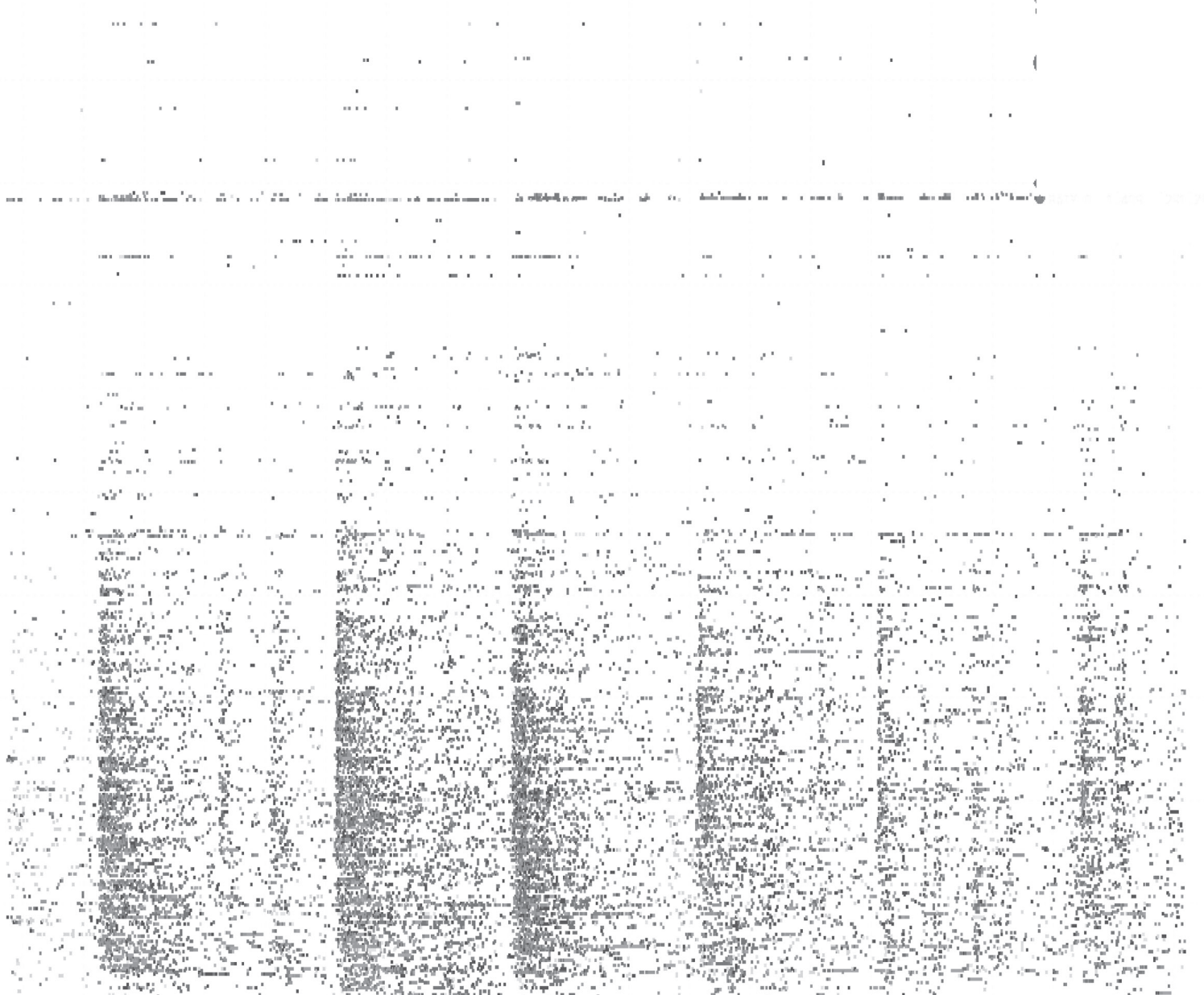


THE ALL INFRARED LINE

— LEONARDO DELLANOCE

FEMKE HERREGRAVEN'S ART PROJECT ON FINANCIAL CAPITALISM



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Table of Contents

Introduction	2
1. The All Infrared Line	6
1.1. Paradoxical Geography	6
1.2. Formal Analysis	10
1.3. Gnoseology of Finance	19
2. Informing Power	23
2.1. All Red Line	23
2.2. Agency of the Network	27
2.3. Designing Geography	30
3. Hacking the Dominant Narrative	34
3.1. Planet Capitalism	34
3.2. Time is Money, Money is Language	38
3.3. Capitalism as Aesthetic Issue	43
Conclusion	50
<i>Illustrations</i>	53
<i>Bibliography</i>	75

Introduction

Franco 'Bifo' Berardi, writing about financial capitalism, states that “a light of possible intelligence and openness seems to come not from philosophy, but from art”¹. The quote refers to a possible reaction or counter-movement to financial capitalism and its domination towards reality, which can (and should) be developed by art and not from philosophy alone. From this consideration my research takes a start. Financial capitalism is an extensively studied subject which fundamental importance in politics and society is widely understood, but that still remains unchallenged. When I write unchallenged I do not mean that no attempts were taken to counter it, but that those attempts have been mainly aleatory. Philosophy and political thinking have always been at the forefront both to understand capitalism and to propose an alternative. So far all the criticism drowned in the dark pool of the infosphere, countered with far more powerful tools than what an individual thinker or group can possibly imagine. Moreover the birth of the global market spread the logic of finance to any corner of the civilised world and further, even in regions mostly dominated by nature alone. The colonization of reality operated by financial capitalism is still ongoing and we are all involved in it. Anything can be financialised: resources, debt, animals, human genes, language and so forth. I do not mean to demonize finance *per se* by saying this, as I believe that any moral connotation does not help our comprehension of it. Yet it is important to understand in what system we live in and above all how we can build alternatives.

At the present state, alternatives are not tolerated on the economical, political and social level. Where to build them? It seems to me that only art can now provide a space for critical thinking to unfold. Art is not only a space for reflection but is also a critical act. For this reason I firmly believe that artworks can lead us to a new understanding of reality, to a shift in our perspective by attracting us into their critical space. This is perhaps a privilege that only art has and philosophy does not.

¹ Berardi, F. *The Uprising: On Poetry and Finance*, Los Angeles: Semiotext(e), 2012, p. 43.

“Tout se résume dans l’Esthétique et l’Économie politique”.² I think that Stéphane Mallarmé’s aphorism helps, in an unprecedented way, to understand how the discourse around financial capitalism is developing. On the one hand, there is political economy, which is the basic discipline in the field. On the other hand, there is aesthetics that is a rather new perspective on the subject. It seems to me that this specific point of view is developing mainly after the financial crisis in 2007-2008, when the deep influence of finance on society became infamously crystalclear. In the discourse, which is mostly academic, artworks are analysed in relation to different aesthetic theories. In my opinion, two main approaches are adopted in this case: artworks as instrumental examples to ground reasoning and artworks as the core of new research paths. Among the two abovementioned approaches (which are not in contrast and are often integrated), I prefer the latter. It is in fact not my intention here to draw an aesthetic theory of financial capitalism, but to see how a specific artwork can embody and help our comprehension of the mechanism and hidden structures of financial capitalism. This approach might not be new but it is rigorous in the case of this text, as financial features not addressed in the artwork will not be taken into account. This fact does not undermine the scope of the research, but it demarcates a loyalty to what the artist has created, instead of pushing my own views on it.

The artwork under investigation is *The All Infrared Line* (2012-ongoing) by the Netherlands based Femke Herregraven, a multimedia installation which has not been displayed yet but that I came to know by meeting the artist and visiting her studio. The first time I heard about this artwork was during a symposium, held at the occasion of the Global Imagination exhibition in Fall 2015 and hosted at the Volkenkunde Museum in Leiden. Herregraven presented several of her artworks during her talk at the symposium.

The choice of this artwork is the outcome of a process of investigation in practices relating to this field (that is artistic research on financial capitalism), which brought me to Transmediale in Berlin in 2016 among other festivals. By attending those events and reflecting on them, the main research question came into being. I found Herregraven’s practice more precise and poignant than many others. For this

² Mallarmé, S. *La musique et les lettres*, 1895.

reason the question around which my research revolves is: to what extent does Herregraven's *The All Infrared Line* constitute an alternative narrative to financial capitalism? In answering this question I discuss capitalism as an aesthetic issue and as a dominant visual narrative.

The thesis starts with an introduction of Herregraven's practice and a formal analysis of the work, which is extensive and detailed due to its complexity. The artwork is then framed through a revision of Umberto Eco's postmodern aesthetic theory, bringing to the fore why this artwork is relevant in relation to the topic. In particular I refer to *Opera Aperta*, Eco's famous text, and to the concept of epistemological metaphor as a starting point to develop a different framing for Herregraven's work. The second chapter, *Informing Power*, deals with the structural configuration of the financial infrastructure and the narrative that is already embedded in its characteristics. In order to explain it, I take as a starting point a historical framing of the network, elaborating on what is already present in *The All Infrared Line*. Later, the design of the network and the role of Herregraven in exposing it is investigated. In this case, Keller Easterling's ideas regarding infrastructure and the powerplay surrounding it are used as a framing. Her book *Extrastatecraft* constitutes an important source for grounding my personal view on the artwork from an architecture-related point of view.

The third and last chapter deals with the virtual presence of finance and its features. From the analysis of the infrastructure I pass to explain the planetary scale of finance from an ecological perspective. The concept of hyperobject by Timothy Morton is an important reference in this case because it gives guidelines that allow me to define financial capitalism as such, something that is fundamental to my research. Also, the relation between language, time and money is addressed in order to describe the implications of the financialization of reality. In this section I refer to the study *The Uprising* (2012) by Franco Berardi who proposes a neo-marxist semiotic understanding of finance, which is not the perspective adopted by me, yet it is basic to debunk many aspects of the virtual processes occurring on financial markets. Last but not least, capitalism as an aesthetic issue and its dominant visual presence are addressed in order to point out why Herregraven's artworks constitutes an alternative narrative to it. To do so

Cartographies of the Absolute (2015) by Alberto Toscano and Jeff Kinkle presents a new perspective on the visual apparatus of capitalism through analysis of art and pop culture. Their definition of cognitive mapping is particularly important to describe in what way Herregraven goes beyond the dominant logic into the realm of speculation.

With this thesis, I would like to contribute to the discourse on aesthetics of finance from an art-critical perspective in order to bring to the fore the role art can have in our society. I believe that a debate regarding financial capitalism as a power structure is urgent on a societal level, and especially art can propose unprecedented alternative views on it.

1. The All Infrared Line

In order to introduce such a complex artwork like *The All Infrared Line*, it is necessary to clarify how to look at the project. For this reason this chapter starts with a positioning of *The All Infrared Line* in Herregraven's practice, particularly in relation to other works by her which share with it a strong geographical feature mainly evident through mapping as a mean of discovery. Once where the artwork stands is defined, I will pass to formally analyse it in detail because of the impossibility of showing it through images and words. Lastly, the role the artwork can have in our understanding of financial capitalism is scrutinized remarking its importance as source of questions and investigative paths.

1.1 Paradoxical Geography

A paradox is defined as: "an apparently absurd or self-contradictory statement or proposition, or a strongly counter-intuitive one, which investigation, analysis, or explanation may nevertheless prove to be well-founded or true".³ Therefore, paradoxical geography is a mapping of the world that seems absurd but alas, is demonstrated to be real. This chapter endeavours to explain how a Western-centric geography of finance is fallacious by analyzing three of Femke Herregraven's artworks. Her practice is focused on researching and mapping finance in order to allow a public debate. For most people finance is represented by Wall Street and other iconic institutions which are only the tip of an astonishingly huge iceberg of data centres, networks and tax havens spread worldwide.

