical discourse so as to think about images “beyond the desire to show the world as it is, later associated with documentary filmmaking,” were already evident in the cinematic and written works of the Soviet filmmaker Sergei Eisenstein.³⁶ In his 1927-8 diary entry called “Notes for a film of *Capital*” – a screen adaptation of Marx’s *Das Kapital* from 1867 – Eisenstein even referred to the method he intended to film in as a “collection of short film-essays,” a change in method so dramatic that he said it would “overturn” his “entire system.”³⁷ While this film was never made, Eisenstein tested some of the methods in fragments of his film *Oktyabr (October, 1928)*. In one of these fragments, Eisenstein uses this method which he also referred to as “intellectual montage,” to convey the idea that images can transcend from “given cases to ideas.” The fragment presents Trudovik (and anti-Bolshevik) leader, Alexander Kerensky’s ascent to power in Russia, metaphorically, by showing the figure physically ascending the stairs to the Winter Palace, intercepted by images of a “statue holding a wreath,” highlighting the “conceited nature of Kerensky’s aspirations,” which – as the Soviet viewers would know – was to rapidly rise to power as Dictator.³⁸

In a different national context some of Hans Richter’s late 1920s films present screen arrangements such as split-screen, composite imagery and stop-motion – aspects which distort the direct representation of “the real” – which are in some ways continued by Biemann, although in her case these aspects are the result of digital postproduction. However, Richter – a German filmmaker often associated with the Dada and Surrealist movements – did not conceptualise his work as film essays until the year 1940, when he wrote the text “Der Filmessay. Eine neue Form des Documentarfilms” (“The Essay Film. A New Form of Documentary Film”). As David Montero has noticed, the main argument of the text seems to be a proposal that cinematic essays enable a rendering of “complex processes ... intelligible through images,” in a way that places it “in direct relation to the documentary film,” even if the filmmaker is “no longer bound to the rules and parameters of traditional documentary.”³⁹ For Richter, then, the essay film allowed artists a creative and experimental approach to social reality which was not necessarily bound to “the formal limitations imposed by classic

³⁶ David Montero, *Thinking Images: The Essay Film as a Dialogic Form in European Cinema*, (Peter Lang, 2012), 29.

³⁷ Sergei Eisenstein in David Montero, *Thinking Images*, 29.

³⁸ David Montero, *Thinking Images*, 30.

³⁹ *Ibid.*, 32; Nora M. Alter in *Ibid.*, 32.

documentary representations.”⁴⁰ Still, as Montero elaborates, Richter’s text does not address the subjective, personal, and poetic potential of the essayistic, and perpetuates instead the “paradigm of disembodied knowledge which was to play such a major role in the development of classic documentary filmmaking.”⁴¹

For it is the personal and the exploration of the subjective and poetic that have become important attributes of the essay film and video essay in recent years. These were also the key aspects that André Bazin underlined after watching Chris Marker’s *Lettre de Sibérie* (*Letter from Siberia*, 1957) in 1958. Through the use of a subjective voice-over in *Letter from Siberia*, as well as a range of found footage such as animation and adverts which seem to clash with the footage from Siberia, new meanings are forged, and representation itself is questioned. As will be elaborated in chapter four, some of these strategies are continued while others contested in Biemann’s *Remote Sensing*.

Largely ignored by scholars addressing Biemann’s works is the way in which *Remote Sensing*, as well as other works, relate contextually to a range of other artists who have explored the intimate relations between art, media, and technology, media materialities and the ways in which technological mediation affects ways of seeing, knowing and imagining. For technologies of representation always introduce new potentials, limitations, complexities, and specificities which artists have explored via the once new, now old technologies of photography, film, television, video, and the digital, to name only a few. This broad tradition inflects and overlaps, in Biemann’s case, with the documentary tradition. In the case of *Remote Sensing*, it is satellite media and technologies that are investigated, situated, exploited, and appropriated for their potential to image the globe from ionospheric distances, producing not only mere images, but also new conceptions and imaginations, as we shall see, about globality, temporality, vision, and location. In addition to contextualising Biemann’s works within a documentary tradition then, the great range of art-and-technology practices should also be considered as a backdrop for her investigation of satellite perspectives. To briefly mention only a very few, we can think of the Soviet Constructionist approach to exploiting the photographic camera and producing and conceptualising a “new vision” in the 1920s; Dara Birnbaum’s appropriation and transformation of televisual material and distribution means in her *Technology/Transformation: Wonder Woman* (1978-1979) – a

⁴⁰ David Montero, *Thinking Images*, 32.

⁴¹ *Ibid.*

video work whose production required intimate knowledge of the technology with which to record and manipulate televisual images; or more recently Sean Snyder's investigation of the techno-materiality of digitised images in *A broken piece of raw optical glass from the Carl Zeiss Archive* (2007), in which the same original image has been digitally reworked into an approximation of four different image standards, revealing the material effects of resolution and printing processes upon the image.⁴² Looking further back to the early years of photography, where contemporary discussions of the relationship between art and technology often originate, the ballooning experiments by the Parisian photographer, Nadar can be mentioned too. As a pioneering attempt to investigate and exploit the limits and potentials of the medium of photography, his 1850s ballooning experiments provided some of the first vertical perspectives by means of this medium. After many unsuccessful attempts at photographing and developing his photographic plates from balloon elevation – the draft from the gas which fuelled the balloon reacted with the emulsion on Nadar's plates – Nadar discovered a way to channel the balloon gas away from his plates, so that they could be developed successfully. This produced some of the first remotely sensed images, more commonly known as aerial photographs. The photographs introduced a revolutionary way of relating to the streets of Paris, especially as they were able to document the ongoing Haussmannisation – a significant urbanisation project that involved for instance the construction of linear boulevards emanating from the Arc de Triomphe de l'Étoile, a star pattern that would pop out when viewed from above. These images instantiated new conceptions and imaginations about Parisian modernity and urban imagination, as well as the potentials of the medium of photography.

Vertical views in visual culture

As a starting point for this thesis, I claim that *Remote Sensing* instantiates a curiosity and will to explore satellite technologies – as specific technologies rather than as extensions and instruments of capitalism or militarism – and that this curiosity should be taken seriously. This also involves taking seriously the ongoing changes in visual culture, as the impact and ubiquity of satellite media and images in particular is taking part in shaping not only what we see, but also how we see.

⁴² See Sean Snyder, "Optics. Compression. Propaganda," *Art & Research: A Journal of Ideas, Contexts and Methods* 2, no. 1, (Summer 2008): <http://www.artandresearch.org.uk/v2n1/pdfs/snyder.pdf>.

Biemann produced *Remote Sensing* at a critical time in what we could call an ongoing increasing ubiquity of satellite and drone (Unmanned Aerial Vehicles) images as well as virtual visualisations of the earth (Google Earth) – all of them providing vertical perspectives by visualising something from above. *Remote Sensing* was made only few years after the first privatisation of a number of U.S. satellite programs, which meant that civilians could gain access to high resolution satellite imagery which for decades had been reserved for military eyes only.⁴³ Around the same time, the Clinton-administration also declassified the archives of the Corona satellites, a top secret espionage program initiated to collect reconnaissance data on Eastern Europe and parts of Asia between 1960 and 1972.⁴⁴ Additionally, satellite images from the massacres in Srebrenica in July 1995 became the first satellite images that were accepted as forensic evidence in an international tribunal in 2001.⁴⁵ That same year satellite images of Manhattan’s ground zero following the 9/11 attacks circulated in television news coverage worldwide.⁴⁶ During this time, Google also worked on their own Geographic Information Systems (GIS) tool which they launched as Google Earth in 2005. This allowed anyone with access to a computer a simulated, manoeuvrable view of the surface of the earth, zoom-able down to a resolution of approximately 10 cm in certain areas.⁴⁷ 2005 was also the year that the London Eye – a massive Ferris wheel on the London south bank which opened in 2000 – was voted the “world’s top tourist attraction” in Pringles’ Ultimate Destinations Poll, beating sites such as the Vatican in Rome.⁴⁸ From the top of the London Eye tourists could take their own aerial images with their cameras and cell phones, indicating that they had acquired a taste for the vertical view, perhaps catalysed by the expansive popularity of Google Earth. However, there is a continuation here to Nadar’s Paris, as Ferris wheels are an older entertainment technology which gained popularity in Paris

⁴³ The process of privatising a number of satellite programs happened between 1994 and 1995 under the Clinton-administration. See Lisa Parks, *Cultures in Orbit*, 80.

⁴⁴ U.S. Department of the Interior/ U.S. Geological Survey website, https://lta.cr.usgs.gov/declass_1 accessed 14.10.15

⁴⁵ General of the Bosnian Serb Army, Radislav Krstic, was found guilty of “aiding and abetting genocide” at the International Criminal Tribunal for the former Yugoslavia in The Hague on 2. August, 2001. In a law review it was explained that during his trial, “military satellites were used to verify the witnesses’ accounts – to the point where the surveillant images were said to have shown men ‘lined up on fields, freshly disturbed soil where graves were dug’.” See Marouf Hasian Jr., *Forensic Rhetorics and Satellite Surveillance: The Visualization of War Crimes and Human Rights Violations*, (Lexington Books, 2016), 57.

⁴⁶ Lisa Parks, *Satellites in Orbit*, 81.

⁴⁷ Mark Dorrian, “On Google Earth” in Mark Dorrian and Frederik Pousin (eds.), *Seeing From Above: The Aerial View in Visual Culture*, (I.B. Tauris & Co, 2013), 295.

⁴⁸ Arifa Akbar, “London Eye on top of the world as it becomes best tourist attraction,” *The Independent*, 17.03.05, accessed 14.10.15, <http://www.independent.co.uk/news/uk/this-britain/london-eye-on-top-of-the-world-as-it-becomes-best-tourist-attraction-7907425.html> See also Mark Dorrian, “On Google Earth,” 297.

during the Haussmannisation, most notably after 1900.⁴⁹ More recently, Unmanned Aerial Vehicles (UAVs), also known as drones have gained visibility, although various drone technologies have existed for decades. It has become clear that the U.S. has relied exponentially on drones in warfare and reconnaissance since 9/11, with the assumption that they have a “surgical” precision suitable to strike or surveil terrorist targets.⁵⁰ Recently drone strike controversies, such as questions of casualties have reached the mainstream press. A number of NGOs in Pakistan work on mapping and identifying both found missiles and the people who have witnessed, been injured or killed in drone strikes, shedding light on the doubtful means by which especially the CIA gathers and reports information about the results and precision of drone strikes.⁵¹ Meanwhile, the boom in drone visibility is not only because of military uses of UAVs. There is an expanding civilian demand for drones too.⁵² Drone-mounted camera perspectives are now all over the news and they have revolutionised TV broadcasts from sports events. A range of affordable hobby-drones are available in common electronics stores, and the amateur passion for drones is evident from the millions of drone films and reviews on YouTube.⁵³

Even more importantly, as vertical views become growingly ubiquitous in the form of satellite images, drone footage, 3D films, Virtual Reality games, to name a few, viewers of these images come to rely more and more on affordances that are given to us by increasingly intelligent machines.⁵⁴ Since humans cannot fly mobile vertical views from above are almost exclusively defined by a degree of technological mediation, as some form of technology – be it an air balloon, a satellite or a computer program – is required to give such affordances. Simultaneously the traditional humanities of an extended Kantian (or neo-Kantian) tradition (including social constructionism) might struggle to adapt a critical language with which to address these technological, nonhuman forms of intelligence which act and afford independently of the human mind.⁵⁵ For since Kant, it has been common to differentiate

⁴⁹ See for example Mark Dorrian, “Cityscape with Ferris Wheel: Chicago, 1893,” in Christoph Lidner (ed.), *Urban Space and Cityscapes: Perspectives from Modern and Contemporary Culture*, (Routledge, 2006), 21.

⁵⁰ See for example Jordan Crandall, “Ecologies of the Wayward Drone,” in Adey, Whitehead and Williams (eds.), *From Above: War, Violence and Verticality*, (C. Hurst & Co, 2013), 267.

⁵¹ One of these organisations is the Foundation for Fundamental Rights.

⁵² Crandall, “Ecologies of the Wayward Drone,” 267.

⁵³ On 13.11.16 the word “drone” had approximately 11,900,000 hits on YouTube.

⁵⁴ For a theory of affordances, See James J. Gibson, *Ecological Approach to Visual Perception*, (Psychology Press/Routledge, 2014).

⁵⁵ The concept of an autonomous world that exists independently of the human mind departs with the Kantian and structuralist idea that structures, concepts and language structure the world. See Manuel De Landa, “The

between the world as it is experienced by humans, and the world which according to Kant is beyond human knowledge.⁵⁶ The latter is viewed as essentially inert and passive until human experiences animate these parts of the world.⁵⁷ From this point of view, it is hard to account for the creative processes which occur in nature, or in machines (think for example of the expanding branches of artificial intelligence such as machine learning and deep learning) spontaneously. It is more necessary than ever therefore to try to understand these intelligent machines, including intelligent weapons.

1.5 Research questions

With this in mind, the way in which this thesis will approach Ursula Biemann's *Remote Sensing*, is guided by the following questions:

- How are vertical perspectives and the technologies that produce them presented, or better, situated, in Biemann's *Remote Sensing*?
- In what ways can vertical perspectives be considered different from horizontal and linear perspectives with regards to embodiment, vision and visual technologies?
- How may the reading that this art project affords offer a new perspective on the "genre" of the video essay?

1.6 Theoretical framework

In order to approach satellite technologies and vertical perspectives productively, as well as to locate how these are situated in Biemann's *Remote Sensing*, there is a need to (re-)conceptualise the machine, the relation between the human and nonhuman, as well as the relations between materiality, representation, and discourse outside of the deeply ingrained Western dichotomies of nature/culture, subject/object, and active/passive. It is necessary to speak of both the "fleshy and wired materialities of bodies" – human and nonhuman bodies that is – which appear in Biemann's video essay.⁵⁸ Theorists such as Donna Haraway and Bruno Latour have extended, challenged, and problematized the fields of poststructuralism, postmodernism, and cultural studies "in ways that can more productively account for the

Philosophy of Gilles Deleuze." Lecture, the European Graduate School, June 2007. Available on YouTube: <https://www.youtube.com/watch?v=zqisvKSuA70>.

⁵⁶ Ibid.

⁵⁷ Ibid.

⁵⁸ Stacy Alaimo, "Trans-Corporeal Feminisms and the Ethical Space of Nature," Stacy Alaimo and Susan Hekman (eds.), *Material Feminisms*, (Indiana University Press, 2008).

agency, ‘thought’, and dynamics of bodies and natures.”⁵⁹ While they do not understate the significance of critical linguistic discourse and the theories of social constructivism they highlight the need to “move beyond discursive construction and grapple with materiality.”⁶⁰ To critically interact with scientific knowledge and technological operativity requires terms that can account for, among other things, the material and active ontologies of nonhuman entities, something which linguistic and social construction theories seem to overlook.

Donna Haraway is wary of the penetrating potential of vision and vision technologies to reinforce masculinist, “... militant and colonialist narratives ...” of science, geography, cartography and so on.⁶¹ In what she calls “the God-trick” she describes the myth of the “conquering gaze from nowhere,” which claims its right to “see and not be seen,” and “to represent while escaping representation.”⁶² This disembodied gaze belongs to white men in the name of objectivity, as the positions of “man and white” are thought of as “unmarked” or invisible within the categories of gender and ethnicity. In other words, they are allowed not to have a body that shapes their view into a gendered or an ethnic one.⁶³ For the benefit of this conquering gaze’s objectivity vision technologies are thought of as instrumental, as a resource, but nevertheless transparent. All “objects,” including visual technologies and the earth, are turned into “a resource for appropriation ... [which] guarantees and refreshes the power of the knower.”⁶⁴ The “object of knowledge” must be denied the status as *actor*, and reduced to a resource or tool.

The “satellite visions of globality” that Biemann refers to could easily be considered a perfect model for this “God-trick,” as satellites are able to “see without being seen,” have a deep connection to military and colonial power, and contribute to shaping the way we imagine the world. The distance between the satellite, satellite operator and the area which is observed is so great that it produces a “supposedly detached, disembodied, and objective scientist whose

⁵⁹ Ibid., 242.

⁶⁰ Stacy Alaimo and Susan Hekman, “Introduction,” in Stacy Alaimo and Susan Hekman (eds.), *Material Feminisms*, (Indiana University Press, 2008), 5.

⁶¹ Margareth Grebowitz and Helen Merrick, *Beyond the Cyborg: Adventures with Donna Haraway*, (Columbia University Press, 2003), 64.

⁶² Donna Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” in her *Simians, Cyborgs and Women: The Reinvention of Nature*, (Routledge, 1991), 188-189.

⁶³ Ibid.

⁶⁴ Ibid., 197.

only passion is the pursuit of knowledge.”⁶⁵ Simultaneously satellite images penetrate unknown land and nature, which in the Western tradition is attributed a feminine character – something beautiful, but dangerous which should be admired and studied for its mysteries. As such, satellite images reinforce the white male colonialist/geographer’s role as simultaneously “rigorous scientist, conquering hero, *and* pleasure-seeking admirer.”⁶⁶ This form of disembodied vision in relation to scopophilia – a general privileging of vision over other senses— has been interrogated by feminist theories raging from Irigaray’s psychoanalytic reading where it is related to “masculinist symbols,” to Fox Keller’s understanding of it as a “cognitive penetration of the secret nature, which bears a direct link to the social and psychic construction of masculinity.”⁶⁷

Haraway reminds us that the “God-trick” is just that; a trick and an illusion. The potency for visual technologies to become affiliated with this myth lies in the fact that a certain ideological notion of objectivity appropriates and resources objects for its own benefit, denying an object or a technology the role as actor and simultaneously making its role transparent in the production of a specific form of supposedly disembodied knowledge.⁶⁸ Therefore, visual technologies are not inherently masculinist, militarist, and capitalist, but are appropriated as such. Haraway’s argument, with which she wants to reclaim vision for feminism’s and critical theory’s benefit, is an insistence that all vision is embodied and active, whether that body be a machine or human. She stresses that both our human eyes and the “eyes” of visual technologies are “active perceptual systems ...” which produce “highly specific visual possibilities, each with a wonderfully detailed, active, partial way of organizing worlds.”⁶⁹ Via an understanding of visual perceptual systems as specific and different instead of omnipotent and simplistic, Haraway believes that the search for an understanding of how these systems function in terms of their technicality, location and connectedness, “...ought to be a way of embodying feminist objectivity.”⁷⁰

⁶⁵ M. Pavlovskaya, “Feminism, Maps and GIS,” in Rob Kitchin and Nigel Thrift (eds.), *International Encyclopedia of Human Geography*, (Elsevier Ltd., 2009), 38.

⁶⁶ Ibid. Emphasis my own.

⁶⁷ See Luce Irigaray, *Speculum of the Other Woman* (Cornell University Press, 1974) and Evelyn Fox Keller, *Secrets of Life, Secrets of Death: Essays on Language, Gender and Science* (Routledge, 1992); Rosi Braidotti, “Posthuman, All Too Human: Towards a New Process Ontology,” *Theory, Culture & Society* 23, no. 7-8 (2006): 204-205.

⁶⁸ Haraway, “Situated Knowledges,” 189.

⁶⁹ Ibid., 190.

⁷⁰ Ibid.

This method – one of Haraway’s most central – is called “situated knowledges.” Moreover, it is explained as a need to situate, locate, and embody the knowledge produced by “partial perspectives” which “sustain the possibility of webs of connections.”⁷¹ It rests on the idea that the source of data, whether a human or machine, is partial and unfinished, that it is “stitched together imperfectly and *therefore* able to join with another, to see together without claiming to be another.”⁷² This concept, which in addition to offering some theoretical considerations concerning vision and visual technologies also presents itself as a way of thinking metaphorically about vision in terms of embodiment, seeing from somewhere (a place), seeing together with other humans and/or nonhumans, and partial perspective.