Femke Herregraven's first project is titled *Geographies of Avoidance* (2011).⁴ The artwork is composed of a printed index of companies (Fig. 1 and 2), which legal headquarters are located in the 'Zuidas', that is the financial district of Amsterdam. In itself it can be considered of non-primary relevance in the financial world; there are far more important stock markets than Amsterdam such as London, New York,

³Oxford English Dictionary:

<http://www.oed.com/view/Entry/137353?rskey=o3f68m&result=1&isAdvanced=false#eid> (11/02/16)

⁴ <http://femkeherregraven.net/geographiesofavoidance/> (11/02/16)

Tokyo, Paris, Chicago and Frankfurt.⁵ In fact the Netherlands are worldwide famous, not for their stock market (that is the reason why they are not mentioned above), but for their fiscal regulation. Thus a hierarchical division between cities and stock markets, although on the one hand is true, on the other hand can be misleading if not explained properly. The Netherlands are considered a semi-tax haven.⁶ Fiscal advantages are sold abroad almost as an export product in order to attract foreign companies; there is no doubt that the biggest European corporations have their legal headquarters there. In addition, there are other enterprises, so-called 'mailbox companies'. This term defines fake companies that do not physically exist anywhere but are created *ad hoc* for tax evasion. Herregraven listed all companies, dividing them per address in her book; each page corresponds a specific address. Thus the more blank space there is on a page, the more real business is carried out by companies. Not surprisingly, for some addresses there are thousands of firms listed within which certain fake enterprises do not even bother inventing proper names, but instead use the military alphabet: Alpha, Beta, Echo and so on. These kinds of companies are usually part of a complex system through which big brands legally avoid taxation.

Herregraven decided in 2012 to dig deeper into this intricate process. *Geographies of Avoidance* is a list of names and addresses, collected by the artist consisting a pure list of data. *taxodus.net*⁷ (Fig. 3) goes beyond data. Data have no value in themselves and need to be processed in order to become information. Information has value, both cognitively and economically. Femke Herregraven took her practice a step further, from data visualization to information narrative. She collected data about royalties, dividends and interests, then she processed them and visualised them in a multi-narrative platform, an online game (Refer to: <http://taxodus.net/>). In this very case she literally connected the dots to create a cognitive map of tax evasion. Working with tax lawyers and other experts she

⁵ Sassen, S. *Electronic Markets and Activist Networks: The Weight of Social Logics in Digital Formations*. in *Digital Formations. IT and New Architectures in the Global Realm*, Princeton University Press: Woodstock, 2005.

⁶<http://www.theguardian.com/business/2011/oct/19/tax-avoidance-in-netherlands-becomes-focus-of-campaigners> (11/02/16)

⁷ <http://femkeherregraven.net/taxodus/> (11/02/16)

finalized the research in an online game *taxodus.net*. The premise of this artwork is to visualize the geography of tax evasion by big brands in its entirety.

Playing the game, the first choice that has to be made is to select a famous brand. A player is hired by a brand to escape tax revenue and also a 'tax wizard' (who is basically a tax lawyer) is appointed as a collaborator. The game is all set on the planisphere, just like a strategic table-game.

What makes this artwork captivating is that the amount of data collected to build this game is not just enormous but also reliable and current. Players have the chance to deal with real data about royalties, dividend etc. The game is obviously a simplified version of the real mechanisms, nonetheless it almost represents a professional tool. Herregraven told me that even a professor of Law asked her to be allowed to use *taxodus.net* for educational purposes. Fundamental is the fact that the game does not only visualize information but also generates it. In which way? The strategies adopted by each player are collected, computed and then stored by the game itself. After completing the game each player obtains a PDF report of his/her activity that visualizes the score and the tactic adopted by the player. The reports are collected in a shared database and so made available to anyone interested in them. Ironically, brands could search those reports and they might find new shortcuts for tax evasion.

The graphic report displays the path taken by the player; that means each player can build a narrative of tax evasion for his/her brand. A private foundation in Nigeria, a shared fund in France and headquarters in Colombia are part of players' individual geography. What makes this artwork so interesting is that global narratives are already embedded into it. In effect it is possible to visualize the commercial treaties signed within different countries while playing the game. It appears when the headquarters of a selected brand are clicked and they are shown in a sort of colorful fountain or firework. Each line is per se a narrative entangling different countries that, on the one hand, can represent a suggestion for the player, but on the other hand, transcending the game logic; clicking that button shows the power relations existing in our world. Those power relations are global narratives in which we are implicated. This artwork makes intangible processes visible to

everyone, on a virtual platform. If those power lines are followed, a hidden network of relations can be discovered which creates an alternative geography.

This alternative geography is a map of power but what kind of power? It is an economic power that is truly global, in the way that it involves the whole world in its mechanisms. Economic globalization does not only deal with production in itself (for instance it is widely recognized that South-East Asia and China are the main producers of finished goods for the global market) but also with tax evasion. In this complicated mechanism, countries outside the 'power circle' (that is the one constituted by OECD countries⁸) have a fundamental role. This is usually because of a favorable economic-political environment. On the political side, non-democratic or fake-democratic states are preferred because of their deregulations on social-economic matters. On the strictly economical side, tax havens are obviously key points in this system. These two advantageous features are usually combined (exceptions applied, for example Switzerland). The further away from political control the better, but tax havens still need to be linked to the financial centres, otherwise money cannot be moved.

Therefore Herregraven focused mainly on the processes and what allows them to occur. Her research since 2012 is directed to infrastructural systems through which not only tax evasion takes place, but also through which finance is put into existence.

The All Infrared Line is a project which was started in 2012 and is still ongoing. Herregraven is trying to map all fiberglass submarine cables which constitute the backbone of finance. It is an infrastructural network that ties the world together. Obviously that planetary scale of finance is related to geography in itself. I would like to take Great Britain⁹ as an example to show how *taxodus.net* and *The All Infrared Line* are linked and how much finance is rooted in the colonial past. London is considered to be one of the main stock markets in the world and it is no accident that many tax havens are located in the Caribbean. Historically, parts of the Caribbean are former British colonies and some islands still figure as overseas

⁸ OECD is the Organization for Economic Co-operation and Development. For the list of member countries refers to: <http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm> (11/02/16)

⁹ Pre-Brexit situation.

territories. During the British Empire there was a need for communication between London and its colonies all over the world in order to manage and hold together the empire. For this very reason a huge effort was put into linking those territories to the homeland through the telegraph.¹⁰ The Caribbean, due to its location, was linked through the Atlantic Cable. Nowadays fiber cables run the British routes, and many others, allowing billions of dollars to be moved around the globe.

In this way an alternative geography is created. The 'border countries' in this Western-centric geography turn to be centers of a hidden structure that strongly affects the global balance. While we are all looking at Wall Street, millions of dollars are flowing through Djibouti, and once across the Arabian Sea, are safely stored in the Seychelles. It is a paradoxical geography in which the economic power materializes itself where it is not, and hides itself where it is present.

1.2 Formal Analysis

Describing and analyzing an artwork that has not been displayed until now can be considered tricky. Nonetheless a formal analysis of *The All Infrared Line* is necessary for a complete investigation of its relevance. Thus two elements must be remembered reading the next pages: first of all, *The All Infrared Line* is an ongoing project, subject of continuous mutation; second, it is divided in five different parts that all together constitute the artwork. The former characteristic, even though it does not need an explanation, must be justified.

The All Infrared Line, started in 2012, is an art-project by Herregraven, whose main research focus, as discussed previously, is on finance, tax evasion and high frequency trading, and so financial capitalism at large. It is more specifically an investigation on the infrastructure of finance, which needs a sophisticated network of submarine fiberglass cables to exist, covering the planet in a huge network of wires. As it is analyzed in detail in the next chapter, the hypercomplexity of this extra state structure of information makes any investigation *per se* complicated. From the beginning of the project the artist did not want to give a defined form to it,

¹⁰ Kennedy, P. M. (October 1971). "Imperial Cable Communications and Strategy, 1870-1914". *The English Historical Review* **86** (341), pp. 728–752

considering it an everlasting process of research. In fact the artwork itself does not allow any form of definition due to its planetary scale. The infrastructure of fiber optic submarine cables is an ever changing system too big to map entirely, assuming that mapping it would lead to a better understanding of the matter.

Therefore Herregraven approached the subject from a number of different perspectives, each one manifested in different parts of the artwork itself. As it has been mentioned before, so far the artwork is composed of five pieces, all very different from one another: a map, 19th-century newspapers, pictures, videos and blocks (titled *Malleable Regress* that has been exhibited alone in New York in May 2016). It is impossible to grasp in one single view all of them and so, for the sake of my research, I propose to the reader to imagine a white box or a room, a White Cube.

This virtual room has four walls, a floor and a ceiling. On the left of one wall a door is opened, allowing to enter and to exit the artwork-space. Once entered the artwork-room, we find the first wall on our left on which a big pencil-drawn planisphere is hung (Fig. 4 and 5), showing several cable landing points on different continents. Then turning to the second wall we have a first perception of the whole space noticing that a sculpture is placed in the middle, on the floor. Being careful and precise visitors, we want to follow the sequence even though our mind goes back to the panoramic view of the room we just looked at. On the second wall, which is opposite to the door, different old newspapers' pages are showcased (Fig.6-9), in which descriptions and depictions of telegraph cables are presented. We realize that we are looking at historical documents from the British Empire Era. Slowly but steadily we pass by them, gazing to the third wall on the right. Here we are confronted by pictures of landscapes (Fig. 10-22), mostly shores by the seaside, but also forests, rivers, houses. The sudden twist in subject is visually quite shocking. Out of the blue, landscape photography seems to deviate from the narrative we were expecting. Going to the fourth wall, where the door is opened, it is possible to recognize a pattern: shores are again the subject but this time video is the medium (Fig. 23 and 24). Sea is at the center of these short films. Now the tour around the walls is over, it is time to turn to the center of the room, where blocks are placed, bearing a mysterious word on their surface 'Tjipetir' (Fig. 25-27).

The tour of the virtual room may be completed, but the artwork raises a lot of questions. To try to get a grip on it, it is necessary to analyse the artwork, piece by piece, deconstructing it in order to reconstruct the unitary narrative that the artist is proposing us. Let us proceed by starting from the Map, going all the way to the puzzling blocks.

The Map (100 x 70 cm, pencil on paper)

On a huge paper, Herregraven has drawn a planisphere, which at some places is dotted in order to visualize the landing points of some cables she discovered (Fig. 4). The Map, as I will refer to it, is a pure visualization of data collected by the artist. In fact the tiny handwritten annotations next to each dot are the names of locations where these cables land from international waters to legal states (Fig. 5). It is possible to consider this specific part, as a work in progress, a data visualization. Herregraven is updating the Map with new findings all the time, turning it not only in a pure graphic description but also in a work diary that by changing over time refers to the activity of research itself. The use of pencil on paper remarks the situation of precarity and temporariness to which the Map is subjected. It changes over time by the activity of two agents: one is the artist, the other is the cables' network itself. As a matter of fact new cables are put on top of the older ones every 25 years, due to technical reasons (for instance erosion by the sea salt). It is clear therefore how, in this regard, time deeply affects data visualizations that at the moment of beholding may be totally different. Moreover discovering the precise coordinates where cables are located, is far from easy, due to their political and economical value. Thus the Map is a metonym of *The All Infrared Line* in itself, precisely in the way it is ineluctably destined to alteration.

The Newspapers (28 x 40 cm)

The second part of the artwork does not present criticalities similar to the Map. Various pages of newspapers from the era of the British Empire constitute this section. In this regard it is important to mention the historical background of those

newspapers, considering their authenticity: the pages are taken from *The Graphic*¹¹ and *The Engineer*¹².

The Graphic was founded in 1869 by William Thomas Luson and run until 1932 when its name was changed in *National Graphic*. The focus of this illustrated newspaper was broad, ranging from arts, sciences, literature to important events and trending topics. While *The Graphic* dealt with the illustration of facts, *The Engineer* covered the latest developments and business news in engineering. It was founded in 1856 by Edward Charles Healey and it still runs today. What makes this second magazine fascinating is that its founder was an entrepreneur financially involved in railways, one of the first examples of the vast scale infrastructure in the capitalist era. Moreover both magazines were founded at the peak of the British political-economical power, and in particular *The Engineer* was a source of information for stock prices of raw materials. Therefore the context in which these newspapers were issued already represent a link with both finance and the cables' network at their earliest stage. Analysing more in details the topic of these pages, the correlation turns out to be stronger. Both *The Graphic* and *The Engineer* published extensively about telegraph cables. During the British Empire the ancestor of our contemporary global network was projected and realised under the name of All Red Line.¹³ Due to their different focus, both newspapers approached the subject from a different perspective. *The Engineer* illustrated the composition and technical production of the submarine cables (Fig. 6 and 7), whilst in *The Graphic* events related to the construction of the lines were depicted, such as inaugurations, parties and celebrations (Fig. 8 and 9). The display of these pages grounds the artwork to a narrative that starts in the 19th century and which roots are in the British colonial empire, allowing the beholder to understand the historical background of such contemporary infrastructure.

The Landscapes (photographs, 60 x 40 cm)

¹¹ <http://content.time.com/time/magazine/article/0,9171,744210,00.html> (29/06/16)

¹² <http://www.theengineer.co.uk/classic-archive/> (29/06/16)

¹³ See chapter 2 for an in-depth analysis.

Coming to the third wall, the beholder sees a series of pictures going from historical documentation to natural sightseeing. The pictures are shots of several landscapes, mostly natural, where submarine cables land on the continent in nine different locations: Willemstad in Curacao, Teriberka in Russia, Le Palus and Les Rosaires in France, Vigo in Spain, Penmarch and Lannion in France, Baie de Jacobet and Triolet in Mauritius. The list is destined to be expanded through time, due to Herregraven's continuous research.

For the sake of clarity let me divide the series of pictures in two different typologies: landing points and hinterlands. The former term identifies pictures depicting the shore at seaside. The latter qualifies all the photographs not portraying directly the cable landings, but the territory around the spot.

Landing points photographs are shot mostly frontally in a horizontal position, allowing the picture to be divided in two parts: sea and land. While the sea acts as common denominator, making a comparison between the locations possible, even though different weather conditions characterise each shot differently, the land gives a visual distinctiveness to each location. The sandy shores of Normandy in France are clearly unlike the rocky shore of Vigo in Spain. Those dissimilarities create an interesting collection of natural panoramas that suggests the global scale of this infrastructure. Once observed the beautiful natural environments in the pictures, it becomes clear that a main element is missing: the cable.

In none of the pictures we can see a cable; nonetheless we are sure a cable must be there. Looking at the photographs for the first time, the beholder takes for granted that a submarine line must be landing in that point. At first sight, all these photographs are self explanatory, nature depicted as it is with no filters added. Sand, sun, sea, waves foaming, they can easily be holiday photographs from the last summer trip. A first fundamental element is that what matters cannot be seen: the cable. This represents a first filtering of reality. Why not dive to shoot photographs of the cable itself? Scuba Diving is what an investigative reporter would, most likely, have chosen: reporting the bare fact there is a cable. Choosing not to document reality as it is enacts a first layer of aesthetization. Herregraven is more interested in triggering the visitor inside her narrative and raise questions rather than in documenting and denouncing a phenomenon.

The viewer gives total trust to the artist: is the cable landing exactly there? The viewer is not sure and the artist neither, at least not in all cases. Herregraven researches the coordinates of cables but not all of them are mapped, or rather the locations of all of them are not available to the public. The research then follows a more investigative path, gathering architectural and natural information from the surroundings. An example is the landing point in Baie du Jacotet in Mauritius (Fig. 14). There the artist was able to identify the exact location resulting from clear signs of recent infrastructural works on the sand and witnesses of building activity by local people. In other cases it is far more difficult to pinpoint a landing site. It is the case of Willemstad in Curacao where a suspicious abandoned lot between houses on the seaside could mark a hidden site where the cable lands (Fig. 18 and 19). The latter case is more fascinating as it resulted from an investigation by the artist, based on facts, who creates a narrative that could be fiction. The veracity or not of this narrative does not jeopardize the force of the artwork, in contrast the implied tension between what is represented in the photographs and what is true, the narrative created by Herregraven and factual reality, is the most crucial feature of this series.

The hinterlands pictures are divided per location, corresponding with each landing point. Hinterlands define the surrounding environment in a range of few kilometres from the landing spot. The visual investigation of surroundings is fundamental for this part of the artwork, completing the narrative started with the landing point pictures. It is in fact in the hinterlands that key identity features of each location can be found. Let me proceed in this analysis through the exploration of three different cases: Teriberka in Russia, Triolet in Mauritius and Penmarch in France.

Teriberka photographs (there is always a series corresponding to one landing point) display a wild natural environment that is extreme to a certain extent, because of its latitude set northern from Murmansk on the Barents Sea (Fig. 10-13). What is depicted in the picture are the ruins of a human settlement, composed of wooden structures as well as of stone houses. A ghostly atmosphere is suggested by the gloomy weather conditions and the ruins. Shipwrecked fishermen's boats stand still by the rocky seaside. What does this example suggest to us? Apart from

the intrinsic romantic aesthetics of the place, the first striking feature is the absence of actual human presence. At first sight, the village has been abandoned and most likely no one will reclaim in the near future the old fishing facilities, thanks to which this settlement flourished in the past.¹⁴ In reality this specific site has been already reclaimed and is overlooked by companies, which already have the commission to lay the first Arctic submarine cable most likely from that spot. The financial interest in this location counterbalances the apparent state of forgetfulness in which it is now, including it in the bigger picture of IT infrastructure. Therefore, in this case, the narrative created by Herregraven works by contrast, by teasing the beholder's attention with its apparent clarity.

Penmarch in France constitutes a different narrative. In this case, the sand shore is empty, no recognizable human made buildings are visible (Fig. 20), except for the ruin of a pillbox from the Second World War (Fig. 21). Following the artist's movement towards the land, it is clear that nature is playing a central role. Pictures of sandy hills and lonely shrubs suggest a feeling of wilderness (Fig. 22). Here, without remarkable human traces the stillness of the atmosphere is impressive. Nothing seems to happen there and its void gives even more an impression of untouched nature. This feeling might not be wrong because more than often those cables are laid down and linked to the land in natural parks and reserves, where their underground presence is unnoticed and their safety secured. No wonder that the beholder, whilst looking at these pictures, is struck by the natural beauty and probably subconsciously puts aside the investigation of finance. This example is important because it gives a first hint of the relationship between finance and nature. Once the cable presence under the sand dunes is remembered it is difficult not to regard nature as a cover of an hidden structure.

Lastly, Baie du Jacotet in Mauritius turns out to be considered a richer example than the others. In one photograph the shore is visible, shot from the jungle, in which signs of recent digging are present (Fig. 14). Due to the concavity of the construction site, a small river coming from the jungle ends into a pond. The rivulet highlights and uncovers the direction to take, deep into the wild (Fig. 15). Following it, it turns into a small river that is crossed by a concrete bridge, a human

¹⁴ <http://barentsnova.com/business-overview/our-stories/354-meanwhile-in-teriberka/page,92/> (22/07/16)

construction that suggests that a new discovery is close by. This natural water path brings in the end Herregraven, and so the beholder, to a find of importance: a gate. In the middle of the jungle, a gate in neocolonial style is placed to access a cluster of buildings that looks pretty anonymous (Fig. 16). The presence of human traces into supposedly wild nature reveals important knots of the financial infrastructure: data centers. No labels or signs identify the structure, which purpose can be anything, but which presence in that specific spot leads to raise questions. Things get clarified when from afar satellite antennas in the shape of white spheres stand out from the background (Fig. 17). The facilities are protected by a tall fence and possibly by guards.

Having presented the three cases, it is now possible to analyse the narrative presented by Herregraven. The first fundamental feature is that landing points do not constitute the end of the narrative, but the starting point. It is quite a twist in the plot if we consider that those spots are not easy to reach and so Herregraven most likely had to cross the hinterlands to get there. Therefore the beholder does not follow the process of localization, but rather the collection and investigation of details and hints that are spread out in the environment which can bring, like in Triolet, a new discovery. A narrative is created going in a reverse direction, showing not how to reach the cable, but why the cable is exactly there. In this sense, natural and human elements are intertwined, because they precisely create the circumstances for the cable to be there, and not somewhere else: abandoned villages, natural reserves and so on are both conditions and effects of the cable presence.

The Videos (HD video, loop, stereo sound)

On the fourth wall, a series of screens display videos of the nine locations. Placed one next to the other, the videos seem to show the same view: on the upper half the sea and the sky, on the lower half the shore (Fig. 23 and 24). The visual similarity not only of the videos but also of the series of pictures is not difficult to recognize. A main difference occurs though; while the photographs were shot horizontally, the videos were recorded vertically. This small detail, that can easily be

considered of no importance at first glance, represents the main conceptual difference between these two part of *The All Infrared Line*. Adopting a vertical framing implies a certain degree of aestheticization, that does not occur to this extent in the pictures. From documentation to aesthetization, Herregraven seems to imply that her videos are to be considered moving paintings. In effect their vertical disposition, contrasting with the horizontal lines dividing the sky, the sea and the shore can refer to modernist abstract paintings. A connotation to abstract paintings by Marc Rothko can occur that, for their wide color fields, have similarities with Herregraven's videos. It is interesting then to note how at this point aestheticization starts to play a stronger role in the artwork. An aestheticization that, it has to be said, is expressed only visually. The videos' sound were not edited, allowing the natural noises to be heard. This characteristic justifies the correlation to abstract paintings more than to other examples of video art, precisely because the medium is not fully manipulated by the artist, and this clearly attributes a bigger value to the visual part. Even the stillness of the subject strengthens the link to paintings; in fact nothing happens during the video, no action is undertaken by anyone, no movement occurs apart from the wave's restless motion.

Malleable Regress or The Blocks (335 x 225 x 25 mm, PU rubber)

Last but not least the mysterious blocks (Fig. 25 and 26) placed in the center of the room require our attention. The blocks are squares, made of transparent colored silicone, bearing the inscription 'Tjipetir' and containing one capsule of materials each paired by a strip of coordinates (Fig. 27). Let me start by analysing the writing in order to clarify its role in the artwork. 'Tjipetir' is the name of a former plantation of gutta-percha plants in Indonesia during the late 19th century. Gutta-percha¹⁵ plants can be used to produce natural rubber, very valuable at that time. The rubber was extracted from the plants, then melted to blocks and consequently shipped to London. There the blocks were remelted and utilized to wrap the wires adopted in the telegraphic network. Even though their role was merely instrumental, their technical value was fundamental; without that specific type of rubber, the British All Red Line would have not come into being. The

¹⁵ <http://www.merriam-webster.com/dictionary/gutta%E2%80%93percha> (29/06/16)

rediscovery of these blocks is quite recent. A few years ago, some of them were washed ashore in the north of France and many people collected them from the sea; almost nothing was known about their function. Because of the engraving it has been possible to trace back their provenience to that Indonesian plantation, yet the reason behind their reappearance is unknown.