Conceptualising vertical perspectives as partial and embodied rather than totalising and disembodied is not only important in order to reclaim vision and escape the rhetoric of the God-trick; it is also necessary in order to understand the ways in which satellite (machine) perspectives are radically different from the conceptualisations of linear perspectives as developed in Western art history and visual culture. This will be further elaborated in the second chapter of this thesis, which compares the Renaissance and Cartesian conceptualisations of linear perspective in Panofsky and Damisch’s writings to how we may conceive of the vertical perspective.

There is an inclusive feminist sentiment in Haraway’s conceptualisation of seeing with another. Here feminism is not only concerned with gender, but rather with learning how to see *from* and *with* the “limited location and situated knowledge” of the “subjugated,” the “other,” or the “machine,” so that we “might become answerable for what we learn how to see.”⁷³ The key here is that the feminist understanding of “‘gender’ (i.e., as derived from ‘genre’) as a marker of differentiation,” enables a conceptualisation of other differential markers, such as “race, ethnicity, disability, and ... social class,”⁷⁴ and even other types of bodies, such as the nonhuman bodies of animals and machines. There is a feminist ethical paradigm for Haraway, which she carves out as an alternative to both “relativism” and “totalization” – both examples of a denial of “the stakes in location, embodiment and partial perspective.”⁷⁵ Haraway perpetuates elements from continental critical theory and maintains

⁷¹ Ibid., 191.

⁷² Ibid., 191-192.

⁷³ Ibid., 195-196.

⁷⁴ Joost Van Loon, *Media Technology: Critical Perspectives*, (Open University Press, 2007), 81.

⁷⁵ Ibid.

an emphasis on the concern for both “ethical and political accountability.”⁷⁶ The real alternative to relativism for Haraway is thus “partial, locatable, critical knowledges sustaining the possibility of webs of connections called solidarity in politics ...”⁷⁷ Within these webs of connections are both humans and nonhumans, and the possibility of an almost affectionate connection between them, as indicated by Haraway’s choice of words when she explains that the aim of seeing with another, includes a “loving care” and “faithful[ness].”⁷⁸

In the context of Biemann’s *Remote Sensing*, Haraway’s discussion of the stakes and difficulties involved in the possibility of “seeing with” the “subjugated,” may be replaced with Gayatri Chakravorty Spivak’s discourse on “the subaltern.” For the position of many of the female migrants, sex workers, and victims of human trafficking that we encounter in *Remote Sensing* occupy “a space of difference” from which they have “limited or no access to the cultural imperialism.”⁷⁹ While Spivak maintains that the subaltern are prevented from speaking from their true position as a result of oppressive and hegemonic cultural, linguistic and intellectual filters, other scholars – while following Spivak’s line of reasoning – “have rightly insisted that we must maintain a space for the subaltern in our theoretization and guarantee her agency; failing this we become complicit in the silencing of the subaltern.”⁸⁰ Haraway’s situated knowledge maintains this space too, but the metaphor in her case is vision and the ability to “see with” the subaltern, rather than speaking and hearing. As will become clear in the following chapters, vision and visibility are the stakes with which Biemann forges a connection between satellites and the subaltern.

Haraway’s theory and method oppose many of the dualisms that are deeply ingrained in Western thought; the subject/object and active/passive dualisms in the question of situated

⁷⁶ Braidotti, “Posthuman, All Too Human,” 197.

⁷⁷ Van Loon, *Media Technology*, 81.

⁷⁸ Braidotti has observed that Haraway’s affectivity has – similarly to her own work and the philosophy of Deleuze – an anti-Oedipal quality which, rather than perpetuating the negativity of the “paranoid-narcissistic-self-nexus,” emphasises a “cognitive brand of empathy, or intense affinity: it is the capacity for compassion, which combines the power of understanding with the force to endure in sympathy with a people, all of humanity, the planet and civilization as a whole. It is an extra-personal and a trans-personal capacity, which should be driven away from any universalism and grounded instead in the radical immanence of a sense of belonging to and being accountable for a community, a people and a territory.” Braidotti, “Posthuman, All Too Human,” 205.

⁷⁹ Gayatri Chakravorty Spivak in Leon de Kock, “Interview with Gayatri Chakravorty Spivak: The New Nation Writers Conference in South Africa,” *ARIEL: A review of international English literature* 23, no 3 (1992): 29-47.

⁸⁰ These theorists include Rajeswari Sunder Rajan and Lata Mani. See J. Chapin, “Postcolonial Action: Hannah Arendt, Public/Private, *Sati*, and the Recuperation of Subaltern Agency,” *Weber Studies: An Interdisciplinary Humanities Journal* 15, no. 1, (Winter 1998): 41-54.

knowledge become destabilised as the “object” of study – in this case the satellite – becomes an active perceptual system, a connected actor in a web, while the “subject” who seeks knowledge through the satellite’s perceptual system becomes equally a connected actor in this web. The division between nature and culture is also dissolved. Haraway’s example of the OncoMouse™ – a patented species which has been constructed by genetic designers in a Harvard laboratory but yet is a fully natural being – is clear: it is both nature and culture as if the two could not be separated.⁸¹

I have mentioned that not only humans, but nonhuman forms such as a machine too, can be actors in Haraway’s universe. Her concept of the “material-semiotic actor,” which can be either human or nonhuman, tries to explain how entities (such as a dog, to follow her favoured example), are material at the same time as they may generate or already possess semiotic meaning.⁸² The focus on semiotics rather than action – the latter being the focus in Bruno Latour’s “Action is Overtaken” – produces some confusion as semiotics sustain the idea that human language and concepts should be given a privileged role.⁸³ For the benefit of clarity concerning the fuzzy terms actors, actants, and agency, elements from Bruno Latour’s development of Actor-Network Theory might be more helpful.⁸⁴

Similarly to Haraway Latour protests the constructed opposition between active human subjects and passive, inanimate things, and proposes instead that both humans and nonhumans, such as things, objects, technologies, minerals, bacteria, etc., can be actors.⁸⁵ An

⁸¹ See Donna Haraway, “FemaleMan©_Meets_OncoMouse™. Mice into Wormholes: A Technoscience Fugue in Two Parts,” in her *Modest_Witness@Second_Millennium.FemaleMan©_Meets_OncoMouse™*, (Routledge, 1997), 49-119.

⁸² David Bell, *Cyberculture Theorists: Manuel Castells and Donna Haraway*, (Routledge, 2007), 120.

⁸³ Haraway’s material-semiotic concept springs out of her interest in Katie King’s “poems” as “sites of literary production where language is also an actor independent of intentions and authors.” Therefore, Haraway suggests that “...bodies as objects of knowledge are material-semiotic generative nodes. Their boundaries materialize in social interaction.” Donna Haraway, “The Biopolitics of Postmodern Bodies: Constitutions of Self in Immune System Discourse,” in her *Simians, Cyborgs and Women: The Reinvention of Nature*, (Routledge, 1991), 210.

⁸⁴ For the record, Latour also relies on “semiotics” as the “study of how meaning is built.” But Latour states that meaning should be understood in terms of “how one privileged trajectory is built, out of an indefinite number of possibilities,” rather than in terms of textuality and linguistics. Latour thus writes that semiotics “... is the study of order building or path building and may be applied to settings, machines, bodies, and programming languages as well as text ...” See Akrich and Latour, “A Summary of a Convenient Vocabulary for the Semiotics of Human and Nonhuman Assemblies,” in Wiebe E. Bijker and John Law (eds.), *Shaping Technology / Building Society: Studies in Sociotechnical Change (Inside Technology)*, (MIT Press, 1992), 259.

⁸⁵ Latour is strongly against the subject/object dualism, and favours to speak about human-nonhuman relations, although he is aware that this opposition between human and all-things-that-are-not-human bears an anthropocentric element. See Latour’s footnotes to “Action is Overtaken,” in his *Reassembling the Social: An Introduction to Actor-Network-Theory*, (Oxford University Press, 2005), 76.

actor acts, but is “not the [only] source of action.”⁸⁶ Rather action is a result of multiple entities between which “action is borrowed, distributed, suggested, influenced, dominated, betrayed, [and] translated.”⁸⁷ In order to see how objects can be “participants in the course of action” it is necessary to speak of action in a way that is not limited to human intentionality and human meaning-making; to follow Latour’s own simple example, a hammer does not act intentionally, but is made to act in collaboration with a human. Although the human actor makes the hammer act, the hammer’s input makes a detectible difference that can be observed by looking at the nail that was hit.⁸⁸ Latour explains that since the word actor is strongly associated with a human figure in English, the word actant is sometimes used to refer to actors that have not yet been “endowed” with a figuration of some sort, and is by means of its abstraction easier to relate to when anthropomorphic figurations are not in the picture.⁸⁹

Agency is something that causes a difference: an event of transformation, an action that can interfere with other actions. For Latour, the key thing about agencies is that this action or transformation has to be accounted for. If one speaks about agency, one must speak about what it did: what was detected and what changed?⁹⁰ Moreover agencies should be seen as assemblies of heterogeneous actors in which “competences and performances are distributed” in such a way that one actor cannot be singled out as a source.⁹¹ Rather, the distribution among different actors – humans and not – is what conjointly is the source of the agency’s ability to produce a difference. Therefore, agency is not something that is possessed, but rather something that happens, and that can only be observed and accounted for after it has happened.

Together, Haraway’s situated knowledge and Latour’s theory of action help map out an ontology that can help us locate, situate, inquire, and maybe understand better, the satellite and satellite vision as a “view from a body ...” that is “... complex, contradictory, structuring and structured ...”⁹² However for a further elaboration and situating of the satellite’s complexity with regards to technical operativity, there is a need for more technical terms that

⁸⁶ Latour, *Reassembling the Social*, 46.

⁸⁷ *Ibid.*

⁸⁸ *Ibid.*, 71.

⁸⁹ Akrich and Latour, “A Summary,” 259.

⁹⁰ Latour, *Reassembling the Social*, 53.

⁹¹ Akrich and Latour, “A Summary,” 259.

⁹² Haraway, “Situated Knowledges,” 195.

have been hard to find in the humanities for a long time. As a heterogeneous field of inquiry into machine and media operations from a hybrid humanities/scientific perspective, media archaeology might offer some insight.

The processes of satellite data collection in orbit (digital imaging), transmission to Earth (radio waves), and data processing in computers on the ground (reassembling digital images) occur in a highly technical manner that requires updated concepts of time and space. Human, historical time has obvious limits if one is to address and locate operative satellite temporalities. Firstly, many satellites destabilise the anchors of human time-keeping; it does not make sense to speak about night, day, winter and summer for satellites that orbit the earth 16 times faster than the earth rotates around itself, as these are concepts that explain variations in temperature and sunlight caused by Earth's simultaneous rotation around itself and its orbit point in relation to the Sun. Instead, satellites exist in their own specific space-times that are determined by their distance from Earth and the speed of their trajectory. As explained by Einstein, the nature of space-time also causes more "time dilation" the faster the satellite orbits, which means that clock time passes slower or faster due to gravity or relative velocity.⁹³ Secondly, parts of the satellite operate with "electronic transmission media" like radio waves in specific frequencies. These frequencies, and the manipulations done to them in order to traffic data are "micro-temporal processes" that are imperceptible to the human senses.⁹⁴ Thirdly, other satellite operations are digital, and thus process even smaller "temporal intervals."⁹⁵

With this in mind, Wolfgang Ernst's version of media archaeology – an approach that looks specifically at "time-critical media" offers some helpful terms. The notion of time-critical media is different from "time-based" media, as it describes not the media that refer to time, but the media processes that consist of time in and of itself. In digital media, Ernst describes the time-critical concept as "media operations under the conditions of digital signal

⁹³ "The speed of time depends on your relative speed." Astronauts stationed at the International Space Station (ISS) age slower than humans on Earth. After a 6-month mission, time dilation causes time to have passed approximately 0.007 seconds slower than on earth, because the velocity of the ISS affects the speed of time. See Ed Lu, "Expedition 7," NASA Aeronautics and Space Administration, http://spaceflight.nasa.gov/station/crew/exp7/luletters/lu_letter13.html, accessed 05.10.16. For the full theory of relativity, see Albert Einstein, *Relativity: The Special and General Theory*, [1916] (Methuen & Co, 1920).

⁹⁴ Anthony Enns, "Preface" in Wolfgang Ernst and Anthony Enns (trans.), *Chronopoetics: the Temporal Being and Operativity of Technological Media*, (Rowman and Littlefield International, 2016). Kindle edition, 346/7829.

⁹⁵ Ibid.

processing [which] must be processed in strictly predefined time windows in order for them to succeed and for a message to materialise at all.”⁹⁶ The mechanisms for processing time is in time-critical media so distinct from human time that it usually cannot be detected by the human sensory apparatus, and by creating and consisting of critical time processes, these media exist in their own unique “tempor(e)alities.”⁹⁷ Since these tempor(e)alities are so distinct from human time, they can only be interpreted by analysing the “technical (time) signals” that are revealed when the media are operative, rather than analysing them in terms of “cultural (semiotic) signs,”⁹⁸ even if the latter is much more common in the humanities. The content of media then, which Ernst calls the “discursive register of signs” is not of importance, as his focus is on the analysis of the temporalities of signals which are “algorithmic and technomathematical.”⁹⁹

1.7 Method and thesis structure

Haraway’s situated knowledge constitutes as much a way of working and thinking as it does a theoretical framework. This thesis proposes that Biemann’s *Remote Sensing* stitches together a range of partial perspectives that come across as precisely situated knowledges. However while the migrant women we encounter in the work are situated as complex bodies that live, experience, form memories, and traverse across borders that are shaped by local, regional, or global politics and economics, it is necessary to emphasise that the machine bodies of satellites – while equally complex – need to be situated in machine appropriate terms in order to access information about how satellites produce partial and specific knowledges, as well as where they are “seeing” from. To address the latter properly then, this thesis takes the cue from the work – which presents a range of images that relate to satellite operativity, such as that of a rocket launch, a graph indicating radio frequencies for satellite communication, as well as animations of satellite orbits – to investigate satellite operativity in media technical terms. This a crucial move in order to locate what is at stake with the ubiquity of vertical perspectives in *Remote Sensing* as well. For, if vertical perspectives and the technologies that produce them are discussed in vague terms, these discussions run the risk of reinforcing the existing power-structures via what Haraway explained as the God-trick. However by discussing satellites and these types of perspectives as embodied – tied to a

⁹⁶ Wolfgang Ernst, *Chronopoetics: The Temporal Being and Operativity of Technological Media*, (Rowman and Littlefield International, 2016). Kindle edition, 845/7829.

⁹⁷ *Ibid.*, 354.

⁹⁸ *Ibid.*

⁹⁹ *Ibid.*, 385.

specific body and a location – as well as in terms of their technological specificity they can be alternatively conceptualised as something productive for Biemann’s overall project of giving visibility to forms of movement that often go unnoticed; that is, they can be stitched together with other, human situated knowledges. In order to understand how this stitching together functions this thesis investigates the ways in which the video essay and the tools for digital postproduction have been exploited and experimented with by Biemann.

The first chapter following the introduction is a theoretical chapter which addresses some of the mathematical, technological, and philosophical considerations of perspective which have informed perspectival understandings and theories in Western art history. The chapter is guided by the question of what distinguishes vertical perspectives from horizontal and linear perspectives. It therefore starts by locating the central criteria that define conceptualisations of the linear perspective by engaging with the seminal texts on perspective by Erwin Panofsky and Hubert Damisch. From there, these criteria are tested against the types of vertical perspectives that can be found in Ursula Biemann’s *Remote Sensing*, namely satellite images. The results of these tests reveal that there are tremendously important differences between linear and vertical perspective, especially when it comes to vantage points, the fixity/unfixity of the viewer, the relation between the viewer and the image, as well as the relations between subjects and objects. Because of the differences revealed, the chapter proposes alternative terms with which to address the vertical perspectives of satellite images, which are derived from Haraway’s notion of situated knowledge: embodiment, technical specificity, partiality, and seeing with others.

The next chapter (3) investigates how vertical perspectives and the technologies that produce them are situated in Biemann’s *Remote Sensing*, and attempts to analyse how Biemann – through her selection, editing, and handling of the image material – perpetuates a will to “faithfully see with” satellites and an interest in their technical, locational, and temporal specificities. The proposed terms from the previous chapter will help unfold an understanding of how Biemann’s project may constitute a form of situated knowledge itself. Taking this as a cue, the chapter expands on how satellite images and satellite operativity are situated by the video essay, both in a very technical sense, and in the specific context of the transnational migratory trajectories women in the sex industry traverse.

The final chapter before the concluding remarks addresses how Biemann exploits and re-imagines the video essay both in terms of how the video essay is conceived historically and with regards to the technical possibilities of digital postproduction. Here I identify that Biemann productively sets in motion a set of hybrids: the document/picture hybrid with regards to representations that swing between truth and fiction; human/nonhuman hybrid vision concerning the levelling of machine and human perspectives which we find in *Remote Sensing*; and finally, a linear/vertical perspectival hybrid that multiplies vantage points and disorients the viewer via the screen space that *Remote Sensing* presents.

2 Horizontal vs. vertical perspective



(Fig. 4: Still from Ursula Biemann's *Remote Sensing* (2001). Photo courtesy of Women Make Movies)

At 11 minutes and 56 seconds into *Remote Sensing*, three quarters of the screen are occupied by a reddish-hued satellite image of what appears to be a river delta somewhere in the world (fig. 4). On the remaining fourth of the screen there is an image of a rocket as it is about to launch from its base, and the voice-over states that this rocket is about to blast the Ikonos satellite “into orbit to gather geospatial data.” In fact, there is a direct causality between the two images; The rocket in the smaller picture pushed the Ikonos satellite into orbit, which afforded the other, larger image on the screen to be produced. Most of the satellite images that are included in Biemann's *Remote Sensing* are actually produced by this specific satellite, and the small image of the rocket launch also visualises the “becoming” of Ikonos as an operative satellite.¹⁰⁰ However, there is something else which is interesting about the

¹⁰⁰ Per definition a satellite is a body that orbits around a planet and this also includes for example the Moon. An artificial satellite that is not placed in orbit yet, has yet to become a satellite properly; Becoming is a term from Deleuze and Guattari's *A Thousand Plateaus: Capitalism and Schizophrenia* (University of Minnesota Press, 27

juxtaposition of these two images. The satellite image presents a vertical perspective from above that looks down at the surface of the earth, while the image of the rocket follows the logic of the horizontal perspective, and accordingly the horizon is the vantage point against which objects are either perceived as close or far from the viewer.

This thesis includes perspective in its title but what is actually perspective if we take the mathematical, technological, philosophical and, art historical meshwork of considerations into account? And more importantly, in what ways can vertical perspectives be considered different from horizontal (including linear) perspectives with regards to embodiment, vision and vision technologies? This chapter wants to address these questions by working through some of the key principles of perspective that have been relevant to the history of art, and look at how fundamentally these principles are altered when we discuss vertical instead of linear perspective. These questions and criteria will be discussed with Donna Haraway's concept of situated knowledge, which in addition to offering some theoretical considerations concerning vision and visual technologies also offers a way of thinking metaphorically about vision in terms of embodiment, seeing from somewhere (a place), seeing together with other humans and/or nonhumans, and partial perspective. Thinking about vision in terms of embodiment, seeing from somewhere, seeing with and partial perspective will thus become new criteria with which to address the vertical perspective.