Femke Herregraven's blocks are different from the original ones. In fact, she decided to cast the actual shipwrecked blocks and reproduce them in transparent colored silicone, giving them a hi-tech appearance, even though the signs of time and damage are still present. She put a capsule in them containing soil materials and a strip of coordinates of possible new landing points. This part of the artwork ties the construction of the financial system to the colonial past of Western societies, but it also keeps it at distance; the original blocks in effect are not simply displayed but reproduced into modified copies. Their existence as art objects avoids the risk to understand Herregraven's practice an archeology of finance whilst allowing the artist to create her own critical narrative.

1.3 Gnoseology of Finance

In framing *The All Infrared Line* for further investigation I turned to the work of Umberto Eco in *Opera Aperta* (1962), which I take as a starting point to conceptually locate the artwork in my investigation. In his book, Eco draws an aesthetic theory of postmodernity, in which most forms of expressions (visual arts, literature, music and even television) are read through and given ground to its theory. The pivotal concept is the *open work*, that refers to the disclosure of multiple interpretative paths by the artwork itself. Eco in particular writes about the artwork as a micro universe of almost infinite interpretative possibilities, that is defined by the artist and allows disclosure, but avoids complete relativism.¹⁶ A postmodern artwork is not chaos, but there is possibility for several meanings to unfold. This characteristic disclosure or openness of the artworks realised in the 1960s (Eco refers particularly to the Informal and Abstract American paintings) is for the author an important symptom, or better reaction, to the scientific achievements at that time (quantum

¹⁶ Eco, U. *Opera Aperta*, Milano: Bompiani, 1962, p. 53.

physics). In proposing this reading of the artwork, Eco does not undermine the role of art to science, but theorizes a reaction of art to philosophy and scientific theory and even more art as an embodiment of a new understanding of reality.¹⁷ An open artwork does not only represent discontinuity (referring here to the theoretical context of the 1960s), it is discontinuous.¹⁸ For this reason the concept of open work is strictly related to the epistemological metaphor. In fact, as Eco writes, in the case of visual arts, an open work is an epistemological metaphor because it does not ontically represent something, it ontologically is that thing.

Opera Aperta was first published in 1962 and even though many updates have been made by Eco himself, more than half a century later it cannot satisfy art critique anymore. In particular the concept of open work is outdated as our times already internalised this type of understanding of art. I believe though, that thinking an artwork as an epistemological metaphor is still poignant. In the case of Herregraven's *The All Infrared Line*, the artwork constitutes to be a good epistemological metaphor of financial capitalism. However I believe that in this case it would be better to define the artwork as a gnoseological metaphor. On the one hand, epistemology¹⁹ is traditionally understood and defined as the philosophy of scientific knowledge (which in the case of Eco fits perfectly). On the other hand, gnoseology²⁰ is the philosophy of knowledge at large and of how we know reality. Therefore in the case of financial capitalism it is more precise, in my opinion, to speak of gnoseology, as finance is not science, even though it might seem scientific because of relying on mathematical rules.²¹

The All Infrared Line is analysed as a gnoseological metaphor of finance throughout this thesis, as a metaphor of how we investigate the complexities of financial capitalism. In my research *The All Infrared Line* constitutes the access the

¹⁷ Eco, U. p. 155.

¹⁸ Ibid., p 156.

¹⁹ Epistemology in the English speaking world has a broader meaning than the one presented here. The difference between the English-American and Italian tradition often makes difficult to define the terms precisely. Following the Italian tradition, to which Eco also relates, I refer to the definition by the Enciclopedia Treccani <http://www.treccani.it/vocabolario/epistemologia/> (19/06/16). For an English definition see the Merriam-Webster dictionary: <http://www.merriam-webster.com/dictionary/epistemology> (19/06/16). For further readings in the English-American definition please see <http://plato.stanford.edu/entries/epistemology/> (19/06/16)

²⁰ <http://www.merriam-webster.com/dictionary/gnoseology> (19/06/16)

²¹ Berardi, F. p. 72.

artist provides us to understand aspects of the economic reality we live in. This economic reality gained such importance during the last centuries that in many regards addressing financial capitalism and its processes reveals sides of the essence of power itself, a power which is not only economic but also political, social and visual. It is my conviction that Herregraven presents us an artwork that does not only inform or shed light on finance, but also provides methodological instruments to investigate it. In this way *The All Infrared Line* relates to gnoseology, to the way we know finance.

Analysed earlier, the artwork can be divided in five different parts that help us to enter the complex narrative Herregraven creates and also shows us the methodology she used in approaching such a complex subject. I do not want to divide the artwork in steps, as I believe there is no predestined order, but a discourse has not the advantage to be nonlinear as an artwork. Moreover, the following division should not be intended as a guideline to follow, but as the personal way the artist approached the matter, which can exemplify how we can investigate financial capitalism.

Gathering information is always the first activity to be made together with understanding the roots and causes of a phenomenon. The Newspapers constitute an historical methodology to finance, in which the artist, almost as an historian, defines a context by analysing sources. In this case the history of finance is addressed on the technological (*The Engineer*) and political level (*The Graphic*).

Structuring an investigation is fundamental, Therefore the Map can be considered a guideline the artist drew for herself, which has to be constantly updated and modified according to the unfolding of the project.

The Landscapes are on-site investigations, where the artist zooms in to the cables and their landing points. As much as a biologist observes nature in the wild, Herregraven embraces an adventurous plan of action, travelling for kilometres (even to other continents) in order to observe her subject of investigation. Once on-site, focusing on the landing point is not enough as it needs to be contextualised and observed in relation to the surroundings (zoom-out). For this reason the artist departs from the shore to go back to the hinterland, searching for traces.

The hands-on plan is completed by a process of reflection in which the complexities of the subject are internalised. The outcome is an aesthetic elaboration of those complexities in which the friction between the collected informations and their interpretation generates ambiguity (the Videos).

In the end, the ambiguous space defined by the artistic process creates a new set of possibilities that are brought to the beholder as a speculative act (*Malleable Regress*) that is the start of a new narrative resulting from the sum of all the parts: *The All Infrared Line*.

The All Infrared Line is not only a metaphor but also an gnoseological tool on the reality of finance. The artwork opens up several questions that must be analysed and it switches our perspective to financial capitalism. It is my intention to follow the path that Herregraven points out in her work and to see to which new discoveries it will lead me. For this reason I start by researching the infrastructure of finance and what narrative is hidden in its structural configuration; then I reflect upon the virtual presence of it in order to finish by explaining why Herregraven creates, through her artwork, an alternative narrative to financial capitalism.

2. Informing Power

To inform means “to report facts or news, communicate information to”. It comes from the Old French *enformer*, “to instruct, to teach” and directly from Latin *informare* “to shape, give a form”.²² The second chapter, Informing Power, deals with the concept of giving a form to financial power. In the first section, the past developments of the infrastructure of finance are analysed from an historical perspective, that does not aim to be comprehensive of all the processes involved, but that instead starts from the artwork to investigate history. The second part of the chapter deals with the architectural configuration of the infrastructure. In it the core parts of the design, the form of this infrastructure are explained through *The All Infrared Line*. In particular new aspects of the structure, unveiled by the artwork, are the subject of research and how they interact with the surrounding reality. In the last section, the architectural feature of the infrastructure of finance is investigated from a narrative point of view in order to show how they create a specific narrative. In this regard, *The All Infrared Line* acts as a debunking tool to uncover how a certain geography has been designed according to that narrative.

2.1 All Red Line

The first step that must be taken is to investigate the infrastructure that supports the financial system, starting from its early development during the British Empire: the All Red Line. What is the All Red Line? It turns out to be the submarine telegraph cables network, realized in the second half of the 19th century, under the rule of the British Empire and therefore by British companies both for political and military reasons. In 1837, Morse invented the telegraph²³, a new revolutionary communication technology that could provide instant communication at great distances and that attracted great attention from the very beginning. Among the first ones who were appealed by its potential were businessmen because the new technology was a promise for faster and more profitable trade. Within the colonial

²² <http://www.thesaurus.com/browse/inform> (05/05/16)

²³ <https://www.britannica.com/technology/telegraph> (30/06/16)

powers, Britain in particular was interested, because the telegraph could solve many problems on the political and defensive level, being also a means to tie together the colonial empire. On the political side, a technology able to make the motherland communicate with its colonies in one day represented a powerful tool to manage the logistics that the size of the British Empire required and to tie closer overseas territories that were far away from the central power. On the military side, the competition between colonial powers constituted an harmful factor of uncertainty for the British Empire, for which political stability was of great commercial value. This uncertainty could be partly solved by communicating and orchestrating strategies at faster speed than other competitors.

The first telegraph cables were laid down on land, what caused a huge problem. The land was subjected to different legislations of rival countries; reason why land cables were not interesting for a political force like Britain. Instead, submarine cables were considered a solution to this problem. As the Colonial Defence Committee stated: "The maintenance of submarine cable communications throughout the world in time of war is of the highest importance to the strategic and commercial interests of every portion of the British Empire."²⁴

Even though strategical motivations helped the evolution of the All Red Line, it must be kept in mind that this network was not developed solely for military purposes. Conversely, as Paul Michael Kennedy, British historian at Yale University, writes, this infrastructure was built and managed by private companies in most cases. At the time the first cables were laid down in the Channel, in the 1850s, telegraph companies were all owned by private citizens.²⁵ Entrepreneurs were involved in the first development of this infrastructure. 1870 marked a change in the operations. In that year the Atlantic Cable was placed by a private company but this time was subsidized by the American and British governments. From this date onwards, due to the governmental sponsorship of the cables, the interests of

²⁴ Cab.[inet Papers, Public Record Office, London] 11/118/15, Colonial Defence Committee memorandum 417M, secret, 7 July 1910 in Kennedy, P. M. (October 1971). "Imperial Cable Communications and Strategy, 1870-1914". *The English Historical Review* **86** (341): pp. 728–752.

²⁵ Kennedy, P. M. p. 730.

strategists, and hence military influences would constantly rise up to the point of deciding themselves where and how those cables landed.²⁶

In the same year the East Telegraphic Company, one of the most powerful private corporations to serve Her Majesty, started to lay down a cable to link Great Britain to India.²⁷ The strategic importance of this route does not need explanation. According to strategists it was not safe to link India only via one cable passing through the Mediterranean sea, where the British fleet was less influential than elsewhere. For this reason a second cable was placed following a different route, passing instead through Vigo in Spain in order to reach Gibraltar, a British overseas territory. Vigo is also one of the nine landing points of the new fiber-optic cables that Herregraven mapped and included in her artwork *The All Infrared Line*. It now serves the global market of finance, but it is fascinating to notice how, more than a century later, a crucial switch point for the British network is important for the contemporary infrastructure. It represents, in my opinion, a proof that military reasons are not enough to justify the construction and maintenance of this infrastructure. As Paul Starr, sociologist and public affairs expert, remarks: “[...] war [...] is hardly the only determining factor in infrastructure decisions. Technologies do not have predestined uses, military or otherwise”.²⁸ A very recent example supporting this point can be the birth of Internet from ARPANET. Ironically “ARPA’s network, designed to assure control of a ravaged society after a nuclear holocaust, has been superseded by its mutant child the Internet”²⁹, as Bruce Sterling explains in *Short Story of the Internet* (1993).³⁰

In effect, if 1870 can be considered as the starting date for the British military interest in the telegraphic system; however another date is more important for my investigation: 1865. In 1865, the first meeting of the International Telegraph Union (ITU) took place.³¹ It was an occasion, part of a peace conference, in which delegates from several European countries gathered together to decide about some

²⁶ Kennedy, P. M. 730.

²⁷ Ibid. 731.

²⁸ Starr, *The Creation of the Media*, p.164 in Easterling, K. p. 143.

²⁹ Sterling, B. “Short History of the Internet”, *Magazine of Fantasy and Science Fiction*, February 1993.

³⁰ The reason why the quote is used here in spite of the rather old year of publication is because of the suggestive way in which the sentence is written.

³¹ Easterling, K. p. 137.

technical issues concerning the telegraphic network management and standardization. Although it represents a starting point for many different narratives and analyses, I will investigate this meeting briefly for its economic implications in the evolution of the network and not from a military perspective or other.

The spokesmen present at the meeting were there on behalf of different European powers but in effect they were all company-owners of telegraph firms. At the decisional table were present, in fact, representatives of the *haute finance*. In the 19th century, the basis of the contemporary economic system were laid as a result also of infrastructure development. The political powers subsidized different companies able to carry out complex interventions such as laying down cables, building dams and so forth. The co-dependency between governments and these corporations made possible for the latter to substantially increase their capital. It was the time when concepts such as the freedom of the market and the birth of the *homo economicus* started spreading, allowing the economic liberalism to become a dominant narrative. In particular the liberal narrative played a role in promoting infrastructural construction, so Easterling argues, that was seen as an epic quest by its contemporaries because of the involvement of a huge amount of human forces and technical novelties.³² The successes of these efforts were prestigious for the countries participating in the projects, leading newspapers to widely report and celebrate such events. Looking at the pages of *The Graphic* in *The All Infrared Line*, it is clear that celebrations accompanied the laying down of new cables. Each time a submarine cable of the telegraph touched land banquets and public events were organized. Any step in the creation of the All Red Line was considered and marketed as a marvel both technically and politically.

Considering once again the submarine cables, Kennedy argues that the greater number of them linking London to the rest of the world by the early 20th century, for example, were privately owned and built by few companies.³³ These cables were for commercial purpose only whilst the remaining ones, with strategic value, were owned by the British government, but produced and set by private companies subsidised by the government itself too. Companies operating on

³² Easterling, K. p. 152

³³ Kennedy, P. M. p.739.

strategic lines were often monopolizing the routes, with approval by the government and consequent complaints by rival firms. This phenomenon allowed a substantial concentration of capital and the creation of monopolies, similar to a certain extent to what happened with the railway system in the US.

The political dominance of Britain of the telegraphic system was also assured by technical means. British companies were the best specialized in the production of cables and also the best equipped. The pages taken from *The Engineer* by Femke Herregraven well document how cables were produced and from what source. Apart from the copper wires that constitute the core of a telegraph cable, the rubber-coating is fundamental (Fig. 6). As depicted in the newspaper, the rubber was taken from plantations in British colonies, shipped to London where the cables were produced, rolled and mounted on special ships (Fig. 7). The special type of rubber required in the process, the gutta-percha, is a natural rubber extracted from the homonymous tree, originating from the Malaysian peninsula, a British colony at the time. According to Kennedy, Britain had then both a virtual monopoly on the raw materials necessary for the production and on the technology to lay the cables.³⁴

The All Infrared Line traces back the birth and the specific geography of the cables' network to the British colonial power. Herregraven's research starts in fact with investigating how colonial powers participated in shaping this system and how it gave it its planetary scale, allowing finance to take over the same trading routes, a century later.

2.2 Agency of the Network

The All Infrared Line brought me to discover how the submarine cables infrastructure was born and firstly conceived: as a new communication network for trading and managing power. Two key elements has been highlighted and described in the first section of this chapter: Britain's influence in shaping the network and the role of financiers in building it. The former feature faded away decade by decade, consequently the latter took over the shaping power left by the British Empire.

³⁴ Kennedy, P. 741.

As far as this infrastructure is primarily an architecture and affects the space in which we live, I would like to refer to the theory elaborated by Keller Easterling in the volume *Extrastatecraft: The Power of Infrastructure Space* (2014). The book deals with infrastructure in a broader sense than what is the focus of my research, yet some key concepts are important to analyse the matter from a different perspective. This new perspective is primarily suggested and shown by *The All Infrared Line* itself, but Easterling's theory results nonetheless useful to investigate how Herregraven shifts our viewpoint. Let me start by introducing the concept of *extrastatecraft* in order to refer later to The Map.

“As a site of multiple, overlapping, or nested forms of sovereignty, where domestic and transnational jurisdictions collide, infrastructure *space* becomes a medium of what might be called *extrastatecraft*-- a portmanteau describing the often undisclosed activities outside of, in addition to, and sometimes even in partnership with statecraft.”³⁵ According to Easterling the *extrastatecraft* can be present in different spatial forms: as a zone or a network. The zone is a recent example of free-trade space, both physical and legal, that is not subject to the same jurisdiction of the country in which it is built. It means that laws of the hosting country do not apply in that specific area or at least are less strict; it has its own sovereignty. Global players are attracted by this relaxed jurisdiction, often accompanied by impressive economic exemptions and profitable advantages. There are several examples around the world: King Abdullah Economic City in Saudi Arabia, New Songdo City in South Korea and many more. Even though out of state jurisdiction, it has become a need for many states to build such free zones, mainly for economic reasons.

The network works in a similar way. The economic influence that certain infrastructures have allows them to be outside the reach of state power. A striking example is surely constituted by the mobile telephony infrastructure that is touted as a resource as important as water in economic terms.³⁶ Similarly the underground presence of fiber-optic cable gives new value to certain pieces of lands that otherwise would be (maybe) worthless. Moreover at the switching points of an

³⁵ Easterling, K. p. 15.

³⁶ Ibid. p. 17.

infrastructure, for instance the data centers in the case of fiber-optic cables, monopoly can generate.

Another form of infrastructure space occurs at a more abstract level; as Easterling wrote: “If law is the currency of governments, standards are the currency of international organizations and multinational enterprises”³⁷. Organizations that monopolize decisions regarding standards for infrastructures are *de facto* power holders. An example is ITU (International Telecommunications Union) that was born in 1865 under the name of International Telegraphic Union (in 1947 it was included as an agency in the UN). Apart from coordinating any telecommunication system in the world, from satellites in the sky to sonars underwater, it helps in setting the technical standards of these systems, thus shaping where and how communication occurs worldwide. Technical specifications are able to shape reality and can have enormous consequences on a societal level. Infrastructure operates as an actor in this new space outside any state jurisdiction, it “tutors a shrewder, cagier counter to the lubricated agility of most global powers -- an alternative *extrastatecraft*”.³⁸

The autonomy of the infrastructure, although always partial, comes from its specific design: how it performs in space. Consequently, its legal presence comes from its architectural existence, but goes beyond it. Having its own legal jurisdictions, the infrastructure acquires its own agency on the space in which it operates. From inert object to agent, as Alfred Gell would define it. Precisely Gell’s theory of agency, as it is developed in *Art and Agency: An Anthropological Agency*³⁹, might be useful to explain how *The All Infrared Line* shifts our perspective. For my research, it is interesting how Gell gives to objects and technologies, for instance, a role of agents and not of mere objects. Technologies and networks are shaped by humans but at the same time they shape humans, through the way they interact with us, and so forth. In this bilateral relationship both parties are actors and subjects to change. In this relationship the form, defined as “something which allows something else to be transported from one site to another”⁴⁰, has a central role. Moreover “to provide a piece of information is the action of putting something

³⁷ Easterling, K. p. 18

³⁸ Ibid. p. 23.

³⁹ Gell, A. *Art and Agency: An Anthropological Theory*, Oxford: Clarendon Press, 1998.

⁴⁰ Latour, B. *Reassembling the Social*, p. 223 in Easterling, K. p. 90

into a form”⁴¹. In this sense the title of this chapter, *Informing Power*, from the Latin *informare* that means to “give a form”, acquires meaning. The infrastructure as agent in Gell’s terms, gives a form to the space, to power. As Easterling wrote: “Power lies in the prospect of shaping a series of activities and relationships over time”; that is what infrastructure does, because it is “[...] an updating platform unfolding in time to handle new circumstances”⁴².

Femke Herregraven’s map in *The All Infrared Line* precisely visualizes this complex nature of the cables’ network as agent. As has been mentioned before, the Map is hand drawn in pencil, a fact that marks its state of temporariness, and it is subjected to the agency of the artist, who draws it, and the network. The cables’ network *informs* the space of society and of power, moreover it shapes it. Analysing the Map, our perspective on the infrastructural space of finance shifts. It is no more an inert network completely in the hands of humans but it acts on humans as well. Considering this cables’ network an agent allows us to accept the complexities of the present situation in order to further understand it. At first, Herregraven gives us information on the past of this system, the All Red Line, and in the second step she changes our viewpoint: infrastructure of finance can be seen as an agent, as intended by Gell, operating in an in-between legal and architectural space, called *extrastatecraft* by Easterling, that is unveiled by Herregraven’s visualization, the Map (Fig. 4 and 5).

2.3 Designing Geography

The infrastructure of finance is able to shape the space in which it operates. The space in which it acts can be understood as Easterling’s *extrastatecraft*, a liminal intermezzo where state power is less influential than elsewhere or is possible to avoid it. As far as its operative space has a planetary scale (the whole planet is covered in wires), the network acquires its own geography.

The Map in *The All Infrared Line* visualizes the planetary scale of this network: a planisphere drawn with the dots of cable’s landing points. By linking the

⁴¹ Latour, B. p. 39 in Easterling, K. p. 90.

⁴² Ibid. p. 14.

dots to each other, routes are revealed: from Tokyo to Singapore, from London to New York. But those dots are more than starting or ending points of the submarine routes of the fiber-optic cables. Femke Herregraven's artwork does not stop at the mapping and visualizing activity but continues with on-site investigation. In this regard, the Landscapes help in following Herregraven's narrative. As an example I would like to mention one particular landing point: Baie de Jacolet in Mauritius. In the Baie de Jacolet series of photographs, it is possible to see a data center provided with antennas from where most likely the cable departs in different directions. It is a center where data are sorted to go to different destinations, processed and most likely stored. Through that specific point, tons of data pass every day at any time. In the bigger network of this infrastructure of finance, a data center certainly constitutes a nevralgic point, its function in processing and sorting data gives it a pivotal role, indispensable for the entire system. For this reason, the anonymous buildings hosting this type of facility are most of the time carefully surveilled and heavily guarded.

The data center in the Baie de Jacolet is just one example of a feature of the system that is repeated as pattern. Its necessary presence makes it being multiplied in the network. Easterling defines it, from an architectural point of view, as a multiplier.⁴³ A multiplier is a feature in the infrastructure that is repeated throughout for its necessity, but that shapes the network at the same time. It is developed from a structure but simultaneously develops the structure itself in a specific direction. Data centers are just one part of the infrastructure, but they are indispensable, so the infrastructure is shaped around them. Cables for instance are laid according to a specific pattern, in which the link to a data center is surely a requirement. That is because data centers are also a switch, that works as a modulator of a flow of activities.⁴⁴ It can suppress or redirect a flow and it can affect the line attached to it from a distance; it is a remote control. Switches and multipliers are often overlapping in the network, like data centers. Moreover not only data centers but

⁴³ Easterling, K. p. 74.