In other disciplines, images which offer vertical perspectives are often referred to as "aerial views." Practices of aerial views have for a long time been found in disciplines as diverse as war studies, geography, space research, architecture, and computer science, and in the interdisciplinary field of visual culture, to mention a few.¹⁰¹ Here, the vertical perspectives, the practices and technologies which afford aerial views are often characterised as spatializing technologies and images that have spatializing potential. Cartographic inquiries, land surveys, and mapping the field for political, warfare, scientific and/or environmental purposes are practices that rely on aerial images for their spatializing potential, namely the

1987), see pages 257-258. It explains processes of change and movement within an assemblage, with discrete parts of the assemblage moving or changing in such a way that the assemblage becomes open to a range of possible shifts. In a satellite launch, fuel thrusts the satellite against gravity with a range of possible outcomes: becoming-satellite, becoming-debris, etc.

¹⁰¹ See Mark Dorrian and Frederic Pousin, *Seeing From Above: The Aerial View in Visual Culture*, (I.B. Tauris, 2013).

way they contribute to the ordering of space.¹⁰² In art history, all this matters too, but on top of that, the study of perspective itself has a privileged role. But this starts, not with the vertical or aerial perspective, but with the horizontal perspective.

A horizontal view corresponds with a body, usually human, which looks towards a vantage point that is either the horizon or the object that is the furthest the eye can see, for example a wall. Along the trajectory between the eyes of the body and the vantage point, objects diminish in size relative to their distance from the eyes. Horizontal perspective is therefore perceived as natural to bipedal creatures such as humans, because it corresponds to the most familiar form of bipedal vision – looking towards an horizon. Vision is the ability to register and process information about for example movement, space, colours, etc., that is contained in visible electromagnetic energy, namely visible light. In humans, the visual technology that makes this possible is our two eyes, specifically their cornea and lens' ability to focus light information onto a photo-sensitive part of the eye called the retina, where it is converted into neuro-signals and then distributed to other parts of the brain.¹⁰³ For humans thus, the relation between vision, vision technologies and embodiment is in its simplest form that the eyes and brain afford the body with vision – a processual scanning of light – and the body anchors this vision to a specific but not fixed location from which embodied vision then occurs.

Perspective, while resembling vision, is a presentation or representation of what appears to be three-dimensional space onto a two-dimensional surface. This can be presented in different mediums, such as in drawings, paintings, photography, and computer animation. In his essay, "Perspective as Symbolic Form," Erwin Panofsky traced the organisation of space in European drawings and paintings from antiquity to the late renaissance with an emphasis on the development of realism and a horizontal, unified vantage point. For Panofsky, the degree of sophistication of a society's (horizontal) perspective was symbolic of that society's conception of space, and as he demonstrated through various examples, these conceptions could be tied to that society's philosophical ideas of space as well as knowledge of abstract mathematics. As an example, Duccio's *Last Supper* from the *Maestà* (1301-1308) represents for Panofsky, a way towards linear perspective – a construction of space where all lines meet

¹⁰² See Bernard Siegert, *Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real*, (Fordham University Press, 2015). See also Sean Cubitt, *The Practice of Light: A Genealogy of Visual Technologies from Prints to Pixels*, (MIT Press, 2015), 154-155.

¹⁰³ See Michael Baxandall, *Painting and Experience in Fifteenth Century Italy: A Primer in the Social History of Pictorial Style* (Oxford University Press, 1972), 29. See also Richard Gregory, John Harris, Priscilla Heard, and David Rose (eds.), *The Artful Eye* (Oxford University Press, 1995).

in one vantage point – in which a sense of depth between figures and a room has been attempted, but not with success in producing a sense of realism. The central element in the painting is a table around which Jesus Christ and the twelve disciples are seated, but the way the table has been positioned within a larger room makes it seem like it is lopsided, tilting towards the viewer. As a result of multiple, instead of one vantage point, the space is read as “inconsistent.” Additionally while the rear walls and ceiling produce a sense of depth the objects on the table “appear to stand in front of the space box rather than in it.”¹⁰⁴ In the 1430s, however, Italian artists such as Leon Battista Alberti and Filippo Brunelleschi managed to paint spatial depth with the “correct” relation between objects, something Panofsky attributed to their knowledge of mathematics: Alberti’s solution was that “the picture is a planar section of the visual pyramid,”¹⁰⁵ and the depth is a product of calculating intervals along the pyramid when it is viewed in “side elevation.”¹⁰⁶

Almost seven decades after Panofsky, Hubert Damisch was in part prompted by Panofsky’s empiricist study of perspective as well as by the theories of Jacques Lacan, to create a new perspectival paradigm in art history. Following Panofsky Damisch argued that the invention or discovery of linear perspective in the Italian renaissance had enormous repercussions, not only in terms of organising space on a two-dimensional surface, but as a force that “organises the way we think about art and art history.”¹⁰⁷ More than a tool for creating “an illusion of space,” the consciously constructed perspective reveals “the advent of a reflexive self-awareness about the relation of mind to things and about the nature of art as being essentially about that relation ...”¹⁰⁸ And this, which suggests a “critical distance” and ability to reflect upon representation for Damisch, is what made the proper discipline of art history possible. Furthermore, Damisch extends Panofsky’s perspectival model of thought to encompass the way perspective affects the viewer, and to do that he evokes Lacan’s symbolic order.¹⁰⁹ This extension of the symbolic form through the symbolic order, Margaret Iversen notes, causes multiple theoretical “stresses and strains,” to the extent that Iversen questions if the two models are compatible.¹¹⁰ On the one hand Panofsky affords a reading of perspective as

¹⁰⁴ Erwin Panofsky, *Perspective as Symbolic Form*, trans. Christopher S. Wood, (Zone Books, 1997), 56.

¹⁰⁵ Alberti in Panofsky, *Perspective as Symbolic Form*, 63.

¹⁰⁶ Panofsky, *Perspective as Symbolic Form*, 63.

¹⁰⁷ Margaret Iversen, “The Discourse of Perspective in the Twentieth Century: Panofsky, Damisch, Lacan,” *Oxford Art Journal* 28, no. 2 (2005): 193.

¹⁰⁸ *Ibid.*, 194.

¹⁰⁹ *Ibid.*, 199.

¹¹⁰ *Ibid.*, 195.

symbolic form in which the viewer – who’s realisation of perspective as an abstract construction of space causes a critical distance – takes up a reflexive role, while Damisch’s reading of Lacan on the other hand, explains a viewer that enters a crisis of subjectivity in relation to perspective. While Panofsky’s perspectival model connotes “rationality, critical distance, reflexivity, and freedom,” the Lacanian terms used by Damisch to extend this model seem to suggest the opposite, with its emphasis on “seduction, alienation, lack, death and desire.”¹¹¹ For Damisch, Iversen explains, perspective “constitutes a subject that ‘is to become that of modern science in the form of a point’.”¹¹²

This reduction to a point is important, because it is with the Cartesian subject that Damisch finds an entry into perspective via Lacan. Descartes’ idea of consciousness, Amelia Jones notes, is based on vision from a “disembodied and transcendent ... eye” which “turns all bodies into objects.”¹¹³ Because the construction of perspective reduced “man to an eye and this eye to a point” which corresponds with the unified vantage point, the Cartesian cogito is “itself a sort of geometrical point.”¹¹⁴ And this geometrical observation about the relation between the subject and the perspective, allowed Damisch via Lacan to see how “... the subject is caught, maneuvered, and captured inside the field of vision, and how painting can deliberately exploit it to captivate the ‘subject’ in a relation of desire, but one that remains enigmatic.”¹¹⁵

In different terms, geometrical abstraction of space in perspective is also addressed at the beginning of Panofsky’s essay, and in various other texts about perspective. Iversen notes that “perspective abstracts fundamentally from basic human psycho-physiological perception, which is obviously not monocular or static or strictly geometrical.” But, because “perspectival forms of representation” are ubiquitous in our visual reality, the essential difference is sometimes overlooked. We are, in other words conditioned to perceive perspective as non-abstract illusion. Similarly, in parts of Jean-Louis Baudry’s apparatus theory, in which he argues that the cinematic setup structures the viewer in much the same way as the renaissance perspective because both are based on the *camera obscura*, the centre or vantage point of the image coincides with the eye-level of the viewer, thus fixes the

¹¹¹ Ibid. 199

¹¹² Hubert Damisch, *The Origin of Perspective*, trans. John Goodman, (The MIT Press, 1994), 425; Iversen, “The Discourse of Perspective,” 199.

¹¹³ Amelia Jones, *Body Art/Performing the Subject*, (University of Minnesota Press, 1998), 37.

¹¹⁴ Damisch, *The Origin of Perspective*, 44-46.

¹¹⁵ Ibid., 46.

viewing subject into a position from which “monocular vision” – following the logic of the camera’s single lens – is the only possible way to read space.¹¹⁶ The ways in which this fixity acted out a form of “ideological pressure and physical disciplination” upon the viewer was seen in direct correlation with the way in which optical media and perspective “select, frame, and direct the visual.”¹¹⁷

The main criteria, thus, for the different philosophical and theoretical approaches to linear perspective, have been 1) a unified, central vantage point which corresponds with a stable horizon, 2) the fixed, monocular position of the subject, 3) the relation between this subject and the object/image/vantage point 4) the disembodied Cartesian eye/”I”/subject which turns everything into an object. The theoretical and methodological perspectives of media archaeology, as well as the ontologies of Donna Haraway and Bruno Latour make it possible to problematize these criteria, first and foremost for their absolute privileging of the human “subject” which objectifies all things by means of vision.¹¹⁸

While new materialism comes in many varieties, what joins these ways of thinking together is “a whole-sale rejection of the Cartesian and Kantian legacy of modernism” by “a rejection of the modern distinction between subject and object and, second, rejecting epistemology and turning to ontology.”¹¹⁹ As such the different modes of conceptualising perspective described above *can* and should be thought out differently. However, let us for the sake of understanding Biemann’s project as well as for the sake of contrast see how these criteria either uphold or become obsolete when we look at the modes of vision and perspective in vertical views and the technologies which afford them. Maybe vertical perspectives mark a fundamental break with Western modernity’s conceptions of time and space?

¹¹⁶ Jean-Louis Baudry and Alan Williams, “Ideological Effects of the Basic Cinematographic Apparatus,” *Film Quarterly* 28, no. 2 (1974-75): 41.

¹¹⁷ Wolfgang Ernst and Harun Farocki, “Towards an Archive for Visual Concepts,” in Thomas Elsaesser (ed.), *Harun Farocki: Working on the Sightlines*, (Amsterdam University Press, 2004), 268.

¹¹⁸ Wolfgang Ernst and Harun Farocki argue that Baudry’s view of technical optical media as disciplinary performers can be turned around into something positive if the focus is instead on how the “technical predispositions (offer) a chance for liberating images from exclusively human perception,” In *Ibid*. See also Martin Jay on the “ancient scopic regime of Cartesian Perspectivalism in Martin Jay, “Scopic Regimes of Visuality” in Hal Foster (ed.), *Vision and Visuality*, (Bay Press, 1988), 3-29. See also Bruno Latour, *We Have Never Been Modern*, (Harvard University Press, 1993).

¹¹⁹ Carl G. Herndl and S. Scott Graham, “Getting Over Incommensurability,” in Paul Lynch and Nathaniel Rivers (eds.) *Thinking With Bruno Latour in Rhetorics and Composition*, (SIU Press, 2015), 41-42.

When we look at images that have been shot directly from above in such a way that the ground becomes the “background,” the horizon escapes and cannot provide a fixed reference point according to which distance can be determined. This causes a sense of disorientation as the loss of the horizon also marks a “departure (from) a stable paradigm of orientation, which has situated concepts of subject and object, time and space ...”¹²⁰ Here I will evoke a scene, not from *Remote Sensing*, but rather from *Contained Mobility*, as the latter offers a satellite image of identifiable objects, and in that way it will be easier to compare to a horizontal view of the same objects. 5 minutes and 51 seconds into *Contained Mobility* and recurring throughout the work, there is a satellite image of the port of Rotterdam (fig. 5). From above, it is noticeable that there are rows and clusters of white, circular objects with different diameters all over this part of the port. In a different image of this area of the port, (fig. 6) we see that these circular objects – which we can now identify as storage containers for gas, fuel, and other hazardous cargo – are cylindrical, and varying in height as well as in diameter. As a result of the full foreshortening of the objects the height difference and cylindrical shape of the containers were impossible to determine from the vertical image. If we look for a vantage point in the same image we realise that there is none, there is only the flatness of the ground. As such we can argue that the first criterion of a unified central vantage point, which corresponds with a fixed real or virtual horizon, is generally non-applicable to vertical perspectives. This is true for vertical perspectives in single images. There are however examples of composite image models which offer manoeuvrable 3D-views, as we will see.



(Fig. 5: Still from Ursula Biemann’s *Contained Mobility* (2004))

¹²⁰ Steyerl, “In Free Fall,” 14.



(Fig. 6: Port of Rotterdam, Photo Courtesy of Luke Price)¹²¹

With regards to the second criterion, namely the fixed, monocular position of the subject, things get more complicated. If we think in terms of Haraway's conception of embodiment that destabilises the subject/object dualism, the subject can either be the body of the human who views the image, or the machine that produced the image. If we consider the former, Hito Steyerl and Thomas Elsaesser follow the idea that vertical perspectives too, provide a fixed and monocular position of the "subject." Phenomenologically, they imagine that the body of the viewer gets transported and fixed in the air by vertical perspectives, floating above the surface of the earth in a perpetual "free fall."¹²² While interesting as a thought experiment, this idea goes to great lengths to imagine the human spectator as the producer of the perspective, and in that way they "fall" into the illusion, or rather immersion of perspective, instead of thinking in terms of for example mediation and technological affordance.

Thinking with Haraway instead, we must insist that the vertical perspective is an embodied view from somewhere, and that the body in question is a machinic one, which nevertheless

¹²¹ Flickr.com, User: Luke Price. License: CC BY 2.0. <https://flic.kr/p/e4zVPC>

¹²² Steyerl, "In Free Fall," 14, 25-29.

affords humans to see *with* it. In remotely sensed satellite imagery, the viewing position is continuously moving in a defined orbit, rather than being fixed. Although a satellite image may seem as if it is taken from a frozen or fixed viewing position this is not the case if we look at how some satellite camera setups operate. In contrast with the familiar hand-held digital camera which shoots in a given resolution of for instance 640 x 480 per frame, most satellites (including Ikonos) use line scan sensors of for instance 11 km x Y. 11 km refers to the Ikonos satellite's swath width, which is the width of the land area that the satellite image covers, while Y is defined by the forward motion of the satellite as it moves in its designated orbit. Since Y can expand as long as the satellite's camera is on, the imagery is more like a continuous ribbon than a defined rectangle. The line scan sensor on board Ikonos is comparable to the line scanners in fax machines. Images are scanned line by line by a row of single pixels, and this line determines the resolution width (swath), while the length is unspecified. A satellite image made for viewing, in contrast with this ribbon, is a cropped and processed version, which includes pixel lines taken at slightly different times and from slightly different locations as the satellite moved while it scanned.¹²³ From the satellite's embodied point of view then, mobility or a perpetual forward motion rather than fixity seems to be the viewing or scanning position.

As we saw in figure 5, it was impossible to deduce the difference in height between the cylindrical gas containers, and this is due to the lack of depth caused by both the monocular vision produced by a single telescope setup (a telescope takes the position of the lens in satellite cameras) and the verticality of the image. The sense of depth in humans and other predator animals is generally a result of perceiving the same scene from two slightly different point-of-views, namely each respective eye. These two two-dimensional views are combined by the brain into a three-dimensional scene in what is called stereoscopy.¹²⁴ Although most satellite perspectives are based on monocular vision, there have been experiments with stereoscopy – following the observations made by the astronomer Kepler in the 16th century – among satellite operating companies and other parties. In what is called “3D measuring by photogrammetry,” two or more compatible satellite images are combined in order to build

¹²³ Samuel Purkis and Victor Klemas, *Remote Sensing and Environmental Change*, (Wiley-Blackwell, 2011), 47-57.

¹²⁴ Klaus Tempfli, Norman Kerle, et al., (eds.), *Principles in Remote Sensing: An Introductory Textbook*, (ITC/The International Institute for Geo-Information Science and Earth Observation, 2009), 146.

manoeuvrable 3D software.¹²⁵ However, what must be noticed here is that the perspectives, while from above, are not perfectly vertical. Rather, they image elevated sites such as tall buildings or mountains at an angle so that depth can be seen in relation to other things in the landscape or cityscape.

The relation between the viewing subject and the vantage point in horizontal perspectives should also be considered, as this relationship was of high importance to Damisch. As previously mentioned, the viewing subject's point of view is already defined in a fixed point, from which the perspectival rendering of three-dimensional space is represented on a two-dimensional surface. There is an invisible line between the fixed position of the viewer and the fixed and unified vantage point, to which Damisch attributed both a Cartesian geometrical subjectification and a Lacanian seduction that draws the viewer into the image. The two options for the viewer are to become aware of the constructedness of the perspective resulting in an increased self-reflexivity, or give in to the illusion and look at the image as a window into a different reality. Both options negate the affordance and mediation of technological aids which may have been part of the production, such as the photographic camera, camera obscura, drawing grids, etc. In vertical perspectives, however, there is no vantage point and arguably no fixed point of view and one is forced to ask: what afforded a perspective from this aerial, stratospheric or ionospheric altitude, which is impossible to achieve for a human alone? I argue that this question breaks the illusion of the image-as-window, but instead of provoking a self-reflexive knowledge of the constructed nature of vertical perspectives, the question illuminates the function of the instruments that are employed, and focuses the viewer's curiosity directly on technology.

The final criterion has to do with the relation between the linear perspective and Cartesianism in Western modernity. The construction of the linear perspective as a visual paradigm that came to dominate Western visual culture encompassed a "reinvention of the subject, time, and space," which then became an "additional tool kit for enabling Western dominance and

¹²⁵ Since announcing that it would generate 3D views in 2012, Google Earth has added more and more cities to their list of 3D areas. See Mickey Mellen, "Google Announces Upcoming 3D features," *Gearthblog*, 17.06.12, accessed 19.10.16, http://www.gearthblog.com/blog/archives/2012/06/google_announces_upcoming_3d.html. Another company that provides high-resolution 3D photogrammetry imagery for military and other purposes is Vricon. Together with the Swedish company Saab, they have developed a software that allows the user to "visualize and exploit the world in 3D." See Vricon's website: <http://www.vricon.com/products/> accessed 19.10.16.

the dominance of its concepts ...”¹²⁶ Panofsky and others reminded us that the linear perspective “declares the view of a one-eyed and immobile spectator as a norm,” which is then accepted as “scientific and objective.”¹²⁷ This abstraction of space is – much like Cartesian coordinates and Alberti’s visual pyramid – “mathematical, flattened, infinite, continuous and homogenous.”¹²⁸ With this linear construction of space, time also becomes linear, following the predictable, calculable, anticipated motion towards an horizon. “Horizons” became especially important in the former Soviet Union as a political imagination of a calculable plan for the future – for example a “five year plan” – towards communist utopia.¹²⁹ Lastly, the Cartesian subject is prefigured in linear perspective’s isolation of the eye, which becomes the “I” – the cogito – that gets drawn into the picture so that the subject is central to a particularly calculable, linear world. At the same time however, the eye/I also becomes a fixed point based on the coordinates of the perspective, and “while empowering the subject by placing it at the centre of vision, linear perspective also undermines the viewer’s individuality by subjecting it to supposedly objective laws of representation.”¹³⁰ This paradigm can thus be read as Cartesian, and in an extended sense it helps to visualise the formation of the subject/object binary – the subject is born and comes to occupy a central position in a world where everything external to the subject is objectified, calculable, reasonable, mappable and exploitable.