⁴⁴ Ibid. p. 75.

also the landing points of submarine fiber-optic cables can act as switches, in the way they can affect the onward service and economic value of it.⁴⁵

The series of landscapes by Herregraven depict these features of the financial network: the spot where the cable lands does matter for the entire system. The importance of the landing points was known from the time of the British Empire. Back then those spots were protected by the army, because they represented sensible areas of primary strategic interest. Even more, they were set in British territories in order to avoid troubles in wartime.

Herregraven's videos are far from being shootings of shores. The cable is not seen but the role of the spot in the network is visible in plane sight. Again the artwork allows us to bring our understanding of the financial infrastructure a step further.

Switches and multipliers are defined by Easterling as active forms where disposition unfolds. Easterling defines disposition in many ways. In general, disposition can be understood as an unveiling of potential, of agency. From a narrative point of view disposition can be described as something that an organization, in my case finance, is doing but that may diverge from what is told. It is a discrepancy in the narrative, that uncovers forms of powers hiding in the infrastructure.⁴⁶ In the case of my research, finance created a certain geographical narrative: the economic powers resides in the stock markets in Europe, US, Japan and Australia. At Wall Street, for example, finance reveals itself, on the screens filled with colorful indexes, in the concentrated faces of its operators, in the pronaos of the very building. Finance seems to happen only there, in the stock market's hall and so it makes sense to analyse what is happening from there. The very infrastructure of finance does reveal through its active forms different narratives. According to Easterling, technology is a carrier of information. Cables, data centers and so forth uncover a reality that is different from what is openly presented. Analysing not only the elements of the infrastructure, intended as objects, but also the relationships occurring between them, the active forms, brings to light new aspects of this disposition. As Easterling argues, the designer of active forms is the figure to refer to ("With an artistic

⁴⁵ Easterling, K. p. 76.

⁴⁶ Ibid. p. 73.

repertoire like that of a performer, the designer of active forms, comfortable with less control, works on an unfolding stream of objects rather than a single shape”).⁴⁷ *Taxodus.net* represents an example of this performative design (Fig. 3). In *Taxodus.net* Herregraven designs an online game in which the mechanism of offshore tax evasion is exposed. Apart from the architectural aspect of the game itself, what matters is that the artwork visualizes the relationships intercurring between different agents in the tax evasion network. Each colorful beam is a potential relationship.

In a very different way the Panama Papers follow the same path. Panama Papers is an investigative journalistic operation that revealed a huge network (more than 11 million files leaked from Mossack Fonseca⁴⁸) of influential people around the world involved in different kind of financial crimes, such as money laundry, tax evasion and so on.⁴⁹ This investigation tries to hack the narrative and geography of power, shifting the attention to Panama, a rather periferic country in the financial visible geography.

In both cases, although in a different way, the process of exposing a mechanism works perfectly but it does not shift our perspective. *The All Infrared Line* represents a completely different redirecting process. Returning to the Landscapes from which I started my reasoning, it is possible now to notice something new. It has already been acknowledged that the landscapes uncovers the role of switches and multipliers in the architecture of the system. Moreover, as far as technology is a carrier of information, this artwork reveals how active forms operate in the network. It is precisely in the overwhelming stillness of this pictures and videos, where nothing happens, that disposition unfolds. “Disposition remains as a latent potential or tendency that is present even in the absence of an event”.⁵⁰ Herregraven’s videos have the quality of revealing to us how from the architectural feature of the financial infrastructure a hidden narrative can be mined, uncovering the flesh of financial capitalism in order to finally hack into it.

⁴⁷ Easterling, K. p. 91.

⁴⁸ <http://www.mossfon.com/> (24/07/16)

⁴⁹ <https://panamapapers.icij.org/> (05/05/16)

⁵⁰ Easterling, K. p. 83.

3. Hacking the Dominant Narrative

As Nick Srnicek pointed out: “despite everything written about capitalism, it still remains a mystery”.⁵¹ How is that so? What are the limits in our understanding of the economic system we live in? In this chapter, I address the issue from an aesthetic point of view, which I believe can bring a broader understanding of financial capitalism. In order to do so, the bifold presence of finance (real and virtual) is tackled: space and abstraction. In the first part, the material presence of finance is investigated in relation to the space it inhabits, the Earth. The planetary scale of capitalism is object of investigation, looking at *The All Infrared Line* from an ecological point of view and broadening the understanding of capitalism in relation to nature through *Volatility Storms* (2014), another artwork by Herregraven. Secondly, abstraction in the financial processes is going to be researched mainly according to theories by Franco Berardi, who studied the linguistic aspect of capitalism. In particular the relation among time, money and language will be addressed on the basis of three artworks. Last but not least, why capitalism constitutes an aesthetic issue is investigated in relation to Herregraven’s practice in order to reveal how the artist hacks into the dominant visual narrative.

3.1 Planet Capitalism

“Not just the best opportunity of our generation, but of the last 12,000 years”.⁵² In these words Scott Miner, chief investment officer of the Guggenheim Partners LLC⁵³, defines how the Arctic is considered in financial terms at the present moment. I believe that Miner in his quote gives some hints on how nature is valued by some financiers. Two elements are of my interest here: first, the Arctic; second, financial investments. In analysing them I refer also to the research carried out by Herregraven in the Arctic region during a Dar Ecology residency, finalised in a

⁵¹ <http://www.aft3r.us/navigating-neoliberalism> (14/06/16)

⁵² Herregraven, F. “Robotic Arms, Crabs and Algos”, in *The Geologic Imagination*, edited by Arie Altena, Mirna Belina, and Lucas van der Velden, Amsterdam: Sonic Acts Press, 2015, p. 214.

⁵³ <https://www.guggenheimpartners.com/firm> (14/06/16)

publication for *Sonic Acts* (Amsterdam), *Robotic Arms, Crabs and Algos* (2015) which is part of the investigation at the basis of *The All Infrared Line*.

The Arctic is the new promised land for investments at the present moment. In particular its richness in gas, oil and metal deposits, that the ice retreat makes available, is attracting the attention of many corporations (ingent gold supplies are also present in that region). Apart from raw materials, the Arctic will be covered in infrastructures, that are needed both to dwell there and transport oil etc., but also for human use like roads and others. Commercial routes will be open in the region that constitute an attractive shortcut for merchant ships. New cables will be laid on the sea bottom in order to shortcut the financial route London-Tokyo (see Teriberka's pictures in *The All Infrared Line*). The main reason why to lay new cables is to increase speed on financial markets. This route represents a big deal for financiers if we take into account that there are currently two rather long ways linking London to Tokyo: the Middle-East and the Pacific routes. With the construction of the new cables, data-traffic speed is expected to increase by 30%.

⁵⁴ Saving kilometres means saving subseconds that means mining more money that would otherwise be 'wasted'. Bearing in mind all these advantages, MinerD is not overestimating the importance of the Arctic in economical terms.

The Arctic is intended by me as a contingent case that shows many aspects of the relation between finance and nature. It will be analysed here because it is the most important and recent/future example of commodification on such huge scale. In fact Herregraven includes this case in her piece *Volatility Storms* (2014) in which many aspects of commodification are shown. As is going to be explained in the next section (Time is Money, Money is Language), finance is able to codify reality, to translate anything into a code to which a value is assigned. Reality, and specifically nature is commodified and traded as any other good, *Volatility Storms* precisely addresses this matter. The artwork is divided in five parts (*Arctic Land, Arctic Cables, Species Swap Derivatives, Water Future Contracts* and *Catastrophe Bonds*), each part is a .gif swapping from an image to an infographic, both created by Herregraven.⁵⁵

⁵⁴ <http://extinct.ly/participants/#femke-herregraven> (14/06/16)

⁵⁵ <http://femkeherregraven.net/volatilystorms/> (14/06/16)

Particularly fascinating, in my opinion, are the *Catastrophe Bonds* (Fig. 28) or cat-bonds, the real financial product available on the stock market. As the name suggests they are a financial product that can be bought by an investor bidding on the possibility of a natural disaster to happen or not. The issuers are usually states and insurers; they sell bonds pre-disaster, because of the ingent economic losses that affect them in case of catastrophe. If a disaster takes place, the state or insurer keeps the money from the investor; if nothing happens the investor gains much more money. Cat-bonds are usually bound to a time frame of some years in which the disaster could happen and they represent a lucrative deal for both parties because of their high risk.⁵⁶ The high risk rate is due to the increasing weather unpredictability and violence, two ideal conditions for the financial game.

Species Swap Derivatives work in a similar way. In this case states issue derivatives in order to preserve endangered species. If the number of a certain species increases, investors are paid by the state, if not investors have to pay the state. This phenomenon goes beyond the commodification of animals, reaching their financialisation. Animals become a resource, either renewable or not, whose extinction does not matter in financial terms: either way someone is going to get rich.⁵⁷

These two short examples give a clear idea of how finance re-enacts the traditional Western dichotomy between nature and culture. Nature is put at a distance, regarded as an external entity (the Other from us) and once on a pedestal it can be either mystified or commodified (in commercial and financial terms). *Volatility Storms* visualizes precisely this perverted understanding of nature in financial terms. This contrast between nature and culture (finance is part of it) is fictitious, it does not really occur in reality, yet it is pushed forward by supporters and detractors of contemporary capitalism alike. For this reason it is important to introduce the concept of hyperobject in order to overcome this dichotomy and try to imagine how a new ecological understanding of financial capitalism looks like.

In defining what is the relation between finance and nature, I refer to the theory about hyperobjects by Timothy Morton, professor at Rice University in

⁵⁶ <http://extinct.ly/participants/#femke-herregraven> (14/06/16)

⁵⁷ Ibidem.

Houston and proponent of object-oriented ontology. In his text *Hyperobjects*, Morton defines them as “massively distributed entities that can be thought and computed, but not directly touched or seen”⁵⁸ and he specifies them according to five categories: viscosity, non-locality, phasing, time undulation and interobjectivity (I will later define finance following this order). According to Morton, nature as an entity does not exist and never existed, it is a human construction. The rise of hyperobjects to human attention finally ended the idea of nature, unfolding the complicated relationships occurring between beings, objects and entities. Thinking of nature in traditional terms does not help an ecological thought, on the contrary it undermines it.⁵⁹ Nature, as it is commonly understood, is an object, a container in which other objectified things are present. Therefore the traditional concept of nature allows financial capitalism to commodify our reality. If we consider financial capitalism to be an hyperobject, beyond the traditional dichotomy with nature, what would happen? In that case contemporary capitalism would be comprehended as a massively distributed entity that heavily affects human life but that is currently the base of society, hence impossible to avoid (viscosity). Finance has no physical centres but many, as it is possible to notice in the architecture of financial infrastructure (non-locality). On a more abstract level finance is non-local, because it unfolds where it is not anymore, anticipating humans every time (see the time representations on the screens in stock markets). It reveals itself in different phases, on a macro and micro level, making impossible to map all the processes ongoing into it (phasing). Its existence is linked to a specific event in American politics⁶⁰ (I refer to it later more extensively) that affected our history (time undulation) and under its scope it houses many different objects, goods, people, phenomenon that are all tied to it. An easy example can be the logistics of this economic system, which complexity allows consumers to buy goods, carrying with them the incredible mesh of relations in which those objects are implicated (interobjectivity). In effect, by being globally distributed it is intertwined with any aspect of reality, including nature. In my opinion, it is fundamental to overcome the dichotomy between

⁵⁸ Morton, T. *Poisoned Ground: Art and Philosophy in the Time of Hyperobjects*, sympleke, Volume 21, Numbers 1-2, 2013, p. 1.

⁵⁹ Morton, T. *Hyperobjects*, Minneapolis: University of Dakota Press, 2013, pp. 100-101.

⁶⁰ I refer here to the birth of contemporary finance in 1972.

capitalism and nature, in which capitalism is depicted as the predator and nature as the prey. Both must be demystified, thrown from their pedestals where they were put, either to be admired or insulted, opening in this way a space where new understandings of their relation can be brought to our attention.

In *The All Infrared Line*, this object-oriented understanding of finance is encompassed. The choice by Herregraven to shoot photographs and to record videos of landscapes tackles this issue. In the Landscapes and Videos rather quiet seashores are documented. As has been mentioned in the first chapter, those pictures and videos do not depict any cable, yet in this way she brings to our attention precisely what so evidently is not present: the cable itself. Cables hidden underneath the surface of the sea and the cliffs make us doubt what is natural or not. Sand, rocks, trees seem to cover up the 'real' structure of which the world is made of. The beholder perceives them as fake, superfluous, unnatural just like any flowerbed at an amusement park. There is an uneasy feeling that nature is no more natural, maybe a hint that finance is an hyperobject? Nature happens to be there to hide the presence of the financial infrastructure.

The All Infrared Line brings to the fore another important aspect of finance: its planetary scale. As has been analysed in the first chapter, *The All Infrared Line* is a complex project articulated in five distinct parts. Each part brings to our attention different characteristic of finance but I argue that all of them together give us the scale of financial capitalism. The Map, the Landscapes and the Videos especially expand the geography of the artwork to the point where the beholder starts imagining the planet as a globe covered by cables, running on its surface. Mapping all the processes ongoing on the planet due to the presence of capitalism will not be possible and maybe not even advisable, but Herregraven's artwork presents the infrastructure of finance and by internalising it brings to us not an image of the Blue Planet, but of the cable planet in a carefully crafted planetary scale gesture.

3.2 Time is Money, Money is Language

The planetary scale of financial capitalism has been investigated in the previous sections: how the network was built and projected, the consequences of

its architectural components and the role of Herregraven as designer and lastly a brief ecological analysis of capitalism. But what is happening on the virtual level in financial capitalism? What are the aspects of its non-physical presence? In this section the abstract side of finance will be explained, following two different, but intertwined threads: language and time because, as Berardi claims, “the essential transformation in the passage from modern bourgeois capitalism to contemporary semio-capitalism was a shift in the perception of the relation between money, language and time”.⁶¹

For this reason, I will refer to the analysis of abstraction written by Franco Berardi, Italian philosopher and writer, who in his volume *The Uprising, On Poetry and Finance* (2012) analyses several features of the virtual market, that possibly constitute a sociocultural understanding of finance. It has to be mentioned from the beginning that Berardi’s thought belongs to a marxist critique of cognitive capitalism and has to be read as such. Here again I will try to point out different components of what finance is, through an analysis of Herregraven’s practice. In particular, three artworks are the core of this reasoning: *A timeframe of one second is a lifetime of trading #2* (2015), *Rogue Waves* (2015) and *Subsecond Flocks - When you startle awake at four in the morning it’s not because you’re feeling happy* (2016).

First of all, it has to be established when contemporary finance⁶² actually came into being. Berardi argues that many scholars identify as a starting moment, or at least as basic turning point, the financial reform of Nixon. In 1972 Nixon, as president of the United States of America, broke the Bretton-Woods agreement by decoupling the dollar from the value of gold. The Bretton-Woods accords were meant to set the currency exchange rates (within other decisions), adopting as universal standard the dollar. Detaching the dollar from gold, the American currency became aleatory and therefore subject to subtle fluctuation.⁶³ This decision created the condition, otherwise impossible, to create a financial market working on an abstract level where value was not related in any way to goods. A system of virtual

⁶¹ Berardi, F. p. 83.

⁶² As we understand it nowadays, it is a virtual market of stock exchanging.

⁶³ Berardi, F. p. 30

exchanges was born, where mathematical rules are the only law and the physical world is put aside. Lately the so-called Chicago boys⁶⁴ projected a new set of policies according to which, for the first time in history, virtual money would have a huge influence on the physical world.

In this scenario and under these conditions a world of algorithms battling in the high-frequency arena came into existence. It is not entirely true that the physical world has no influence in that abstract context, but it is true that the abstractions of the financial market, inhabited by stocks and algorithms, have been deducted by the neoliberal ideologists and policymakers to be rules regulating society thus heavily influencing reality. Two components lay at the core of this new finance: language and time.

Financial capitalism, or late capitalism, has been named in many ways, among which semio-capitalism is of my interest here, because capitalism has been analysed quite extensively from a linguistic perspective. How does language relate to finance? Digital-finance has the ability of codifying anything: goods, behaviours, natural disasters, humans and so forth. Its system is based on codes, which are a form of language, that automatise economic processes of selling and buying. Trading-algorithms are made, work and survive on language. Finance actually swallows up language and bends it to its purpose: codifying reality. What cannot be codified is then discarded, if language does not serve the purpose it is useless. Berardi defines this phenomenon as the monetarization of language.⁶⁵ A second phenomenon is the drying out of enunciation - intended as the act of speaking, of saying a word - from meaning and giving value to the referent, that is called by Berardi indexicalization.⁶⁶ It is precisely what algorithms do all the time on stock markets, they read codes and give an economic value to the language they processed without understanding in it. An example of it is what happened on 23rd April 2013 at the American stock market. In that case algorithms, trading on tweets (yes, it is a standard procedure), reacted to a fake news tweeted by the Associated

⁶⁴ Here they are mentioned as the most prominent example of libertarian policies in economy (privatization, deregulation etc.) which appeared in the 1980s, right after contemporary finance came into being. For an introduction on the group please refer to https://en.wikipedia.org/wiki/Chicago_Boys.

⁶⁵ Berardi, F. p. 17.

⁶⁶ Berardi, F. p. 18.

Press's profile that reported on Twitter the explosion of two bombs at the White House and consequential injury of Barack Obama.⁶⁷ Algorithms between 1:08 and 1:10 pm made the value of the Dow Jones Industrial Average dropping by 145 points because of basing their actions on that false news, which was actually the result of a hacking.⁶⁸ Algos⁶⁹ gave a 'wrong' value to that piece of language, a fact that caused huge financial losses. This aspect of finance has been reflected upon by Herregraven in the piece *Subsecond Flocks*⁷⁰ (Fig. 29) that consists, in the artist's words, of "an engraved aluminum plate, a panic stack, black swan feathers and tubes testify of a moment of affective contagion between humans and non-human actors (trading algorithms) via language that invoked "a now" instead of responding to it"⁷¹. The affective and relational (human) language is not part of finance which needs codes to automatize reality in order to work (linguistic automation).

A second more relational aspect of financial language is the one used by financiers to define different processes or entities (like algos) involved in the financial game. It is not an abstract automated language but a human linguistic response to financial complexity. As Herregraven clearly visualizes in her artwork *A Time Frame of One Second is a Lifetime of Trading #2*⁷² (Fig. 30), fascinating and aggressive names are given by humans to algos. The piece is composed of two light boxes, one displaying algos' names and the other one visualizing financial patterns. The former depiction is of our interest now. Algos are named by the investment banks which create (and own) them with names that would attract a possible investor in order to convince him/her to allow that specific algo for trading with his/her money. For this marketing reason the names are chosen according to a certain standard, that is competition. Sniper, Night Vision, Ambush, Pounce, Recoil Instinct are just few examples of this marketing trend. What is interesting for me is the predatory and instinctual aggressiveness implied in the names, when it is not clear war slang. Probably it relates to the phallogocentric male driven aspect of

⁶⁷ <http://blogs.wsj.com/moneybeat/2013/04/23/hack-crash-fake-tweet-shows-pitfalls-of-algo-driven-world/> (14/06/16)

⁶⁸ Ibid.

⁶⁹ Algorithms

⁷⁰ <http://femkeherregraven.net/subsecond-flocks/> (14/06/16)

⁷¹ Artist's words (email by the artist received on 06/07/16).

⁷² <http://femkeherregraven.net/atimeframeofonesecondisalifetimeoftrading2/> (14/06/16)

finance but it is not only that. As Franco Berardi writes: “There can be no financial economy without violence, because violence has now become the one single method of decision in the absence of the standard”⁷³. The standard mentioned here is the one to which the dollar relates to after the decoupling from gold. Violence, aggressiveness, predation seem to be the human linguistic attempt to map the complex processes ongoing in financial markets.

Berardi explains: “The disproportion between the arrival rate of new information and the limited time available for conscious processing generates hypercomplexity”.⁷⁴ A second fundamental aspect of financial abstraction is time and its value on the markets. As has been pinpointed in the beginning of this chapter, time is money to the extent that laying new cables to cut distances is considered economically advantageous (see the case of the Arctic). What is the role of time in the market? Time in finance is acceleration. In the classic age of capitalism time was composed of the rhythm at which machines were working, thus setting the speed of human workers: at that moment acceleration was already taking place. At the present state, finance needs a different type of acceleration. Language is one of the cores of the present system of abstraction, language is money and therefore the speed of linguistic enunciation changed.⁷⁵ The production of signs in this case increased to the extent that a sign refers just to itself and not anymore to a meaning, the time of this process of enunciating and signifying all at once is immediate. Going back to the hack event of the Associated Press’s tweet, it is possible to notice the short time frame (2 minutes) in which the market crashed. The infosphere has accelerated to the extent that humans cannot catch up with time’s speed anymore. In this regard the visualization of algos helps to understand how time perception changed. As Francois Quesnay, French physiocrat, theorized it a *tableau économique* (the growth diagram, for instance) has many visual advantages: above all, the zigzag cuts short on detail, brings to the eye a consistent representation of trends that would be impossible to formalize with precision and

⁷³ Berardi, F. p. 88.

⁷⁴ Ibid. p. 10.

⁷⁵ Ibid. pp. 96-97.

clarity by mean of discourse.⁷⁶ I believe that everyone can visualize the interfaces of finance on operators' screens at the stock market. Fascinating is the relation of humans (and their slow time) with the algos' speed. In *A timeframe of one second is a lifetime of trading #2*, Herregraven brings to our attention some visualizations of financial moments (second light box of two). In this piece she visualizes some recurring events on financial markets to which operators have assigned names such as Ask Mountain, the Knife, Full Moon Rising and so forth. Here again human language tries to make sense out algos' operations to recover the gap between human time and the speed of finance. The infinitely higher speed of trading is mediated by a visual interface that never represents the current moment but what happened right before. Nonetheless operators try to 'humanize' events (re)occurring on the market by recognizing patterns and naming them.

The discrepancy between human and financial time is also brought to the beholder's attention by another work by Herregraven: *Rogue Waves*⁷⁷ (Fig. 31 and 32). The piece consists of six waterjet carved aluminium sticks, each visualizing a different event in which algorithms illegally manipulated the financial markets. In this case the materiality and stillness of aluminium gives to the visitor an ambiguous feeling: events are crystallized in front of us in the physical flesh of metal for our understanding, yet we are aware that each stick visualizes just few subseconds of trading. The easy graspability of the sculpture gives an uneasy proof of the obsolescence of human tools to relate to such fast events: financial hypercomplexity is uncanny.

3.3 Capitalism as Aesthetic Issue

In order to explore further the present state, that is financial capitalism, I need to go back to the concept of hyperobjects, as it has been formulated by Timothy Morton. Finance (or financial capitalism) is such a massively distributed entity that it touches upon every aspect of human activity and it is epistemologically

⁷⁶ Letter to Mirabeau, originally quoted in David McNally, *Political Economy and the Rise of Capitalism: A Reinterpretation*, University of California Press, 1988, p. 110, in Toscano A., Kinkle J., *Cartographies of the Absolute*, Alresford: Zero Books, 2015, p. 34.