2.1 The God-trick

The productive problematisation of these criteria allows for what I identify as two new conceptualisations of vertical perspective. The first one has already been presented in this thesis’ introduction, and follows the idea that increased surveillance from above (by satellites and drones among others) produces a “God-trick” – the scary idea of omnipotent, invisible, mobile and remote controlled vision from above in the name of surveillance and scientific objectivity.¹³¹ Distrusted by feminists in various disciplines and celebrated for their objective results by others, the technologies of remote sensing and their vertical perspectives are often

¹²⁶ Steyerl, “In Free Fall,” 20.

¹²⁷ Ibid., 19.

¹²⁸ Ibid.

¹²⁹ “New Horizons” has also been used in post-Soviet socialist discourse. See for example Ernesto Laclau, “On Horizons and Discourse,” lecture at the second Former West Research Congress on 06.11.10 at Istanbul Technical University. Former West’s channel on Vimeo: <https://vimeo.com/81098733> accessed 20.10.16.

¹³⁰ Steyerl, “In Free Fall,” 20.

¹³¹ Haraway coined “the God-trick.” See Haraway, “Situated Knowledges,” 189, 191. Hito Steyerl presents a similar idea in her “In Free Fall,” 24.

described to enact a “disembodied gaze from nowhere.”¹³² Anyone who uses Google Earth can experience this God-trick – the interface allows a rotation and zooming of the globe by the ease of clicking, dragging and pinching in order to cater to the user’s interests, and as such it literally places the user at the centre of the universe.¹³³ As Steyerl has explained, this could look more like a “... radicalisation ...” than an overcoming of the “... paradigm of linear perspective.”¹³⁴ The subject/object relation is intensified by the disembodied omnipotent eye in the sky, which looks like a literal top-down setup which intrudes, surveils, and colonises peoples, forests, cities and agriculture. The reality of satellite reconnaissance and drone strikes lead by U.S. intelligence in Iraq, Afghanistan and Pakistan also reinforces the idea of Western imperialism.

While this is the perspectival paradigm followed by many of the scholars who address Biemann’s work, I would like to propose something different.¹³⁵ For how can we even start to address critically such an abstract conceptualisation of vision and perspective that is nowhere to be found, and which does not even have a body? The second conceptualisation of vertical perspective is borrowed from Haraway’s situated knowledge, which I argue allows for a deeper understanding of the specificity of the technologies involved as well as a more thorough inquiry into how they afford different types of vision. But it also marks a rupture with established Western concepts of space and time, subject and object.

With the loss of a stable horizon, linear vantage point and fixed subject in vertical perspectives, the Cartesian subject becomes bewildered. In fact, the subject/object binary is shattered by the destabilisation of the paradigm of linear perspective, “which has situated concepts of subject and object, of time and space throughout modernity.”¹³⁶

Thinking with Haraway allows us to penetrate the myth of the omnipotence of the disembodied gaze from nowhere. Instead of conceptualising it as an abstract force, Haraway separates the hegemonic objectivity ideology from the actual workings of visual technologies. The God-trick is an illusion of objectivity and omnipotence perpetuated for instance by the interface design of Google Earth – which conceals the source and date of the satellite images which become part of their virtual world while placing the user at the centre

¹³² Haraway, “Situated Knowledges,” 189, 191.

¹³³ See Mark Dorrian, “On Google Earth,” in El Hadi Jazairi (ed.), *New Geographies 4: Scales of the Earth*, (Harvard University Press 2011), 164-170.

¹³⁴ Steyerl, “In Free Fall,” 24.

¹³⁵ See for example Mennel, “The Global Elsewhere,” 350.

¹³⁶ Steyerl, “In Free Fall,” 13.

of the universe, thus overruling the physical laws of planetary orbit and rotation. It is also perpetuated rhetorically by military and political leaders such as President Obama, who in 2013 made a speech on U.S. drone policy, which while characteristically measured, nevertheless expressed an appreciation for the idea of absolute, gluttonous, and unlimited vision, "...whose technological mediations are simultaneously celebrated and presented as utterly transparent..."¹³⁷ Against this rhetoric, Haraway demands that all vision is active, partial, embodied, and tied to some form of location rather than universalising and totalising. In these terms it is possible to study specific satellites' vision as partial views from a body that is "complex [and] contradictory ..."¹³⁸ This is the undertaking of the next chapter in an attempt to understand the complexity, partiality and "bodily functions" of satellites as producers of vertical perspectives; how they work technically, where they are seeing from, and how they afford humans to see "with" them.

The new criteria, then, with which to address vertical perspectives and the technologies that produce these perspectives are: embodiment, technical specificity, "seeing with," and partial perspectives. After briefly explaining them here, these criteria will help us understand how satellites and their perspectives are situated in Biemann's *Remote Sensing* in the next chapter.

Thinking in terms of **embodiment** even when referring to machine bodies is productive here, because satellite vision, rather than being disembodied and omnipotent, is inescapably tied to the satellite body and the location of this body. The body parts and location are important to stress because they simultaneously enable satellite functionality at the same time as they render it vulnerable and limited compared to the way it is described in the rhetorical perpetuations of the God-trick. The specific place from which satellite vision occurs needs attention. While location is often thought of as fixed and stable, the satellite's location is defined by its orbital position and trajectory, namely its constant forward motion and inability to stop. What the satellite is able to image at any time, then, is also defined by where it is and where it is headed in its trajectory.

¹³⁷ Haraway, "Situated Knowledges," 189. An example of this rhetoric from Obama's speech: "For the same human progress that gives us the technology to strike half a world away also demands the discipline to constrain that power – or risk abusing it." From Barack Obama, "Transcript of President Obama's speech on U.S. drone and counterterror policy, as provided by the White House," *The New York Times* 23.05.13, accessed 25.10.16. <http://www.nytimes.com/2013/05/24/us/politics/transcript-of-obamas-speech-on-drone-policy.html>

¹³⁸ Haraway, "Situated Knowledges," 195.

Furthermore, understanding how satellites function in terms of their **technical specificity** is crucial. On the one hand, to counter the claims that satellite vision is inherently totalising by providing humans with infinite access to universal knowledge. And on the other, to gain an insight into the specifically machinic, technomathematical, and temporal processes which more accurately explain satellite operativity than the anthropocentric attributes of narrative and semiotics.

Partiality, and **partial perspective** is the only place from which the satellite is able to provide some form of insight on the environmental, military, urban, etc., conditions on Earth. For satellites do not constitute an omnipotent, unrestricted form of vision. The great distances from which satellites image the globe make the images susceptible to obscurification due to even thin layers of clouds in the atmosphere, and in addition, half the globe is at any time facing away from the Sun (night), so that scarce light can be reflected and picked up by satellite sensors. Furthermore, Biemann's *Remote Sensing* focuses on the partial views from one specific satellite, Ikonos. This partiality rather than totality allows for an "elaborate specificity" when approaching Ikonos.¹³⁹

Finally, "**seeing with**" satellites explains the ways in which humans can engage with satellite vision. Thinking firstly in terms of embodiment, technical specificity, and partiality in relation to Ikonos' vision and operativity, are grounds for what Haraway describes as a more "intimate understanding" of the time and place the satellite is seeing from. Following Haraway the knowledge of the point of view of "the other" – be it another human or a machine – should induce a greater sense of "responsibility" and "accountability" when engaging in vision with it. Since in this context the "seeing with" occurs between a machine and humans, what John Johnston has described in different terms as "machinic vision" can be evoked. Johnston has extended Deleuze's notion of the *machinic* – the "working relationship among heterogeneous elements and relations defined by an assemblage ..." – to encompass the forms of vision that arise from "human-machine systems."¹⁴⁰ Machinic vision, for Johnston, assumes that human-machine vision includes a "decoding" and "recoding" of signals which, because it makes no sense to the human brain alone, can only be fully understood in relation to machines."¹⁴¹

¹³⁹ Haraway, "Situated Knowledges," 190.

¹⁴⁰ John Johnston, "Machinic Vision," *Critical Inquiry* 26, no. 1 (1999): 27-28.

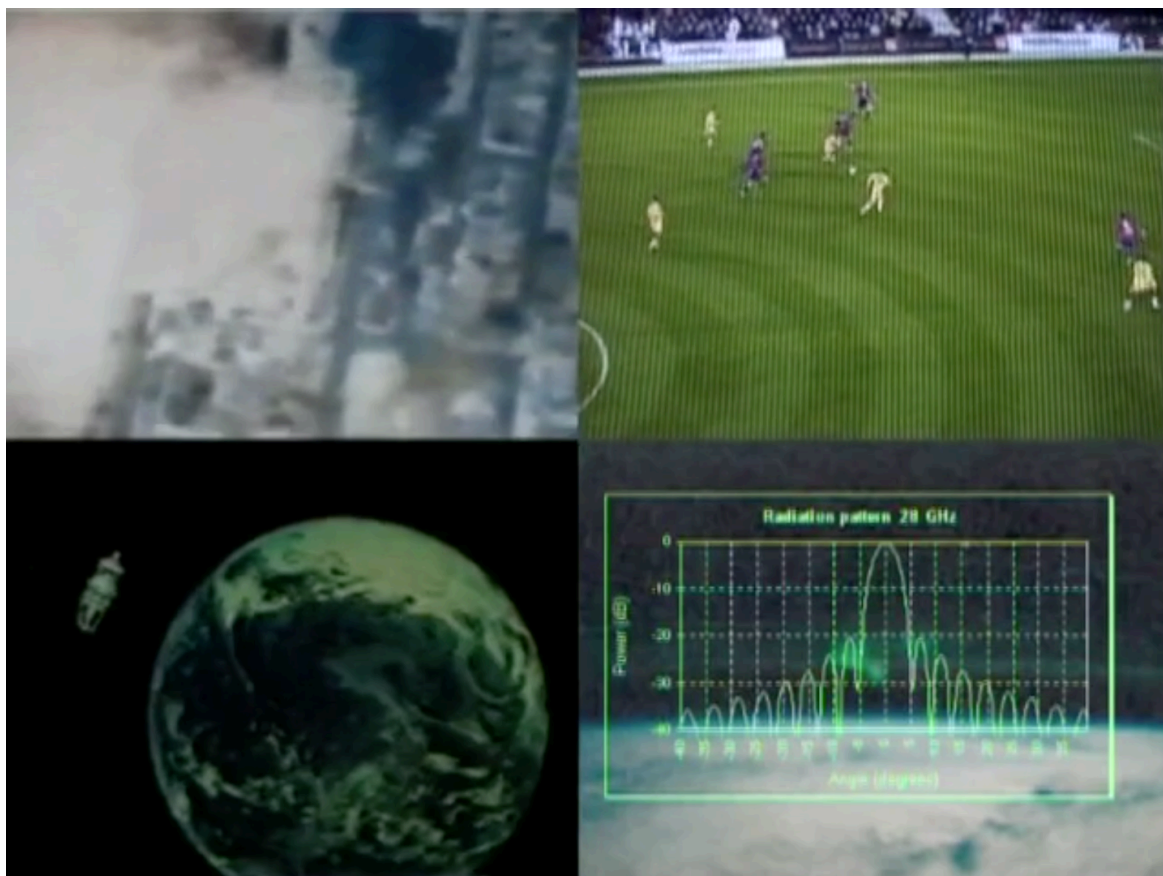
¹⁴¹ *Ibid.*, 27.

3 Situated satellites

This chapter is guided by the question of how vertical perspectives and the technologies that produce them are situated in Biemann's *Remote Sensing*, and attempts to analyse how Biemann – through her selection, editing, and handling of the image material – perpetuates a will to “faithfully see with” satellites and an interest in their technical, locational, and temporal specificities. The criteria from the previous chapter – embodiment, technical specificity, partiality and seeing with – which are borrowed from Haraway's situated knowledge – will come to their use in this analysis. Primarily these criteria will help unfold an understanding of how Biemann's project may constitute a form of situated knowledge itself, but in addition, the chapter will take Biemann's handling of, and curiosity for, satellite knowledge as a cue to investigate these aspects further and in more media technical terms. I argue – contrary to what many others have said about the work – that the satellite is “lowered” from the imagined position of omnipotent, disembodied God's-eye, into a position from which it is identified by its specificities and vulnerabilities, so that it can be associated and stitched together with the other situated knowledges in the work. As such I argue that *Remote Sensing* situates satellites by their technical operation *and* in the specific contexts of women's migration for sexual labour. Like this, the specific visualising potentials of the satellite are used to illuminate – although in a partial rather than totalising way – some the experiences, migratory routes, and alternative circuits of survival of these women, which represent knowledges that usually are invisible, outside the scope of satellite data and official reports. This requires an analysis that encompasses both how *Remote Sensing* presents migrant women as well as how it presents satellites, their operativity, and technical processes. Doing justice to the latter requires a technical approach suitable for addressing machine operativity, and this is where Haraway's terms fall short. To compensate for this, as well as to address elements of satellite operativity that are non-accessible to human senses, (time-)critical terms and observations by the German media scholar, Wolfgang Ernst come into play.

Biemann's editing and compositional techniques has included multiple frames, split-screen and layering in her video essays. In *Remote Sensing* one layer that is presented multiple times on top of different images resembles an XY-graph. Although it is barely legible, the graph

seems to indicate a radiation pattern at a frequency of 20 GHz.¹⁴² This graph is often seen either as a layer on top of or next to a satellite image. 33 minutes into *Remote Sensing*, it is presented along with three other images on the screen, which in this instance is split in four (Fig. 7). In the top right corner frame there is a football match on a TV screen as it appears – with flickering “stripes” – when the TV monitor itself has been recorded. The lower left image resembles an animation of a satellite that orbits the earth, and the last image, besides the graph, is a remotely sensed satellite image of an unidentifiable cityscape. In fact, the frequency of 20 GHz is used for satellite communications, television broadcast, radio astronomy and amateur radio.¹⁴³ It is referred to as a Super High Frequency and is part of the microwave section of radio, which again is a part of the electromagnetic spectrum. It is thus a vital part of signal traffic from the satellite’s orbit – represented by an animation on the screen – to ground control and also in broadcasting television, where specific telecommunication satellites redirect and distribute signals from one location on the ground to multiple other locations.



(Fig. 7: Still from Ursula Biemann’s *Remote Sensing* (2001). Photo courtesy of Women Make Movies)

¹⁴² “The radiation pattern is a graphical depiction of the relative field strength transmitted from or received by the antenna.” Department of Physics at the University of Hawaii, Handbook on ANITA.

www.phys.hawaii.edu/~anita/new/papers/militaryHandbook/radiapat.pdf accessed 28.10.16.

¹⁴³ Bruce R. Elbert, *Introduction to Satellite Communication, 3rd edition*, (Artech House, 2008), 11, 31, 35-36.

Two important observations that I argue are defining for how Biemann presents satellites and vertical perspectives as well as how she works with image material can be made here. Firstly Biemann has actively selected and included found footage, animations and diagrams that relate to satellite functions on a technical level. She presents the satellite's launch by rocket from Earth, its orbit from which it gathers remotely sensed imagery, the frequency of the radio signals by which it communicates with the earth, the satellite images as well as the "content" of signals in the form of a TV broadcast. The fact that all of this is visualised completely decentres the idea of abstract, disembodied and omnipotent vision explained in the notion of the God-trick. It is my opinion that Biemann is herself working with situated knowledges. Her place in a lineage of materialist feminist art practice facilitates a reading of her work as a power-sensitive investigation of how to relate to satellites. Instead of opting into the "dream science/technology of perfect language, perfect communication, and final order" Biemann is concerned with "the sciences and politics of interpretation, translation, sluttering and the partly understood..." as well as with a "translation that is always interpretative, critical and partial."¹⁴⁴ Translation here, should not be read linguistically since the relation between humans and satellites include the machine "languages" of bits and signal traffic in frequency Phase Modulation, neither of which are sign-bearing in human terms. Rather, it should be thought of as a will to understand machines on more symmetrical premises than the anthropocentric view of machines as instruments and resources, and indeed, some form of translation is needed to grasp technical specificities such as frequencies and bits. Furthermore, and more militantly this feminist approach to science and technology does not fit well with the stereotypical idea of the "feminine," nor does it focus on a problem that has typically been of feminist concern. Nevertheless, it marks a continuation of feminist values into an unknown land with its power-sensitivity and concern with the partial. With this observation then, we are prompted by Biemann to see satellite bodies as specific, complex and locatable.

The other observation that can be made from the scene described above as well as throughout the work, regards the multi-perspectival effect of Biemann's screen spaces, which will be addressed more at length in the fourth chapter of this thesis. As mentioned, split-screens, frames within frames and layered images are central strategies by which the video work is

¹⁴⁴ Haraway, "Situated Knowledges," 195-196.

structured as well as how it structures the viewer. Vertical perspectives, central perspectives as well as one-dimensional script and diagrams that are layered on top of other images are all incorporated into these screen spaces in a way that multiplies vantage points, focus points, and perspectives alike. The next few paragraphs will expand on the structure of *Remote Sensing*, and then analyse how satellites are situated in the work, both in terms of technical operativity and in the context of the transnational migration of women who undertake sexual labour.

3.1 The Structure of the work



(Fig.8: Still from Ursula Biemann's *Remote Sensing* (2001). Photo courtesy of Women Make Movies)

As we recall, *Remote Sensing* examines the multiple grey areas which women who migrate for sex work inhabit as well as their border crossing trajectories and paths. These grey areas may represent the thin line between consensual and forced action in a sex market that is highly unregulated in most countries; the need to provide a steady income for family members; the voluntary choices to move to richer countries or bigger cities with the hope of a better life; and then there are the not so grey-area cases of women who are lured (for instance

with false promises of work as waitresses or dancers) or kidnapped into sex work. The video essay is divided into sections that focus on specific countries or regions, with an emphasis on how the particular social, historical, and political factors of that area influence the sex industry. Each of these regions are presented by means of live camera action from clubs and street life, interviews with representatives from women's organisations, interviews with current or former sex workers, intercepted by satellite images, layered images with scrolling green text which resembles travel itineraries, as well as animations of satellites and other found footage. The exploration of each region's social, historical, and political situations and how these factors affect trafficking incentives and working conditions for the sex workers is largely carried by the interviewees, who either tell their stories as current or former sex workers, or – in the case of the women's organisation representatives – speak more generally about the region in which they work. The interviewees are presented in the same way regardless of their status as either activist or current/former sex worker: head-shot against a blue background, in one of four frames in a split-screen setup in which the other frames consist of satellite imagery (fig. 8). The voice-over tends to make more general statements about sex work, transnational migration, and satellites.

The first location that the video essay focuses on is the upper Mekong region, and the borders between Thailand, Laos, Myanmar, Vietnam, and China. Across this region, the interviewees explain how shifting conditions in one of these countries often impacts the migration of women who may end up as sex workers in many of the other countries. For example, the boom in Thailand's tourist economy – which is also advertised as a sex economy¹⁴⁵ – has transformed the country from being primarily an origin country from which women emigrate, to becoming simultaneously a country of destination or transit for girls from the neighbouring Laos and Myanmar. Additionally, the structural privileging of male babies in Chinese areas affected by the one child policy has caused a shortage of women, which is described as especially critical for Chinese farmers. Therefore, the representatives explain, there has been an increased trafficking of especially Vietnamese women into China, predominantly because unmarried Chinese farmers need wives to help with the farm.

The next regional investigation concerns post-socialist central Europe, with an emphasis on the borderland between eastern Germany and the Czech Republic – “one united nation and

¹⁴⁵ There are a number of non-Thai travel agencies specialised in offering catered sex-tours for tourists.

one dissolved.”¹⁴⁶ Along the autostrada of this borderland women from a range of eastern European countries work in “glass house brothels” – which live action footage in the video work presents both from the outside and inside – or stand outside by the road. Many of these women are smuggled in and are waiting to save up enough money to go somewhere else, while others stay because of the hardship with finding another job. The customers – usually German tourists or truck drivers – are just passing by, and thus “everything resonates with impending change,” as the voice-over states.¹⁴⁷ Iveta Bartunkova, a representative from a Czech organisation against human trafficking called La Strada, explains how women from post-industrial post-socialist towns are a targeted group because of the dramatic downsizing of industrial labour in towns in which this used to be the primary source of income. Once they migrate to other countries and start working in the sex industry it is as hard to find other types of jobs in their new places of residence. As explained by Eva Danzl Suarez, who appears in the video essay as a representative from the Swiss human rights organization FIZ Zürich, keeping statistics on the relation between migration and prostitution is hard. They nevertheless deduce that about two thirds of women who migrate into Europe for work in sex come from post-socialist countries.¹⁴⁸ To reach this conclusion, she explains, they have to look critically at the influx of “dancers,” “waitresses,” and “entertainers” – a method that cannot guarantee a high degree of accuracy.

Then the video essay moves on to look at the case of Filipina women in Nigeria, a section which highlights the “multi-national multi-directionality” of women migrants even further.¹⁴⁹ Two women, Arlene Banson and Nilda Vibar, share their story of how they were tricked by a German couple, presumably to work in restaurant in Germany, but ended up in an “oriental club” in Nigeria. Here they were forced to provide sexual services to the predominantly Chinese clientele in order to pay off their debt. One of the women was eventually sold to a customer who helped her return to the Philippines after she got pregnant. The other woman was sold and resold many times until she ended up in Cyprus where prostitution is legal, and she was able to return to the Philippines after a few months.

Finally, there is a section on military entanglement in Southeast Asia and South Korea. As one of the interviewees mentions, the “American involvement in prostitution and trafficking

¹⁴⁶ Ursula Biemann, transcribed voice-over from *Remote Sensing*.

¹⁴⁷ Ibid.

¹⁴⁸ This estimate was made around the time of the video essay’s making, namely around 2001.

¹⁴⁹ Barbara Menel, *Cities and Cinema*, (Routledge, 2008), 199.

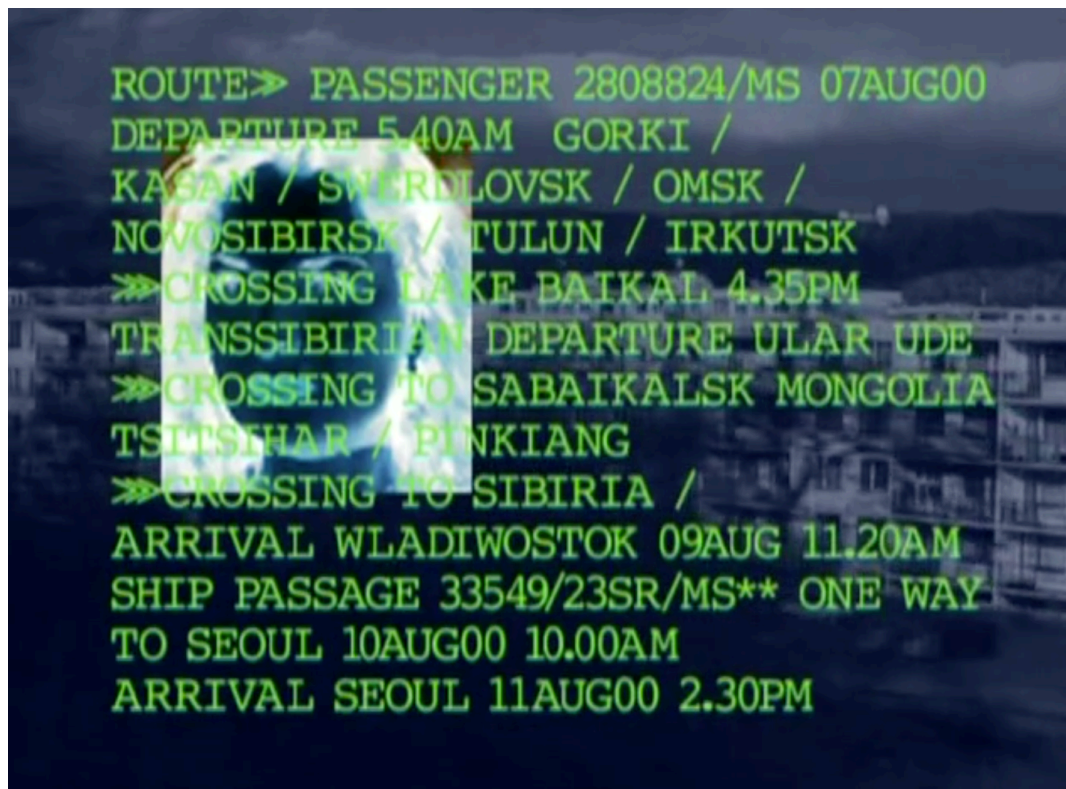
is something that should not be missed” in the history of the region.¹⁵⁰ Informative script which appears in the video essay states that about 30 000 women are estimated to service the U.S. military bases in South Korea. Perhaps not coincidentally, many of these women are from the Philippines – the country in which the U.S. had its largest overseas military bases from the 1940s until the 1990s. Alma Bulawan, who was an entertainer at the former military base in Olongapo, Philippines, recalls that every three months, service ships with about 10 000 soldiers would arrive, and that in the red light districts “you’d always see an American guy with a native woman.” Alma Bulawan also remembers how on her first day as a waitress she thought she would be serving food to the American customers. Instead, she realised that her main income would come from bar fines – the price customers would pay the papa-san/mama-san (restaurant owner and pimp) to take her outside of the restaurant, from which she would get 5 percent. The military bases contributed greatly to the increase of prostitution and trafficking according to Aida Santos, a representative from Wedpro (Metro Manila) who is interviewed in the video essay: the combination of women’s low social status and incomes, and their cultural obligation to help their families financially provided fertile soil for prostitution and trafficking around the military bases where American men with money congregated. This section of the video essay also highlights a concept of sex work that differs from the Western notion of prostitution as a clean transaction of money in exchange for services. In this setting, some of the former sex workers explain that prostitution can be “open ended” or take the form of a relationship. “Rapport” is established with the client without any talk about money, and instead of paying directly for services, the clients believe that they are just paying to compensate for the time the girl spent away from her job as a waitress or dancer.

These diverse arguments, experiences, and stories act as partial views from specific and complex bodies – they are situated knowledges – and shed light on issues that are often segregated in globalisation discourses, such as “sexuality and economics, national histories and transnational memories, the national and the global, scientific accounts of geography and the experience of global movement and place.”¹⁵¹ While describing complex and diverse migratory trajectories on a global scale, the work does not claim to be a comprehensive, totalising or documentary representation of the sex industry globally. For the “mere depiction of visible reality” is problematic, even impossible when trying to represent “the clandestine

¹⁵⁰ Transcribed from the interview with Aida Santos (Wedpro, Metro Manila) in *Remote Sensing*.

¹⁵¹ Mennel, *Cities and Cinema*, 198-199.

realities of globalization, such as the traffic in people, illegal migration, and global sex work.¹⁵² It seems instead that Biemann has embraced representational uncertainty, by situating the live camera action and interviews – which otherwise may have appeared like documentary truth claims – within highly artificial, experimental screen environments. The screen is fragmented, split in four each time one of the interviewees appears, so that her image is placed next to different types of satellite images and other satellite related found footage. The multi-directional flows of women across vast distances are also captured in the travel itineraries that scroll across the screen as a layer. These appear multiple times, and loosely follow the regions that the video essay focuses on, so that in the case of military entanglement in South Korea, we see the travel itinerary of a woman’s journey from Gorki, Russia to Seoul, South Korea (fig. 9).



(Fig.9: Still from Ursula Biemann’s *Remote Sensing* (2001). Photo courtesy of Women Make Movies)

When it comes to the ways in which satellite images and satellite operativity are situated in *Remote Sensing*, Barbara Mennel has argued that remote sensing technologies allow for global surveillance that restricts the movement of bodies across borders, and simultaneously

¹⁵² Ibid., 199.

the imagination or “fantasy of a borderless, global world.”¹⁵³ This, she argues, is set in motion as a paradox in Biemann’s video essay, as the satellite images show a borderless world and represent the imagination of infinite mobility, while the trafficked and/or migrant bodies which move across borders “highlight the space of the nation and its borders.”¹⁵⁴

This thesis, however, considers Biemann’s situating of satellites as more productive, in the sense that, instead of imagining them as a restriction which represents hegemonic, capitalist interests, Biemann transforms satellite images and satellite operativity into something that can highlight useful insights about women’s transnational migration, and render previously invisible connections detectable. Biemann infuses satellite data and operativity with gender specific meaning. More significantly the actual technical specificities of satellite operativity allow Biemann to undertake this complex task, rather than an imagination of satellite operativity that surpasses the actual abilities of satellites – like the idea of the God-trick. To understand how this is possible, the next few sections will examine how the video essay situates satellites in terms of their technical specificity and operation – taking cues from the work to expand the analysis of satellite functions in media technical terms – and then come back to see how satellite views allow for a productive “stitching together” with the situated knowledges of the women migrants.

3.2 Embodiment

From Haraway’s notion of embodiment, I argue that two distinct forms are relevant in the discussion of Biemann’s situated satellites. The first has to do with the way in which the satellite’s position and operativity is embodied in its location. The second has to do with the connections that are forged on the one level between the satellite’s distinct and heterogeneous parts and on the second level – which will be addressed at the end of this chapter – of the connection between the satellite as an entity and the humans who are invited to “see with” the satellite.

In *Remote Sensing* inquiries into the position, location and trajectory of the Ikonos satellite are evident in such a way that we can no longer speak of the satellite’s vision technology as

¹⁵³ Ibid. Here Mennel draws on the notion of time-space compression in globalisation as elaborated by Andreas Huyssen, *Present Pasts: Urban Palimpsests and the Politics of Memory*, (Stanford University Press, 2003) and David Harvey, *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change*, (Blackwell, 1989).

¹⁵⁴ Mennel, *City and the Cinema*, 199-201.

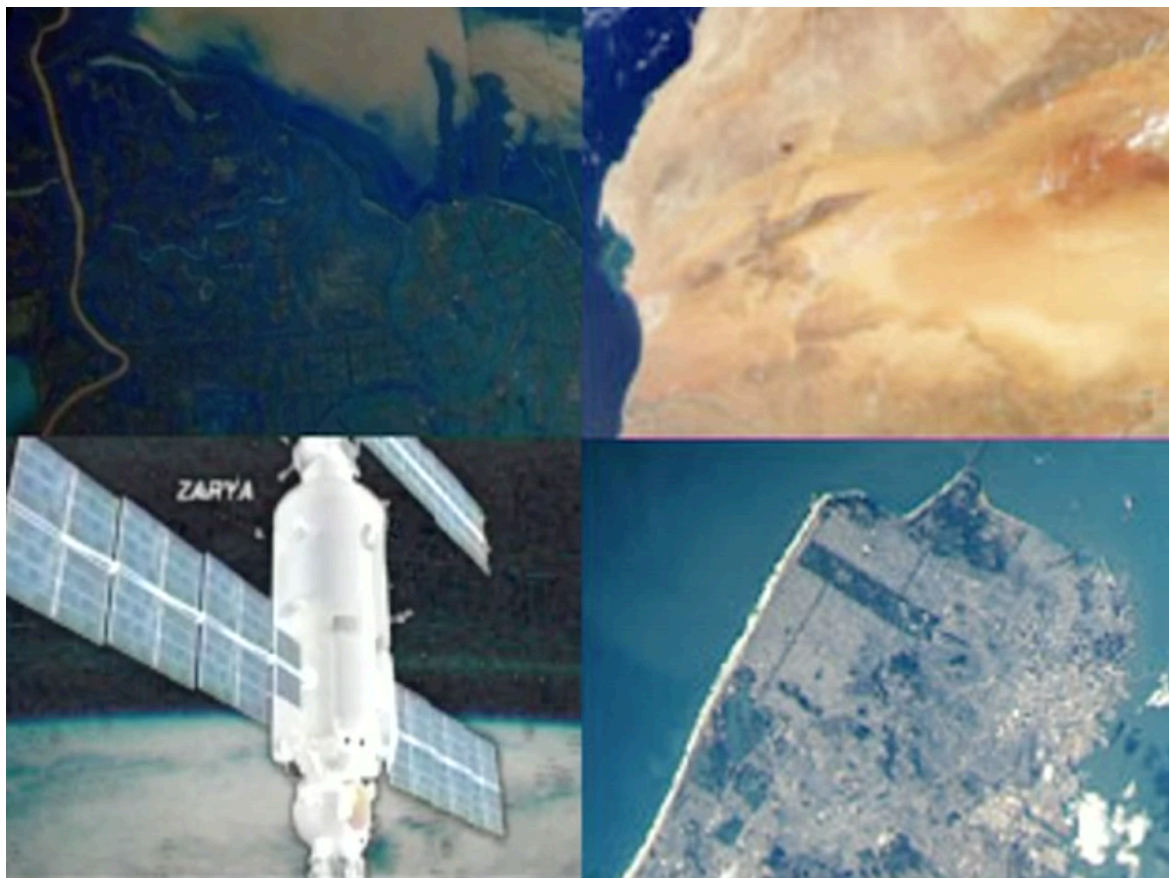
producing a “disembodied view from nowhere.” *Remote Sensing* recorded a precarious moment in the becoming of Ikonos’ location when it showed the satellite mounted to a rocket and the explosive thrust needed in order to defy gravity and blast the satellite through the atmosphere. Later in the work an animation indicating the next stage for the satellite’s orbit is presented. Once in orbit, other precarious processes become of concern, especially considering time, space and location. As the animation indicates, the location of the satellite is inseparable from its trajectory and speed in orbit because of the impossibility to physically slow down or stop. Although orbiting is defined as an ongoing, self-organised process, it is not a stable position. Located at 681 kilometres from the surface of the earth, Ikonos’ position is in what is called Low Earth Orbit (LEO), and because of the relative proximity to the atmosphere, a mechanism for countering the effects of atmospheric drag – a condition where gas molecules collide with the satellite and disrupt orbit stability – is needed in addition to high speed to maintain altitude. Location in space too, is conditioned by vulnerability and instability,¹⁵⁵ and involves a sort of nomadology with the “idea of a possible return to place as an experience of constant becoming.”¹⁵⁶ The specific time-space of Ikonos then, is defined by its orbit at 681 kilometres above the earth, its velocity of 7.5 kilometres per second, *and* the measures it makes to counter atmospheric drag. Furthermore, Ikonos orbits around the earth once every 98.4 minutes, and is therefore able to image 14 to 15 sunrises and sunsets as well as all kinds of seasonal variations within the course of 24 hours. It is therefore safe to say that the anchors of the human experience of time and place are displaced. But also clock-time, itself a human construct, acts differently in this orbit. As postulated by Einstein, time dilation occurs if there is relative velocity between two moving objects or because of relative distance from a gravitational mass.¹⁵⁷ Ikonos is affected by both: because of the high velocity of the satellite, clock time passes slower than on Earth, but because Ikonos is less affected by gravity, this speeds time up again. However, the processes do not null each other out, and clock time on Ikonos still passes slightly slower than on Earth.

¹⁵⁵ Haraway, “Situated Knowledges,” 196.

¹⁵⁶ Edward Casey and Deleuze and Guattari in Federica Timeto, “Diffracting Representation: Towards a Situated Aesthetics of Technospaces,” Ph.D. Thesis submitted to the Faculty of Arts, School of Art & Media at the University of Plymouth, September 2012, 10. See also Braidotti’s definition of a nomad as someone “who has relinquished all idea, desire, or nostalgia for fixity.” In Rosi Braidotti, *Nomadic Subjects*, (Columbia University Press, 1994), 22.

¹⁵⁷ For the full theory of relativity, see Einstein, *Relativity*.

Another split-screen moment in *Remote Sensing* contains a moving animated diagram of the International Space Station (fig. 10). It is visualised up close in a realistic way that reveals details about ISS' construction. As an added layer arrows and information about each semi-autonomous part of the ISS are pointed out with their names; *Zarya* (sunrise in Russian) – the first module to be launched; *Zvezda* (star in Russian) – the service module which also houses two of the astronauts; *Progress* – a small spacecraft which docks to the ISS to deliver supplies; and three Pressurised Mating Adapters – modules which act as docking and communication interfaces between old and new modules on the ISS or with visiting spacecraft.



(Fig.10: Still from Ursula Biemann's *Remote Sensing* (2001). Photo courtesy of Women Make Movies)

This part of the video essay calls attention to the relation between the parts to the whole in satellite construction, or in other words, of how heterogeneous parts come together. In addition to the constitute parts there are other heterogeneous actants which should be named. Vertical perspectives and satellite functions consist of and rely on gold and platinum components (for chips, electrical circuits and as coating to protect parts from corrosion), aluminium insulation wrap, liquid hydrogen and oxygen (fuel for rocket thrust during launch), gravitational fields, chemical fuel, radio transmitters and receivers, electromagnetic

energy, glass/ceramic mirrors, optical lenses or telescopes, computer drives, and image processing applications, to name only a few. These materials and entities are not simply passive objects/non-objects which have been instrumentalised by human operators in order to aid human intentions. In fact, they possess abilities and tendencies of their own, to affect or become affected by other entities, or to resist and endure intensive thresholds of for instance temperature and pressure. Borrowing the term “actant” from Bruno Latour, these entities are anything human or nonhuman which can “take part in a course of action”¹⁵⁸ and that “[can] modif[y] another entity ...”¹⁵⁹ As an example, gold is a metal that conducts electricity while it is able to resist corrosion and tarnishing even at extremely fluctuating temperatures, exposure to vacuum, radiation and solar wind.¹⁶⁰ Gold is therefore inevitable both as a conductor that produces connections and communication between satellite components, and as a protective shield which blocks radiation or high energy charged protons and electrons from causing corrosion in contact with most materials other than gold.¹⁶¹

Although only a few of these actants are directly brought to our attention in *Remote Sensing*, it is evident that the video work is interested in more than the mere content of satellite images. The split-screen juxtapositions and satellite related voice-over commentary suggest a particular interest in the technological structures that produce and communicate satellite images as *media* as well as how these heterogeneous parts are embodied in a larger structure and how the larger structure is embodied in its location.¹⁶² I argue that the way in which Biemann indicates this by including various found footage of satellites, animations and graphs in split-screen constellations is a way of working with situated knowledges, as it goes beyond only addressing the image producing technologies in isolation, and also requires paying attention to otherwise “invisible” entities such as the satellite vessel and parts itself, which remain unseen while its remotely sensed images are welcomed for their content information. The work performs a locating, situating gesture when it draws attention to the complex orbital location, and the heterogeneous satellite parts.

¹⁵⁸ Jane Bennett, *Vibrant Matter: A Political Ecology of Things*, (Duke University Press, 2010), 15.

¹⁵⁹ Bruno Latour in Bennett, *Vibrant Matter*, 15.

¹⁶⁰ Gary Eugene Musgrave, Axel M. Larson and Tommaso Sgobba (eds.), *Safety Designs for Space Systems*, (Butterworth-Heinemann, 2009), 15.

¹⁶¹ Mark Ward, “Space is Corrosive,” *New Scientist* 155, no. 2098 (1997): 9.

¹⁶² See Jussi Parikka’s discussion of material media archaeology as a methodology, and especially his discussion of Ernst and Wardrip-Fruin in Jussi Parikka, *What is Media Archaeology?* (Polity Press, 2012), 86-87.

3.3 Technical specificity and differences of temporality

Based on the observation that *Remote Sensing* shows a curiosity for and will to understand the satellite functions which enable remote sensing imagery and communication with Earth, these next few paragraphs will go into technical detail to explain some of the crucial processes that take place. As such, it is an attempt to explain in text what the works can be said to suggest based on the juxtaposition of satellite images, XY-graphs, and satellite animations. Extensive technical details are necessary to properly situate the satellite in terms of its functions, creative abilities, and partialities – something which can only be analysed through inquiring into its proper operativity. Furthermore, this situation will lay the foundation for how satellite operativity and their vertical perspectives are stitched together with the perspectives and itineraries of the female sex workers. For here, the technical processes which enable vertical perspectives are explained in terms that address machine operativity in a way that, instead of imagining the view from above as either an omnipotent and infinite form of surveillance or as a representation of the time-space compression of globalisation, emphasises the specific and partial view that the Ikonos satellite affords. In *Remote Sensing* it is this specificity and partiality that allows the satellite perspective to be stitched together with the equally specific and partial perspectives of the women migrants so as to produce a web of situated knowledges. However, the specificity and partiality of a satellite body is radically different from the specificity and partiality of a female migrant body, and that is why it is necessary to speak of orbits, CCD chips, microprocessors, and transponders in the next few paragraphs.

Through the inclusion of satellite images juxtaposed with animations and found footage of the body and location of the Ikonos satellite, *Remote Sensing* puts forward an important inquiry which interrogates the processes by which Ikonos “senses remotely,” namely the technical specificities that afford the production of images. The colour images produced by Ikonos are not photographic snapshots, but in fact, composite images. The imaging technology combines the forces of high-resolution “panchromatic” (black-and-white) sensors, with a lower resolution “multispectral” (colour) one to create high-resolution composite imagery in colours. Each image has a swath of about 11.3 kilometres, scanned from an orbit that is 681 kilometres above the earth.¹⁶³ Although the satellite inevitably orbits the earth on a constant trajectory, the imaging sensors do not continuously scan the surface of the earth. As

¹⁶³ Laura Kurgan, *Close Up at a Distance: Mapping, Technology, and Politics*, (Zone Books/MIT Press, 2013), 47.

a satellite operated by a commercial company (DigitalGlobe, earlier: GeoEye, EOSAT and Space Imaging) Ikonos only scans by commission, meaning that it switches off its sensors between requests.¹⁶⁴ It can also be switched off by order of the American president as a national security measure.¹⁶⁵ The fact that Ikonos is a commission based remote sensing satellite distinguishes it temporally from remote sensing satellites that perform a continuous scan. The latter temporality is, according to Lisa Parks, “one of latency” or approximation, as the large amounts of imaging data are constantly uploaded into digital archives where they will remain unseen unless there is a specific need for a particular data set.¹⁶⁶ The scanning and storage of these data occur, in other words, in a machine-to-machine mediation that delays the direct interaction between the image and a human interpreter. For Parks, who investigated the satellite coverage of the 1995 Srebrenica massacre, this archival latency was critical because it revealed that while the U.S. National Reconnaissance Office had information about the atrocities in their remote sensing archives, they had “too much satellite intelligence to process,” and therefore the events went unnoticed for weeks.¹⁶⁷ For Ikonos, on the other hand, there is a particular desire for certain data sets *prior* to their collection, and the anticipation of the data attributes the satellite’s performance with urgency. After the 9/11 terrorist attacks in New York City, this urgency was manifested as the Ikonos images of Manhattan from that day were heavily sought after.

Ikonos relies on passive imagery, which means that instead of beaming electromagnetic energy towards a specific site to scan the reflections, it passively scans the sunlight which is already reflected by the surface of the earth. What Ikonos scans is electromagnetic energy in the wavelengths called visible light and near-infrared. The latter is invisible to humans, but after a visualisation process that involves translating infrared variation into nuances of the same colour, the data can reveal information about heat.¹⁶⁸ When Ikonos scans electromagnetic reflection (light) arrives through the telescope (which performs the optical function of a lens) and passes through a filter that separates the light into four bands, which

¹⁶⁴ Ikonos was decommissioned in March, 2015.

¹⁶⁵ This is called “shutter control.” See *Ibid.*, 48. Kurgan also notes that shutter control never has been exercised. Instead, the U.S. government purchased all of Ikonos’ geographical data on Afghanistan and Pakistan for two months after the terrorist attacks on 9/11 in New York City.

¹⁶⁶ Parks, *Cultures in Orbit*, 90-91. See also Laura Kurgan’s critical discussion of this latency in her *Close up at a Distance*, 29-30 and Wolfgang Ernst, “Archival latency ... is to preserve records for future reference,” in Ernst, *Chronopoetics*, 3095.

¹⁶⁷ Parks, *Cultures in Orbit*, 95.

¹⁶⁸ This is sometimes used to determine how many bodies are inside a building or to find the location of newly buried bodies.

correspond to the colours blue, green, red and near-infrared. A line of “photosensitive capacitors” of CCD (Charged Coupled Device) chips react with the photons of the incoming light, and “release electrons to produce a small charge.”¹⁶⁹ A fence of negative charge keeps the photosensitive material from going out of its designated place, and the charge passes through “a system of gates” which leads and divides the charge “...into usable blocks before it is drained off the CCD chip.”¹⁷⁰ This pathway ensures that information contained in light converts into stored data by means of voltage. Sean Cubitt has compared this process to that of a clock because the charge and drain process mark defined time intervals in which imaging occurs: “The exposure changes the lattice, but the charge is drained from it down ordered channels in lockstep units. The chip moves its data from spatial to temporal and back to spatial ordering... the result is an array of discrete, ordered units.”¹⁷¹

This temporal process is a critical factor for the operativity of satellite imaging, and can as such be described as “time-critical.” As a concept borrowed from Wolfgang Ernst, the notion of time-critical media is different from “time-based” media. That is because it describes not the media that refer to time, but the media processes that consist of time in and of itself. In digital media, Ernst describes the time-critical concept as “media operations under the conditions of digital signal processing [which] must be processed in strictly predefined time windows in order for them to succeed and for a message to materialise at all.”¹⁷² This is precisely what happens in Ikonos’ imaging process – for each line of pixels a charge reacts with photons, and is then channelled and drained into storage before a new charge can build up to react and form a new line of pixels. This happens extremely fast as the process must keep up with the satellite’s forward motion at over 7 kilometres per second. The process involves a concept of time that is outside the scope of the human sensorium, and which measures and organises itself in the charging and uncharging, leading and channelling of signals. It thus marks a fundamental break with a human understanding of time that either has to be perceptible to the senses or explained in semiotic signs, and creates instead a distinctly non-human “tempor(e)ality.”¹⁷³

¹⁶⁹ Cubitt, *The Practice of Light*, 101.

¹⁷⁰ Ibid.

¹⁷¹ Ibid.

¹⁷² Ernst, *Chronopoetics*, 845.

¹⁷³ Ibid., 346.

As we recall from *Remote Sensing*, the work calls attention to the complexity of the “parts to the whole” in satellite operativity, exemplified for instance in the juxtaposition of the radio diagram, rocket launch, ISS parts and TV signals in addition to the ubiquitous satellite images. Building on the understanding of the satellite as a complex network of heterogeneous actants which together perform different functions such as maintaining orbital altitude, imaging, and communication with ground control, Ernst’s concept of time-criticality makes it possible to see how these heterogeneous actants and the processes they take part in also form and consist of multiple tempor(e)alities. In addition to the one described above, the satellite’s media operativity and communication also relies on the micro-temporalities of digital processing, on the temporality radio frequencies and on the translation of signals from digital to radio waves and back to digital.

Towards the end of *Remote Sensing* the voice-over – itself a digital audio track in a digital video essay – questions the binary logic of the digital and suggests a desire to “... capture the noise between 0 and 1; the border area, the grey zone ...” In Wolfgang Ernst’s terms, this “grey zone” takes the form of time. In his view, the digital is a physical implementation of abstract mathematics, and while the logical functions of mathematics are without time, the implementation of these functions into hardware necessarily introduces a temporal unfolding of events.¹⁷⁴ Therefore, the clean abstraction of numbers and logic turn messy with the multiple temporalities of physical operativity. Ernst explains that “... the digital first occurs in time-discrete implementation, and thus as a genuine techno-mathematical operation. The basis of precise digitization is periodic timing, which introduces discreteness to computer time and relies on intermediate time, or strictly speaking the intermediate time of the clock pulse.”¹⁷⁵ The internal workings of a digital machine may work in such a way that gates and switches “operate at different speeds,” and therefore a common pulse is “needed to order the times and make them mathematically concurrent.”¹⁷⁶ It is for this reason that every microprocessor – a single integrated circuit which processes programmed input in binary code which is vital to advanced digital machines – always includes a *timer*.¹⁷⁷ The timer sends a pulse through the microprocessor so as to trigger certain switches which forge precisely timed current connections, which then prompt the wanted action.¹⁷⁸ In contrast with

¹⁷⁴ Ibid., 2351

¹⁷⁵ Ibid.

¹⁷⁶ Ibid.

¹⁷⁷ Ibid., 2672-2689

¹⁷⁸ Hans-Joachim Sacht in Ernst, *Chronopoetics*, 2689.

the human experience of time as continuous, often linear and even narrative, the digital machines operate with calculated time windows in which programmed action occurs, something Ernst calls counting rather than narrative time.¹⁷⁹ Instead of running continuously computer time is determined by a matter of switching on and off: the timer of the microprocessor counts its own time from the moment the machine is switched on until it is switched off, while the timer itself determines the switching on and off of current flows so as to produce desired outcomes in specific time windows according to the programmed input.

While the process of producing and storing remotely sensed imagery happens digitally, the communication which assures the transfer of these data to ground control stations on Earth happens by means of radio wave Phase Modulation. As demonstrated in *Remote Sensing* by the diagram indicating radiation patterns, the radio communication happens in specific frequencies where time and *timing* is the medium through which information travels. In other words, frequency refers directly to time because it measures: “the time it takes for two *crests* (highest part of the wave) or *troughs* (lowest part of the wave) in a row to pass the same point in space.”¹⁸⁰ An essential part of the satellite is therefore a piece of equipment called a transponder (transmitter-responder), which codes the satellite’s digital data (images) and meta-data (information about the instruments, positioning and time of imaging) from binary code into timed radio waves. An antenna on the satellite beams the converted signal towards Earth where it is received and interpreted. The binary code is reassembled from the radio signal because of *timing*: in what is called Phase Modulation (which is similar to the more familiar radio modulations of FM and AM), the satellite’s signal when it is not sending data is registered as a steady pulse or phase (“one part of the wave is passing a particular point at a particular instant”);¹⁸¹ but when it carries data, waves are modulated so that they are out of phase – either quicker or delayed. The difference from the original frequency is measured in degrees from 0 to 180, and as such, the way in which each wave is out of phase can correspond to either 0 or 1, i.e., if the wave is delayed by 90 degrees it means 1 and if it is 90 degrees ahead it is 0.¹⁸² With the correct computer program the image data consisting of 0s and 1s can unfold spatially in rows of pixels so as to visualise the satellite imagery.

¹⁷⁹ “An essential protagonist on the computer motherboard is the timer, which counts electrical pulses.” in Ernst, *Chronopoetics*, 2672.

¹⁸⁰ Nancy Leon for NASA JPL/NASA SpacePlace, “Speaking in Phases,” 2, <http://spaceplace.nasa.gov/x-ponder/en/>. Accessed 08.11.16. Originally published in *The Technology Teacher*, 2001, by the International Technology Education Association.

¹⁸¹ *Ibid.*, 3.

¹⁸² *Ibid.*

The different tempor(e)alities described here can only be situated within their own technical functionality, via a close look at the technical specificity of the time signals that they produce and communicate with, rather than trying to ascribe “cultural (semiotic) signs” to the processes.¹⁸³ While the micro-temporal processes of Phase Modulation or digital timing are imperceptible to human senses and mark a fundamental break with conventionally human experiences of time and time keeping, it should be noted that between and within heterogeneous machines and machine components, many distinct temporalities are seen to coexist, overlap, continue or discontinue, in order to produce desired outcomes. This is especially notable for the transponder, which can receive input in the form of digital signals or multiple different analogue frequencies which it is able to process and convert into Phase Modulation signals which carry all the information. It is also significant in the case of the *timer* within the microprocessor of digital machines, as it is able to keep up with the various *times* of currency connections, which may occur for varying periods and emit different pulses. In these machine-to-machine processes, time is no longer a passive given which simply passes, or meta-data that scientists use to understand images. Rather, it actively creates, affords and affects the most essential of satellite functions in such a way that time itself is an “intelligent operator” which acts autonomously.¹⁸⁴

For a situated knowledge of satellites which affords humans to faithfully see with them, an analysis of the role of time on the premises of technical rather than narrative time is needed. They tell something about where the satellite is seeing from, and about the way in which processing and handling of data are results of time and timing. As these micro-temporalities are imperceptible to humans and concealed internally in the satellite’s machine parts, they often go unnoticed. Through the juxtaposition of images and graphs, Biemann however, displayed a curiosity for this, which has been taken a few technical steps further in this analysis.

3.4 Partiality

Rather than focusing on satellites in general as a form of universal and omnipotent surveillance, *Remote Sensing* places the emphasis on the Ikonos satellite in particular. This stresses the partiality rather than totality of satellite vision, and simultaneously allows for an

¹⁸³ Ernst, *Chronopoetics*, 346.

¹⁸⁴ Ernst, *Chronopoetics*, 845.

“elaborate specificity” when approaching Ikonos.¹⁸⁵ As phrased in the first section of this chapter, satellite images are tied to the particular location of the satellite body at the moment of imaging, a location which is defined by movement rather than stasis as the satellite orbits while imaging. This too is indicative of some of the partiality involved, for Ikonos cannot be ordered to instantly change its course to image a particular area. The time it takes for Ikonos to revisit an exact area with the same angle for imaging (true-nadir) is 144 days, while it takes three to five days for an approximated view of the same area.¹⁸⁶ In addition, there is never any guarantee that the view of the area of interest is cloud free at the time of imaging – even a thin layer of clouds or fog is detrimental to satellite image quality. One must also take into consideration that at any time half of the globe is facing away from the sun, and this darkness results in poor imaging.

In Biemann’s video essays, many of the included satellite images are somewhat obscured by clouds, and as a result it is extremely difficult to interpret what is land and what is water. This partiality becomes a productive ambiguity for Biemann, as it has allowed her to use the same satellite images in different video works, however with very different effects. The first satellite image in *Remote Sensing* reveals essentially no information other than that it vaguely resembles a river delta somewhere in the world. Accompanied by the voice-over, the image here signifies the ambiguity and partial vision of satellites. Later in the work the same image returns and comes to occupy the role of an overview of the situation. This overview is nevertheless a false one for no information can be deduced directly from the image. In *Contained Mobility* and *Black Sea Files*, identical satellite images of a port are presented, but contextualised and situated in different geographical locations. While *Contained Mobility* indicates the site of the port of Rotterdam and further contextualises it within port security, the same image in *Black Sea Files* appears in relation to images of crude oil carrying ships in Istanbul, being the final stop of the oil pipeline that this video essay focuses on. This reflects Lisa Parks and Laura Kurgan’s observations that because of partiality and remoteness, the legibility of satellite images is instable. Objectivity is not inherent in the images but is rather constructed by legitimation from the “discursive authority of meteorology, photography, cartography and state intelligence.” But even within these disciplines Kurgan notes that

¹⁸⁵ Haraway in Joseph Schneider, *Donna Haraway: Live Theory*, (A&C Black, 2005), 105.

¹⁸⁶ GeoEye, “Ikonos Imagery Product Guide,” Version 1.5, 2006, 1.

http://glcf.umd.edu/library/guide/IKONOS_Product_Guide_jan06.pdf accessed 09.11.16.

skilled interpreters face problems – especially if there is no meta-data accompanying the images.¹⁸⁷

In particular, clouds, and their obscuring effect in “satellite visions of globality” have occupied an important role in some of the most symbolically loaded images of the earth. During the manned Apollo missions to the Moon between 1968 and 1972, two photographic images of the globe which were to become the most iconic NASA images were shot. In December 1968, Apollo 8 was the first manned mission to ever orbit around the moon, and the three astronauts, Frank Borman, James Lovell, and William Anders were consequently the first humans to reach a distance so far from Earth that they were able to see the full globe with their own eyes. The sighting of the earth from an angle so that the top half appeared to be covered in sunlight while the lower half appeared dark resulted in the photograph known as *Earthrise* (Fig. 11). During the last manned mission to the moon in 1972 (Apollo 17), a different crew took the photograph known as *Blue Marble*, in which the face of the earth appears fully illuminated (fig. 12). As elaborated by Denis Cosgrove, these photographs were thought of both in terms of “one-world” in the sense of human universality and “whole-earth” under the banner of ecological concern.¹⁸⁸ Cosgrove further argued that both images – despite being used by environmental activists – are examples of “the apollonian urge to establish a transcendental, univocal, and universally valid vantage point from which to sketch a totalizing discourse.”¹⁸⁹ Seeing the images as an extension of a Western, totalising, “colonializing” gaze inherited from geography and territorialism also confirms the notion of the god-trick – the idea of an omnipotent, universal rather than partial perspective. Two natural phenomena distort this gaze, however: clouds and the dark side of the earth. In what Robin Kelsey calls “the rebellion of clouds,” he recalls the way in which Romanticist painters such as Turner and Constable found a “freshness” and “spontaneity” in clouds, which they

¹⁸⁷ Lisa Parks in Kurgan, *Close Up at a Distance*, 29; Kurgan, *Close Up at a Distance*, 29-30. Examples of meta-data are geo-location and time of data collection as well as information about the instruments used for imaging. This is sometimes withheld because of security measures. See also Charles Travis, “Transcending the cube: translating GIScience time and space perspectives in humanities GIS,” *Independent Journal of Geographical Information Science* 28, no. 5 (2014): 1149-1164.

¹⁸⁸ Denis Cosgrove in Robin Kelsey, “Reverse Shot: *Earthrise* and *Blue Marble* in the American Imagination,” in El Hadi Jazairi and Melissa Vaughn (eds.), *New Geographies 4: Scales of the Earth*, (Harvard University Graduate School of Design, 2011), 13.

¹⁸⁹ *Ibid.*

channelled as a soft rebellion against the systematised style of the academy.¹⁹⁰ Similarly, the clouds in *Earthrise* and *Blue Marble* rebel against “the cartographic impulse to optically master the surface of the planet” by beclouding and concealing the contours of land and the vastness of seas.¹⁹¹ And in *Earthrise*, the darkness obscures the full view of the globe so that only a partial section is visible, undermining the cartographic illumination experienced for instance when gazing upon a revolving model globe.



(Fig. 11 (left): *Earthrise* (1968), photo by William Anders; Fig. 12 (right): *Blue Marble* (1972), photo by Harrison Schmitt/Ron Evans)¹⁹²

In later “re-enactments” of especially *Blue Marble* it is interesting to see how the elements of partiality which were earlier considered beyond human control – such as clouds – have been edited out of the picture. In 2004, NASA released a series of composite images called *Blue Marble: Next generation*, which featured one composite image of the earth for each month of 2004 so as to showcase the seasonal variations. As composite images, they are not snapshots like the original *Blue Marble*, but are instead pieced together from fragments taken from a range of satellites at different times. “Magically,” clouds and darkness have given way so that the earth can be illuminated and bright all over. Google Earth is a similarly cloudless, yet

¹⁹⁰ Kelsey, “Reverse Shot,” 14. See also Hubert Damisch and Janet Lloyd (trans.), *A Theory of /Cloud/ Toward a History of Painting*, (Stanford University Press, 2002) in which Damisch traces the cloud as a dialectical opposite from the renaissance linear perspective.

¹⁹¹ Kelsey, “Reverse Shot,” 14.

¹⁹² Source for fig. 11: Wikimedia Commons (Public Domain), <https://commons.wikimedia.org/wiki/File:NASA-Apollo8-Dec24-Earthrise.jpg>; Source for fig. 12: Wikimedia Commons (Public Domain), https://commons.wikimedia.org/wiki/File:The_Earth_seen_from_Apollo_17.jpg

more complex representation of Earth by composite images and mosaics which also to some extent re-enacts *Blue Marble*. Mark Dorrian asserted that “On Google Earth the darkness of night never falls,” as a matter of “distributing and refracting [the Sun’s] agency through the multiple orbiting devices that supply the image data from which the virtual globe is pieced together.”¹⁹³ Furthermore Google Earth is an interface that allows the user to go anywhere, or rather, have the earth’s position manipulated to suit the fixed position of the user. Because it is not the user that moves – with simple mouse gestures it is the earth that is made to spin in order to accommodate for the desired view.

The imagination of satellite vision is largely shaped and informed by composite NASA images such as the *Blue Marble: Next generation* and Google Earth’s cloudless, illuminated and manoeuvrable views, and this inevitably reinforces notions of universality, totality, and certainty, rather than the vulnerability, partial perspective and elaborate specificity that Biemann’s works indicate in relation to Ikonos’ embodied position. What the partiality of Ikonos’ satellite vision offers, then, is that in reality satellite vision is much more random than what the official rhetoric of satellite companies, space agencies and even state leaders have it: clouds and darkness can obscure the view so that the images show essentially nothing. In Biemann’s video essays, embracing this partiality and obscurity is productive because on the one hand it undermines precisely the rhetoric described above, while on the other, it simultaneously allows Biemann to appropriate satellite images in different contexts.

3.5 Seeing with satellites

While satellite images in their distributed form may afford humans access to a form of satellite vision, the technical specificity of the imaging process and data transfer as well as the body and location of the satellite are often invisible or ignored. However through the various found footage and animations of orbits, satellite parts, radiation patterns and rocket launches – the video essay insists on stressing the location, orbit, vulnerability and partiality of Ikonos. The embodiment and technical specificity that the work offers (and this thesis extends) in relation to Ikonos’ satellite vision and operativity, are grounds for what Haraway describes as a more “intimate understanding” of the time and place the satellite is seeing from. Satellite vision is “the other’s” point of view, and the knowledge of how this point of view is situated should according to Haraway provide a feeling of “responsibility” and

¹⁹³ Mark Dorrian, “On Google Earth,” 167.

“accountability” when engaging in vision *with* it. Haraway describes the “loving care” that may be involved when engaging in and learning to “see faithfully” with the other.¹⁹⁴ In different terms, John Johnston has extended Deleuze’s notion of the *machinic* – the “working relationship among heterogeneous elements and relations defined by an assemblage ...” – to encompass the forms of vision that arise from “human-machine systems.”¹⁹⁵ “Machinic vision,” for Johnston, assumes that human-machine vision includes a “decoding” and “recoding” of signals which, because it makes no sense to the human brain alone, can only be fully understood in relation to machines.¹⁹⁶ *Remote Sensing* effectively demonstrates this by referring to the coding, recoding and decoding of for instance near-infrared radiation (which is invisible to humans), into binary code, then into radio waves, and back into binary code before it can be visualised in colour variations that make sense to humans. This also levels out sets of oppositions that both Deleuze and Haraway’s thinking already refuse, such as “the human versus the technical, or the biological versus the mechanical,” for the types of vision described here necessarily include a productive and intimate rather than oppositional relation between these no longer so distinct parts.¹⁹⁷

While the forms of human-machine relations that we encounter in Biemann’s artwork are compatible with Johnston’s notion of machinic vision in some aspects, Biemann’s video essay displays a notable feminist approach to these relations that perhaps resonates better with Haraway’s idea of seeing with others. In the video essay as well as in Haraway’s conceptualisation of seeing with others, feminism is not only concerned with gender but rather with learning how to see *from* and *with* the “limited location and situated knowledge” of the “subaltern,” the “other,” or the “machine,” so that we “might become answerable for what we learn how to see.”¹⁹⁸ The key here is that the feminist understanding of “gender” (i.e., as derived from ‘genre’) as a marker of differentiation,” enables a conceptualisation of other differential markers, such as “race, ethnicity, disability, and ... social class,”¹⁹⁹ and even other types of bodies, such as the nonhuman bodies of animals and machines. So there is a feminist ethical paradigm in it for Haraway, which she carves out as an alternative to both “relativism” and “totalization” – both examples of a denial of “the stakes in location,

¹⁹⁴ Haraway, “Situated Knowledges,” 190.

¹⁹⁵ Johnston, “Machinic Vision,” 27-28.

¹⁹⁶ *Ibid.*, 27.

¹⁹⁷ *Ibid.*, 48.

¹⁹⁸ Haraway, “Situated Knowledges,” 195-196.

¹⁹⁹ Van Loon, *Media Technology*, 81.

embodiment and partial perspective.”²⁰⁰ As distinct from both Johnston and Latour, Haraway perpetuates elements from continental critical theory and maintains an emphasis on the concern for both “ethical and political accountability.”²⁰¹ The real alternative to relativism for Haraway is thus “partial, locatable, critical knowledges sustaining the possibility of webs of connections called solidarity in politics ...”²⁰² Within these webs of connections are both humans and nonhumans, and the possibility of an almost affectionate connection between them, as indicated by Haraway’s choice of words when she explains that the notion of seeing with another includes “loving care” and “faithful[ness].”²⁰³

Remote Sensing sustains the possibility of an affectionate connection between human and satellite perspectives by situating both as locatable, vulnerable, partial and embodied, in a screen setup that stitches together otherwise fragmented bodies, perspectives and trajectories into a new, highly experimental geography. The work offers a radical levelling of the perspectives of humans that some would call subaltern (e.g. sex workers, victims of human trafficking, and paperless migrants), the perspectives of local activists (representatives from women’s organisations), *and* satellite technologies. These different perspectives come together as a cacophony of partial, embodied and locatable experiences, vulnerabilities and visions forming a web of connections. Furthermore, the sense of a web of connections is echoed in the way the image materials unfold on-screen – as a digital montage of recordings, found footage, satellite images, animations, and graphs presented in split-screen, multiple-frame, and layered formats. The viewer is asked to see with multiple partial perspectives in both meanings of the word: he/she is confronted with the disorienting multiplication of perspectives as a result of seeing vertical and linear perspectives within the same frame as a result of split-screen or layering *and* the diverse experiences of migrant women who for different reasons and in different contexts have performed sexual labour. The stitching together of these perspectives creates an alternative geography, or “counter-geography” which gives visibility to bodies and trajectories that are often invisible, and to connections

²⁰⁰ Ibid.

²⁰¹ Braidotti, “Posthuman, All Too Human,” 197.

²⁰² Van Loon, *Media Technology*, 81.

²⁰³ Braidotti has observed that Haraway’s affectivity has – similarly to her own work and the philosophy of Deleuze – an anti-Oedipal quality which, rather than perpetuating the negativity of the “paranoid-narcissistic-self-nexus,” emphasises as “cognitive brand of empathy, or intense affinity: it is the capacity for compassion, which combines the power of understanding with the force to endure in sympathy with a people, all of humanity, the planet and civilization as a whole. It is an extra-personal and a trans-personal capacity, which should be driven away from any universalism and grounded instead in the radical immanence of a sense of belonging to and being accountable for a community, a people and a territory.” Braidotti, “Posthuman, All Too Human,” 205.

that are often forcibly separated in discourses on globalisation.²⁰⁴ It renders visible aspects of satellite operativity that often go unseen – aspects which reveal satellite perspectives as partial and vulnerable to obscurification rather than disembodied and omnipotent – and at the same time put these partial satellite views to use for the purpose of highlighting the alternate circuits of survival that women who migrate and work in sex industries inhabit. This then, conceptualises satellite perspectives neither as surveillance systems that restrict the movement of bodies across borders nor as the representation of the mobility some privileged subjects experience with the idea of globalisation as “time-space compression.”²⁰⁵ Rather, satellite perspectives are presented as instable, obscured by clouds, and ambiguous in a productive way, so as to present a counter-geography of the clandestine border crossings, trafficked bodies, and grey areas that women who migrate for sex may occupy – aspects of globalisation which are themselves instable, obscured and ambiguous, and thus impossible to represent in terms of simple assertions of documentary truth.

²⁰⁴ Ursula Biemann has often referred to her own works as counter-geographies. See for example: Ursula Biemann, “Writing Video – Writing the World: Videographies as Cognitive Medium,” *TRANSIT* 4, no. 1 (2008): 2; Ursula Biemann, “Remotely Sensed: a topography of the global sex trade,” *Feminist Review* 70 (2002): 75-88. Other scholars have also used the term to describe Biemann’s practice. See Rosi, “Film Review.”; Mennel, “The Global Elsewhere.”; and Celeste Ianniciello, “Postcolonial Art: A Living Archive of Border-Crossings and Migrant Matters,” in Anna Maria Guasch Ferrer and Nasheli Jimenez Del Val (eds.), *Critical Cartography of Art and Visuality in the Global Age*, (Cambridge Scholars, 2014).

²⁰⁵ “The experimental dimension of space has shrunk as a result of modern means of transportation and communication” according to Huyssen, *Present Pasts*, 1.

4 The video essay as a web of situated knowledges

“... the essayist approach is not about documenting realities but about organizing complexities.”²⁰⁶

The findings from the previous chapter – concerning the stitching together of levelled, embodied, and partial human and machine perspectives as well as the observation that the postproduction also stitches together a range of heterogeneous images into an experimental counter-geography – are grounds for attempting to specify some new considerations of the artistic “genre” of the video essay. This chapter will therefore grapple with the ways in which Biemann’s *Remote Sensing* exploits and re-imagines the video essay both in terms of how it is conceived and with regards to the technical possibilities of digital postproduction, strategies which are also continued in her *Contained Mobility* and *Black Sea Files*. By conceptualising Biemann’s *Remote Sensing* as a web of situated knowledges, I will argue that Biemann uses the hybrid potential of the “genre” to her advantage so as to construct an alternative “organization of [the] complexit[ies]” that are found at the intersection of satellite visual technologies, vertical perspectives, and the lived lives of the migrants, sex workers, and diaspora (subalterns) which inhabit the transnational spaces the video essay focuses on. I will also show how the vertical perspectives, and the situated knowledge about the technologies that produce them become productive within the notion of hybridity that the video essay manifests, both for its unsettling effects with regards to the Western dualism of subject/object, and for its multiplying and destabilising effects on screen.

4.1 Hybridity

In one of the pioneering texts on the “essayistic” in moving images, Hans Richter proposed that the (then) new genre of the essay film “enables the filmmaker to make the ‘invisible’ world of thoughts and ideas visible on the screen ...” in a way that allows for a breach with the conventions of “traditional documentary practice.”²⁰⁷ Although elements from traditional

²⁰⁶ Ursula Biemann, “Performing the Borders: the Transnational Video,” Ursula Biemann, (ed.), *Stuff It: The Video Essay in the Digital Age*, (Springer, 2003), 83

²⁰⁷ Richter in Nora M. Alter, “Memory Essays,” in Ursula Biemann, (ed.), *Stuff It: The Video Essay in the Digital Age*, (Springer, 2003), 14.

documentary are often present in video essays – in Biemann’s *Remote Sensing* and *Black Sea Files* there are face-to-face interviews, while in *Contained Mobility* the text on the screen constitutes a “strictly documentary” form of “truth representation” – the video essay’s investigation of new knowledge (a quality it shares with traditional documentary) is “not a search for objectivity and ‘truth’, but possibility.”²⁰⁸ As discussed by Brenda Hollweg, the video essay is characterised as an “impure” genre, and impurity is something it shares with the literary essay in the sense that it upholds a tension “between truth and creative pose.”²⁰⁹ Most notably, and attesting to the problems scholars face when trying to define it as a genre, the video essay has been characterised in terms of its generic hybridity (which is also sometimes discussed as “impurity” or “in-between-ness”) as it emphasises both the literary *and* the visual, fusing together “a particular form of text that returns us from fiction to non-fiction (the essay),” and “a relatively recent technology of the moving image (video).”²¹⁰ The effect of the essayistic along with the departure from documentary “objectivity” has caused many scholars to identify the video essay as “personal” and “subjective.”²¹¹ For Hollweg, the personal is constitutional of the very genre of the video essay, as she sees the “personalised, questioning voice” as the privileged site through which “information will be filtered, perhaps distorted, perhaps questioned.”²¹² These were also the key aspects that André Bazin underlined after watching Chris Marker’s *Lettre de Sibérie* (*Letter from Siberia*, 1957) in a 1958 text that would set the stage for debates about the essayistic in moving images.²¹³

Undeniably, Biemann – being the artists – was privileged to make subjective choices with respect to the production of the works. However, in the way her video essays are presented, the presence of the artist’s personal voice does not come across as a privileged site of knowledge. Rather, multiple point of views become privileged sites of knowledge, not in isolation, but because of the webs of connections that the video essay produces between them. Departing from the generic constrains which characterise the video essay either as a visual-textual hybrid or as subjective and personal then, I would like to follow Nora Alter’s

²⁰⁸ Biemann, “Suspended in the Post-Humanist Lapse,” 59; Brenda Hollweg, “Relational Subjectivity, Impure Voice: The Video Essays of Agnes Varda, Bingöl Elmas and Kathy High,” in Luia Nagib and Anne Jerslev (eds.), *Impure Cinema: Intermedial and Intercultural Approaches to Film*, (I.B. Tauris, 2013), 167.

²⁰⁹ *Ibid.*, 166; G. Douglas Atkins, *T.S. Eliot and the Essay*, (Baylor University Press, 2010).

²¹⁰ Dimitrakaki, “Materialist Feminism,” 211. See also Ágnes Pethö, *Cinema and Intermediality: the Passion for the In-Between*, (Cambridge Scholars, 2011), 2; Hollweg, “Relational Subjectivity,” 166.

²¹¹ See for example Hollweg, “Relational Subjectivity”; Laura Rascaroli, “The Essay Film: Problems, Definitions, Textual Commitments,” in *Framework* 49, no. 2 (2008): 24; Luis D. Giannetti, *Godard and Others: Essays on Film Form*, (Fairleigh Dickinson University Press, 1975), 26.

²¹² Hollweg, “Relational Subjectivity,” 168.

²¹³ André Bazin in Montero, *Thinking Images*, 33-34.

insistence that the video essay, like the essay film is “*not* a genre.”²¹⁴ Instead, it is conceptualised by Alter as something which “... disrespects traditional boundaries ...” and is “... transgressive both structurally and conceptually ...”²¹⁵ With this resistance to peg the video essay to rigid conceptual and structural frames, we can look specifically at the alternative hybrid figurations which are set in motion in Biemann’s videos.

The first productive form of hybridity is manifested through the ways in which Biemann has experimented with the relation between the “document” and the “picture.”²¹⁶ While these two categories have usually opposed one another – the document usually being staged as a true, objective “window on the world,” while the picture is thought of as a “constructed image” – they are fused together into hybrid forms of representation in Biemann’s works. In multiple scenes in *Remote Sensing*, script and images which are layered on top of other images resemble literal “documents,” taking the shape of travel itineraries and biometric passport information (height, weight, eye-colour, etc.). However, the colours of the images – which look like passport photo-portraits – have been inverted in the digital postproduction of the work, removing the indexicality which is so important for the identification purpose of passport photos. Presenting these photos in their obviously manipulated state raises questions about the authenticity of the itineraries and biometric information as well, implying that they could be entirely fictive. This strategy is present in Biemann’s other video essays too: the text which narrates Anatol’s migratory biography in *Contained Mobility* is, according to Biemann, “strictly documentary,” in the sense that it is based entirely on interviews with Anatol. All the visual material, however, is either constructed fiction – the view from the interior of a container (including the representation of Anatol) – or a digital simulation of space. These are just two among many examples of how the “real” (document) and constructed (picture) not only overlap, but are entirely fused together into a hybrid form of representation. Furthermore, and as we recall from chapter 2, the discussions of the linear perspective called attention to the ways in which the viewer of the linear perspective negotiates between seeing linear perspectives as either windows into some form of reality *or* as constructed space. Vertical perspectives on the other hand, I argued, negate these ways of seeing by instead calling attention to the mediation needed to access or even imagine such a

²¹⁴ Nora M. Alter in Rascaroli, “The Essay Film,” 24.

²¹⁵ Ibid. A similar point is made by Trinh T. Minh-Ha, who observes that “rather than endorsing categories ‘by which the film world largely abides, [she] produce[s] films that [she] consider[s] to be first and foremost *boundary events* [through which] one can view them as different ways of working with the freedom in experiencing the self and the world’.” in Tay, *Women on the Edge*, 166.

²¹⁶ Charlesworth, “On Reporting,” unpaginated.

point of view, thus fostering a curiosity about the technologies that afford these perspectives. This curiosity is in many ways fulfilled in *Remote Sensing*, by the ways the work makes inquiries into the locational, technical, and communicational aspects of the Ikonos satellite. While these vertical perspectives are dethroned from the idea that they represent objective, omnipotent, mobile and disembodied vision (god-trick/document value) and at the same time represented are more than just abstract, constructed “pictures,” they emerge instead as partial, embodied, and located perspectives, along with the equally partial perspectives of the humans in Biemann’s works.

This leads us to the next hybrid figuration that Biemann’s works put in motion, namely the human/nonhuman and the forms of “seeing together” which arise from this hybrid. This is not meant to say that *Remote Sensing* presents singular entities which are human and nonhuman/machine at the same time, such as Haraway’s cyborg.²¹⁷ Rather “seeing together,” explains the distancing from the hierarchical binary opposition between subject and object which can be observed through the ways in which the video work levels machine and human perspectives, showing all types of vision – whether machine or human – as active and partial. As elaborated in chapter 3, *Remote Sensing* situates satellites and satellite vision neither as transparent nor instrumental, as the rhetoric of the celebrated god-trick does, but attempts instead to represent the Ikonos satellite’s active, creative abilities – exemplified by the (micro-)tempor(e)alities created by its internal imaging, computation and communication processes – along with its partialities and locational vulnerabilities. This fosters, following Haraway, the possibility of an affectionate, “loving care” – a kind of respect and will to understand the inherently nonhuman in its own machinic terms – a way towards seeing “faithfully with it.”²¹⁸ As argued in chapter 2, satellite vision in perspectival terms also contributes to the destabilisation of the Cartesian subject/object binary. As opposed to linear perspectives – which fix the eye of the viewer to a point so that this eye/subject is central to a particularly rational, calculable space in which all external things are objectified by the gaze of the subject – the vertical perspectives of satellites dislocate both the horizon and the fixed point of the viewer. As a result, the sense of an anthropocentrically logical space and

²¹⁷ A cyborg, according to Haraway, is “a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction.” Donna Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,” in her *Simians, Cyborgs, and Women: The Reinvention of Nature*, (Routledge, 1991), 149.

²¹⁸ Haraway, “Situated Knowledges,” 190.

subject/object relation is thwarted, giving way instead to a curiosity about machine affordance, the body of the satellite, its productive capabilities and location.

4.2 The video essay in the digital age

It is evident from the split-screens, sometimes subtitled, composite and layered moving images in Biemann's work that she exploits the digital format for both handheld camera action and postproduction. Some of the moving images appear as "unprocessed live-action of real people and places" recorded on a handheld camera, referencing documentary strategies.²¹⁹ But, as T.J. Demos has specified, this type of footage is often placed within "highly artificial digital environments," such as in split-screens, with added layers, and often with the original sound distorted or replaced.²²⁰ As is evident, the digital format is central to Biemann's ability to create the document/picture hybrid discussed above. The way in which digital images appear as postproduction-ready evokes an ongoing debate about whether the shift from analogue to digital image production indicates "a crisis of the real" in the sense that the translation into digital code cannot accommodate the indexicality of analogue lens based media.²²¹ According to Amy Charlesworth and others, the assumption that only analogue images can be indexical is wrong, as is the assumption that the "digital era" marks a "crisis of the real."²²² In the case of digital imagery at least, photo and video images are still accepted as evidence in legal tribunals, and they continue to function as documentation in scientific research papers, and as "documents in historical archives."²²³ In Biemann's video essays, what unfolds on the screen swings to both sides of this debate; for on the one hand, the presence of geographically situated "live-action imagery" undoubtedly ties her videos to real political events and social realities – the footage from the glass-house brothel along the Czech-German border in *Remote Sensing* is an example.²²⁴ While on the other hand, the multiple postproduction effects through which these forms of live-action are framed indicate a much more complicated relation between camera and action, and the "real" is interwoven with animation and sheets of digital special effects.

²¹⁹ Demos, *The Migrant Image*, 210.

²²⁰ Ibid.

²²¹ Ibid. See also Jean Baudrillard, *Simulacra and Simulation*, (University of Michigan Press, 1994) and Lev Manovich, *The Language of New Media*, (MIT Press, 2001).

²²² Charlesworth, "On Reporting," unpaginated.

²²³ Demos, *The Migrant Image*, 210.

²²⁴ Ibid.

Superficially this observation may indeed indicate that the video essay is distinct from film as the latter is perceived to afford a more direct impression of reality. One must, however, keep in mind that after the obsolescence of analogue video in favour of the digital, its difference from film is no longer a technical one.²²⁵ Furthermore, Biemann's video essays exhibit both continuities and discontinuities with earlier artistic film practices in terms of the aesthetics of the special effects. A range of special effects were utilised to distort the real in Dada and Surrealist films from the late 1920s. In Hans Richter's *Ghost for Breakfast* (1927) and *Inflation* (1927) for example, montage, inverted colours (black and white), stop motion and composite images are prominent, while split-screens can be observed in Man Ray's *L'étoile de mer* (1928).²²⁶ These early films attest to the fact that many of the special effects Biemann employs are by no means unique to digital platforms. Technically, rather than aesthetically, however, the means to achieve these special are different between digital video and analogue film.

In terms of aesthetics and techniques, Biemann's video essays also display continuities with the film essay, especially the works of Chris Marker, an artist Biemann has explicitly referenced in her written work.²²⁷ In Marker's *Sans Soleil* (1983) images which appear as unrelated and fragmented are connected, interrogated, explained, and described by the voice-over of a woman who is in fact reading from letters sent from the made up character and cameraman, Sandor Krasna.²²⁸ *Sans Soleil* is 100 minutes long (and marker's *Grin Without the Cat* from 1977 is four hours) while Biemann's *Remote Sensing* is 53 minutes and *Black Sea Files* 43 minutes. Although Biemann's works are shorter, the length indicates a certain continuation, considering that the general tendency among video essay lengths today is somewhere around six to ten minutes, "in keeping with the print essay's tradition of brevity," as well as – in art exhibition contexts – considerate of the attention span of exhibition goers when they view video installations.²²⁹ Of course the way in which Biemann not only emphasises, but thoroughly situates the imaging processes of machines marks a rupture with Marker.

²²⁵ Ina Blom, "The Autobiography of Video: Outline for a Revisionist Account of Early Video Art," *Critical Inquiry* 39, no. 2 (2013): 218.

²²⁶ Rudolf E. Kuenzli, *Dada and Surrealist Film*, (MIT Press, 1996), 107.

²²⁷ Ursula Biemann, "The Video Essay in the Digital Age," in Ursula Biemann (ed.), *Stuff it: The Video Essay in the Digital Age*, (Springer, 2003), 8. see also Demos, *The Migrant Image*, 210.

²²⁸ Allen James Thomas, "Harun Farocki's Images of the World and the Inscription of War," in Ursula Biemann (ed.), *Stuff it: The Video Essay in the Digital Age*, (Springer, 2003), 114.

²²⁹ Ned Stuckey-French, "The Video Essay," *American Book Review*, 33, no. 2 (2012): 15.

In some of the later video installations by the German artist, Harun Farocki – a moving image “essayist” who is often compared to Marker – however, there are some comparable aspects with regards to machine vision as well as postproduction. In his *Auge/Maschine* (2001), which is a dual projection installation, Farocki included surveillance images from American unmanned aerial vehicles (UAVs/drones) and projectile missiles from the Gulf War (1991), as well as civilian surveillance images.²³⁰ The dual frames as well as the vertical perspectives produced by the UAVs and missiles instantly evoke the similarity to Biemann’s *Remote Sensing* and *Contained Mobility*. Moreover the deep interest in how new forms of vision come about as the result of new technological affordances raises serious concern for both artists. However Farocki’s interest in these forms of vision have a more sinister dimension than Biemann’s, resonating – as Allan James Thomas has elaborated – with Paul Virilio’s *War and Cinema: the Logistics of Perception*.²³¹ For both Farocki and Virilio the link between vision and war is evident with the invention of new visual technologies, so that surviving and being able to kill the other is in direct causality with being able to see while not being seen, phrased by Virilio as follows: “For men at war, the function of the weapon is the function of the eye.”²³² As I have argued, Biemann’s approach resonates more with Haraway’s coercion to “take vision back” from the penetrating and objectifying role it has been given in military and scientific contexts, so that it can be reclaimed as a productive sense in feminist, critical terms.²³³

4.3 Webs of situated knowledges

Despite the effort to reclaim satellite vision, Biemann’s work does not neglect to acknowledge that these technologies tend to be used “as instruments of control for the reinforcement of existing physical and virtual borders” and power relations.²³⁴ Noticeable global asymmetries are manifested in the ways in which the use of vertical perspective (from either drones or satellites) and the occupation of vertical space in general seems to be

²³⁰ *Auge/Maschine* (2001) is the first part of a cycle of three works with *Auge/Maschine II* (2002) and *Auge/Maschine III* (2003). For more information, see Christa Blüminger, “Harun Farocki ... The Art of the Possible,” in Ursula Biemann (ed.), *Stuff it: The Video Essay in the Digital Age*, (Springer, 2003), 100.

²³¹ Thomas, “Harun Farocki’s Images,” 113. See also Paul Virilio, *War and Cinema: the Logistics of Perception*, (Verso, 1989).

²³² Virilio in Thomas, “Harun Farocki’s Images,” 113.

²³³ Haraway, “Situated Knowledges.”

²³⁴ Federica Timeto, “Tracing Women’s Routes in a Transnational Scenario: The Video-cartographies of Ursula Biemann,” *Feminist Media Studies* 9, no. 4 (2009): 446.

dominated largely by the rich super nations of the U.S., China, Russia, and Israel.²³⁵ As has been remarked by others, the movement of women who migrate for work in the sex industry, the internal displacement of people(s), and the flows of diaspora are examples of forms of movement across and within borders that often goes unheard and unseen by these forms of surveillance and the statistics they inform.²³⁶ It is precisely this invisibility that Biemann's video essay aims to counter. She does this by on the one hand, by infusing situated knowledges about these types of movement into what is usually scientific and military data, and on the other hand, by simultaneously rendering the technological processes of these very same visual technologies equally visible. This can be considered a transformation from the idea that satellite remote sensing is inherently tied to the militaristic, scientific, and "colonializing" gaze of super powers, to firstly the idea that satellite vision can lend its gaze to other forms of knowledges, and secondly, that satellite vision itself should be considered – far from objective – a partial perspective. In Biemann's case, this transformation includes a form of empowerment of subjects with little structural power through increasing their visibility and by associating them with technologies considered of high value. An observation by Timeto should, however, be mentioned: "Transnational subjects like refugees or sex workers do not experience the kind of mobility theorized by those who believe that, in our techno-driven world, the act of travelling no longer requires any kind of material displacement."²³⁷ As *Remote Sensing* manifests there is a need to reconceptualise the act of "visualising and representing" these less mobile subjects, especially when Biemann – herself a female, white, Western artist – comes across as so mobile, travelling to vastly different locations to make her video works. There is also a need to critically engage with the ways in which these technologies reinforce or problematize existing politics of mobility and visibility. The difficulty of rendering subaltern subjects – who are in motion, crossing borders, and ultimately "ungraspable" – visible, is expressed through the hybrid "document/picture," as

²³⁵ While the U.S., China, and Russia are the most active "space nations," there are a few surprising countries on the list of countries in possession of weaponised drones, such as Nigeria, South-Africa, Somalia, Pakistan, Iraq, Iran, as well as the non-state organizations of Hamas and Hezbollah. The U.S., Israel, China, Iran, and Russia remain, however, the nations that have executed the most drone strikes. See Robert Farley, "In the Golden Age of Drones, these countries lead the pack," *The National Interest*, 16.02.15, <http://nationalinterest.org/feature/the-five-most-deadly-drone-powers-the-world-12255?page=2>. See also Clay Dillow, "All of These Countries Now Have Armed Drones," in *Fortune*, 12.02.16, <http://fortune.com/2016/02/12/these-countries-have-armed-drones/>. Eyal Weizman has written extensively about the "politics of verticality" in the context of Israeli settlements on occupied land such as the West Bank, East Jerusalem and in the Golan Heights. See for example Eyal Weizman, "The Politics of Verticality," *OpenDemocracy*, 23.04.02, https://www.opendemocracy.net/ecology-politicsverticality/article_801.jsp

²³⁶ See for example Timeto, "Tracing Women's Routes," 447.

²³⁷ Ibid.

discussed above. Rather than simply reporting truth as a form of totality, layers of complexity are organised into new packages with both real and virtual components.

It is the stitching together of what at first appears to be fragmentary and unrelated interviews with diverse subjects, live action footage from various countries and satellite found footage that gives form to this visibility. As such it can be considered a web of situated knowledges which only in its connected state gives visibility to a counter-geography attesting to the transnational character of gender-specific migration, the routes and circuits of border crossing clandestine activities, and the grey zones within the paths to survival that many women take in certain situations. *Remote Sensing* gives visible form to these phenomena through highly unstable representations that occupy a hybrid place between truth and construction, reality and virtuality.

4.4 The multiplication of the screen space

The stitching together of multiple perspectives is not only a product of simply bringing separate images and voices together. Rather it is something that is embedded in the video essay from the root of its production, infused in the digital format and enhanced by means of postproduction, and which unfolds in the spatial relations of the screen. The screen space of *Remote Sensing* splits up the space of linear perspective – the logical, calculable, and rational space which fixes and unifies the viewer – quite literally by splitting the screen into multiple frames, multiple perspectives and superimposed images. Additionally the screen space privileges the vertical perspectives of satellite images in such a way that horizontal orientation becomes impossible, a factor which further disorients and disperses the viewer.

I have mentioned that experiments with layers, composite images, and split-screens can be seen in the Surrealist film practices of Hans Richter and Man Ray, and hence that these screen strategies are not unique to the digital format of moving images. Stan Brakhage, Andy Warhol, Abel Gance, Charles and Ray Eames, Zbigniew Rybczynski, and Mike Figgis, among others, are other artists that attest to a range of experiments with screen spaces before digital tools became available.²³⁸ These are, however, “exceptions which prove the rule” that screen based media for a long time held on to the rigid paradigms of linear perspective and

²³⁸ This list is borrowed from Anne Friedberg. For an extensive investigation of the multiplication of screen spaces in the history of moving images, see her chapter, “The Multiple” in her *Virtual Window: From Alberti to Microsoft*, (MIT Press, 2009).

linear sequencing.²³⁹ As Anne Friedberg elaborates, the dominant forms of “the media of film and television ...” were through most of the twentieth century “viewed in a single frame, seen on a single screen.” While there were multiple experiments with perspectival multiplication in the fields of architecture, chrono-photography, and Cubist painting, moving image media “held on much longer to the strictures of [perspective’s] ‘symbolic form’.”²⁴⁰ Different camera positions and scenes tended to follow each other sequentially in film and television and appeared to be “held within the fixed frame of the screen, a surface that holds its constancy regardless of the continuous or radically discontinuous spatial and temporal relation between shots.”²⁴¹ Addressing cinema in slightly different terms, Jean-Louis Baudry conceptualised that this continuation of the paradigm of linear perspective into cinema resulted in an ideological effect upon the viewer, because it produces an illusion of objective reality by hiding the cinematic apparatus.²⁴²

The digital imaging and editing technologies which came about in the 1990s can – despite the mentioned earlier experiments – be credited for catalysing a shift that led to an increased experimentation with perspectives in moving image media. These technologies not only made it easier to utilise found footage from a range of different sources (with the ability to digitise footage from both film and videotape), to create frames within frames, or “conduct ‘cut-ups’ and collages,” but also eased the construction of “seamless substitutions and simulation effects.”²⁴³

Utilising these image and postproduction effects, *Remote Sensing*’s screen spaces reveal both flatness and depth, images and text, and moving as well as still content which is presented in a way that multiplies vantage points and perspectives. Instead of the perceived depth of linear perspectives, a different kind of “digital depth” appears on the screen as a result of for instance the layering of informational script or XY-graphs on top of other images. Furthermore, spinning satellite images with their vertical perspectives are disorienting both because of the loss of a horizon to navigate after, and because the video essay makes them rotate, thus disabling the possibility of reading them like a conventional map – up for north, left for west, etc. Finally, the split screens, which introduce up to four different moving

²³⁹ Ibid., 192.

²⁴⁰ Ibid.

²⁴¹ Ibid.

²⁴² Baudry, “Ideological Effects,” 41.

²⁴³ Friedberg, *Virtual Window*, 193.

images within one screen show too much information for one viewer to process at once. Walter Benjamin's much quoted "... reception in a state of distraction ... finds in the film its true means of exercise" may provide a suitable model for the type of viewer *Remote Sensing's* screen spaces calls for.²⁴⁴ But the viewer here is not distracted by things external to the screen, rather he/she is distracted by the multiplications of the screen space itself. "The viewer is no longer unified" – as is the case in linear perspectives – but is rather "dissociated and overwhelmed..." in a way that calls for either a viewer trained in distraction or a viewer that can multiply.²⁴⁵

This ultimately attests to the fact that the vertical perspectives in *Remote Sensing* contribute to a reconceptualization of the video essay in two ways. Firstly, and as discussed, they underline the document/picture hybrid that defines Biemann's representational style – a hybrid that is different from the characterisations of the video essay as either personal and subjective or simply a result of bringing text and image together. The vertical perspectives contribute to this hybrid because they are dethroned from the idea that they represent objective, omnipotent, mobile and disembodied vision (god-trick/document value) while they at the same time are presented as more than just abstract, constructed "pictures." They emerge instead as partial, embodied, and located perspectives. Secondly, the effects of these vertical views – more precisely the loss of the horizon and perceived depth – in split-screen presentations multiply vantage points and fractures and destabilises the screen space in a way that disrupts the rationalising of space associated with linear perspectives, cartographic imagination, and the colonial gaze. Biemann's ability to nevertheless maintain a connection to real social and political realities, although via such distorted, experimental representational means, is her credible contribution to the video essay's commitment to a political practice. This commitment is also evident from the distribution of *Remote Sensing* and her other films not only in art contexts such as exhibitions and biennials, but also in activist conferences and networks, as well as in educational settings.²⁴⁶

²⁴⁴ Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," [1936] in Hannah Arendt (ed.) and Harry Zohn (trans.), *Illuminations*, (Shocken, 1969), 240.

²⁴⁵ Hito Steyerl, "In Free Fall," 27.

²⁴⁶ See ARGOS' website, "Ursula Biemann,"

<http://www.argosarts.org/artist.jsp?artistid=6ad7fc338fb3476496edd796c0a7a863> accessed 13.12.16.

Biemann's video essays are distributed by Women Make Movies (U.S.) and ARGOS Centre for Art and Media (EU).

5 Concluding Remarks

How may this multiplication of the screen space then – which ultimately has a disorienting effect upon the viewer – afford a stitching together of the otherwise fragmented interviews, live-action footage, satellite images, animations and other found footage into a counter-geography that gives visibility to the multiple reasons and trajectories of women who migrate and find work in sex? The reason has to do with the ways in which the relations between subject and object, human and nonhuman, and time and space are rearranged in a way that can be considered anti-Cartesian. For instead of fixing the viewer's eye to a point/cogito, from which the viewer's gaze penetrates through a rational, calculable space in which all things external to the viewer are constituted as objects, there are multiple vantage points and no such fixed point from which the viewer can constitute itself as a privileged subject. The viewer is not central to the worldview that is presented, and that worldview is not rational and calculable either. By unsettling these factors, which – if we follow Friedberg – for a long time have constituted both cinematic viewership and Western cartographic imagination, a new counter-geography can take shape. This counter-geography stitches together perspectives and gives visibility to trajectories in ways which negate traditional power-relations, and thus might be more productive when trying to find new, experimental ways to represent the grey areas, clandestine networks, and subaltern situated knowledges that constitute a part of globalisation that is difficult to represent without simply reproducing these power-relations.

This is an expansion of what was argued in chapter 2 about perspective into a consideration of *Remote Sensing's* screen spaces and postproduction effects. In summary then, chapter 2 was guided by the question of what distinguishes vertical perspectives from horizontal and linear perspectives. It located the central criteria that define conceptualisations of the linear perspective by engaging with the seminal texts on perspective by Erwin Panofsky and Hubert Damisch. From there, these criteria were tested against the types of vertical perspectives that can be found in Ursula Biemann's *Remote Sensing*, namely satellite images. The results of these tests revealed that there are tremendously important differences between linear and vertical perspective, especially when it comes to vantage points, the fixity/unfixity of the viewer, the relation between the viewer and the image, as well as the relations between subjects and objects. Because of the differences revealed, the chapter proposed alternative

terms with which to address the vertical perspectives of satellite images, which are derived from Haraway's notion of situated knowledge: embodiment, technical specificity, partiality, and seeing with others.

These terms were important in the third chapter's investigation of how vertical perspectives and satellite technologies are situated in *Remote Sensing*. This chapter identified the ways in which Biemann's working method can be considered a situated knowledge with regards to her selection, handling, and editing of the image materials. Via a carefully handled selection of found footage that relates to satellite operativity, Biemann presents satellites as locatable, specific technologies that provide vertical views from complex machine bodies. Taking a cue from Biemann's technical focus, the chapter expanded on the technical operativity of satellites in media technical terms, but in a way that was structured around Haraway's concepts of embodiment, technical specificity, partiality, and seeing with another. I found that this proper technical analysis revealed how the satellite perspectives could be stitched together with the experiences of women migrants who work in the sex industry into an experimental counter-geography that avoids reproducing the power-relations that satellite perspectives are often associated with (the God-trick). As such, the ways in which *Remote Sensing* situates vertical perspectives in a highly technical manner is imperative to how satellite technologies are also situated in the highly specific context of women who migrate for work in the sex industry.

Finally, the last chapter investigated how this counter-geography is produced by means of a reconceptualization of the video essay that includes both continuities and discontinuities with other and earlier essayistic moving-image works. Here I identified that Biemann productively sets in motion a set of hybrids: the document/picture hybrid with regards to representations that swing between truth and fiction; human/nonhuman hybrid vision concerning the levelling of machine and human perspectives which we find in *Remote Sensing*; and finally, a linear/vertical perspectival hybrid that multiplies vantage points and disorients the viewer via the screen space that *Remote Sensing* presents.

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Illustrations

Figures

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