⁷⁷ <http://femkeherregraven.net/roguewaves/> (14/06/16)

impossible to escape. It is globally distributed and thus non-localised. It is everywhere at anytime; we, as humans, are affected by it but we can, eventually, influence it back. Its hypercomplexity makes it impossible to grasp it in its entirety. Keeping this definition in mind it is possible to approach an aesthetic understanding of the matter.

In this last section I will refer regularly to the volume *Cartographies of the Absolute* (2015), written by Alberto Toscano and Jeff Kinkle, in which a possible aesthetic of capitalism is drawn and counter tactics are analysed. In particular the concept of cognitive mapping is going to be explained according to their formulation.

Capitalism, in this case financial capitalism, has been criticised, supported, hated and studied by many. As every power structure has been the object of very ideological understandings of it, among those, the marxist critique is surely the most famous by far, but also neoliberal capitalist policymaking has been at the centre of debates in the last decades. More recently the European austerity policies after the 2007-2008 financial crisis, and its detractors, got huge attention from the media and a wide public all together. Financial capitalism has been widely investigated in academia too, especially from a linguistic and semiotic perspective. As Patricia Reed, Canadian artist and researcher, remarked in her essay 'Logic and Fiction: Notes on Finance and the Power of Recursivity', the matter has been analysed almost exclusively from a linguistic (and logic) perspective.⁷⁸ In this case capitalism is regarded as so-called 'cognitive capitalism', as Franco Berardi analyses it in *The Uprising*. Precisely the Italian philosopher can be presented as an example of this linguistic understanding of financial capitalism.

An aesthetic approach to finance started trending after the 2007-2008 crisis and it is, in my opinion, an incredibly fascinating perspective that might bring to better, or at least broader, understanding of what the dominant capitalist narrative is. Toscano and Kinkle clearly expressed the reason why capitalism is primarily an aesthetic issue in the following words: "[...] capitalism as a totality is devoid of an easily grasped command-and control-centre. That is precisely why it poses an

⁷⁸ Reed, P. *Logic and Fiction: Notes on Finance and the Power of Recursivity*, p. 2 in *Forthcoming in the Psychopathologies of Cognitive Capitalism II*, edited by Warren Neidich, Archive Books, 2014.

aesthetic problem, in the sense of demanding ways of representing the complex and dynamic relations intervening between domains of production, consumption and distribution, and their strategic political mediations, ways of making the invisible visible”.⁷⁹ Financial capitalism is too vast and complex in its processes to be visualised. The challenge is then to understand how a possible representation looks like in order to have a grip on it.

I would like to define in what way capitalism and its representation are intended and understood in this section. Contemporary capitalism is intended here according to Frederic Jameson’s treble classification, in particular in its reformulation by Toscano and Kinkle. Jameson divided capitalism in three main phases: classical or market capitalism, monopoly capitalism (imperialism) and postmodern capitalism. During the classical age of capitalism, representation did not constitute a problem. In fact in that period the life of an individual was determined by the concepts of city and nation to which realist and naturalist narratives responded accordingly. Representation (understood by Toscano and Kinkle as the relationship between self and collective, local and global) was unsettled by the rise of imperialism. In this case, the life of the individual is overcome in its spatial dimension by a system, the colonial one, that goes far beyond the segregated space of everyday life to reach the opposite side of the world.⁸⁰ Synthesising is not a viable option for the individual who is confronted with the “inability to grasp the way the system functions as whole”⁸¹. If it is the case for a citizen of a British colony during the British Empire era, it is even more for us living in times of late capitalism, in which: “[...] a kind of political and economic invisibility undergirds a representational order which is in its turn both registered and transfigured at the aesthetic level. Conversely, we could argue, to propose an aesthetic of cognitive mapping under conditions of late capitalism could be taken as an attempt to force into being a certain kind of political visibility and thus to counter the objective, material effects of a dominant regime of representation.”⁸² This brief historical perspective on representation is meant to help the understanding of

⁷⁹ Toscano, A. Kinkle, J. p. 24.

⁸⁰ Toscano, A. Kinkle, J. p. 8.

⁸¹ Ibid. p. 9.

⁸² Ibid. p. 10.

contemporary capitalism. The main problems of its representation, its ungraspable vastness and abstraction, are intertwined. Let me start by analysing the spatial component.

In the second chapter of my thesis (*Informing Power*), the spatial and architectural narrative of capitalism has been shortly highlighted through the network's configuration. In particular I referred to the Map as the clearest data visualisation operated by Herregraven. As Toscano and Kinkle put it, "the mapping of capitalism is a precondition for identifying any levers, nerve-centres or weak links in the political anatomy of contemporary domination".⁸³ Cognitive mapping can be extremely helpful in this regard. From a socio-historical perspective, cognitive mapping can be defined as the modalities through which different historical epochs represent their worlds, that are their cultural forms and modes of expression.⁸⁴ From an individual perspective, it can be described as the creation of different maps of reality that respond to a personal necessity to understand the world. In other words, everybody has a different mental map of their hometown in which more or less prominence is given to a square or street, for instance. Cognitive maps may vary according to gender, race, religion, ideology, and so forth. According to Toscano, Kinkle and many others, a lack of knowledge and a poverty of experience are among the privileges of domination.⁸⁵ Therefore cartography, as a tool of contemporary critical art, is an adequate, and at times oppositional, response to the global capitalist narrative.

At this point the reference to the Map in *The All Infrared Line* is mandatory and obvious at the same time. In her map (Fig. 4 and 5), Herregraven draws a tentative planisphere of financial infrastructure that, as has been already mentioned, changes through time under the agency of the cables' network. It is possible to regard this map as a cognitive map. Why? The Videos (Fig. 23 and 24) and Landscapes (Fig. 10-22) complement the pure mapping activity, highlighting and shadowing different landing points according to what Herregraven judges remarkable or not. It is for this reason a cognitive map, divided in an objective map

⁸³ Toscano, A. Kinkle, J. p. 8.

⁸⁴ Ibidem.

⁸⁵ Ibid. p. 17.

of the landing spots, on which a personal cognitive layer of prominence within cables is applied, and in an individual map of videos and photos, that is precisely the added layer of meaning.

The Panama Papers' project works in an analogous way. The investigative journalistic project aims to expose key influential figures involved in systematic financial crimes which support, via money laundering, wars, murders, human trafficking, drug dealing and so forth.⁸⁶ In this ambitious operation, a counter narrative is proposed which sheds a different light on many public figures. Several PMs, ministers and politicians had to resign as an effect of the virtual walk of shame set up by the Panama Papers' journalists. The project in itself has a strong geographical connotation, both in the way it reveals a dark network of financial affairs and relocates Panama at the center of this hidden system. Even though they do not graphically map the phenomenon, it is clear how a certain cognitive cartography is created anyway by connecting different people and countries in the same narrative.

By juxtaposing these two projects, I want to highlight the limits of cognitive mapping *per se*. In fact, on the one hand, the Panama Papers Project is limited in its effectiveness by proposing a counter-narrative that exposes but does not hack the dominant narrative. Its critique is already included in the dominant narrative, precisely because it does not break the logic at the basis of it but exploits it for its own purposes: it is just diagnosis. On the other hand, in *The All Infrared Line* this diagnostic device is included but does not constitute the ultimate instrument to create an alternative narrative because there is still another important aspect to investigate. It is fundamental to address the problem of abstraction before explaining how and why *The All Infrared Line* constitutes an effective alternative narrative.

As Roberto Schwarz, Brazilian literary critic and professor at Sorbonne Nouvelle in Paris put it, "Brecht, who did not want to lag behind his epoch, said it was futile for a realist to stare at workers trudging through the gates of Krupp in the morning. Once reality has migrated into abstract economic functions, it can no

⁸⁶ <https://panamapapers.icij.org/> (05/05/16)

longer be read in human faces”.⁸⁷ The struggle with abstraction and its complexity is remarked, in other words, also by Patricia Reed according to who we found ourselves in “a situation where even negative value (debt) generates profits in excess of our wildest dreams - to a layperson such as myself, this is an achievement of alchemist-like proportions”.⁸⁸ It is difficult to any person, who is not trained to work with algorithms and such abstractions of the financial market, to approach the matter freely. Abstraction can be considered a key feature of finance that has its roots in the decoupling of the dollar from gold in 1972. What is fundamental about it is the way it is perceived, treated and visualised. First of all it has to be said that finance and abstraction are not synonyms, even though most of us think of finance as a purely virtual entity. As Brian Holmes, professor of Philosophy at the European Graduate School in Saas-Fee, points out “financial capitalism is not a phantasmagoria; it is a highly productive phase of capitalism”.⁸⁹ In other words, it is impossible to split financial capitalism from the labour of workers in factories all over the world and all the logistic system surrounding it.⁹⁰ It is important to always bear in mind the partiality of an exclusively abstract understanding of capitalism.

Space and abstraction, vastness and hypercomplexity are such uncanny aspects of finance that have been elaborated and narrated by popular media in two main scenarios. The first one, the planetary scale of finance, leads to an apocalyptic narrative in which the climate disaster of capitalist exploitation of the planet bring the mankind to an end before the end of capital. The second one, the abstract hypercomplexity of finance, leads to a science-fiction dystopian world of algorithmic governance which overcomes physical and geographical boundaries thanks to technological mastery. As Reed commented on them: “these scenarios seize upon the diagnostic actuality of our situation and thrust it towards its existing logical telos, never, however, moving beyond diagnostic or ‘known’ thought. These fictions may appear to oppose or at least set off a warning siren as to our actual or ‘logical’ future, yet like the properties of hyperobjects themselves, they inhere and reinforce

⁸⁷<https://newleftreview.org/II/36/roberto-schwarz-a-brazilian-breakthrough> (14/06/16)

⁸⁸ Reed, P. p. 1.

⁸⁹ <https://www.youtube.com/watch?v=2BL5zuXKdC0> (0:42 min) (19/06/16)

⁹⁰ For further readings about the logistic system see *Volume#47: The System*.

existing modes of operation without alternative (they merely dramatize and perpetuate the same logic).⁹¹

Trapped in this recursive loop of imagination, it seems that even fiction fails to address our need to grasp visually what financial capitalism is and consequently to counter its power. Reed proposes speculation⁹² as the best method for imagining a new future, for anticipating reality. I believe that *The All Infrared Line* responds effectively to this necessity, particularly considering the Blocks. Precisely *Malleable Regress* (the Blocks in *The All Infrared Line*), containing soil capsules and linked coordinates of possible landing points, are speculations on a reality that is not yet into being (Fig. 26). Herregraven goes back to the very material on which the infrastructure was built in the first place by hacking it by inserting these infectious capsules. New cables could land at those points or not, the future is uncertain, but it is put already into existence by the artist's speculation that anticipates financial capitalism in imagining the future. Instead of countering the dominant narrative by opposing to it, she goes back to its roots, to the graspable flesh of finance and sneakily inserts a variation that could bring, if magnified, a non-logical, non-teleological future. Herregraven neither created an ultimate utopia nor stopped to cognitive mapping, but created an artwork that lays in between the two, where ambiguity creates a space for speculation and an alternative narrative finally unfolds.

Reed says: "It is [...] time to seize the power of their fictional infrastructure that fails to deliver, and repurpose its energy towards a logic of serving the many. Such repurposing requires not only the concrete construction of models able to map the complexity of a global situation, but above all, the force of anticipation – an abstract fiction – that compels our collective, ethical inclination in the fabrication of novel associations with each other and with the surroundings."⁹³ That is precisely what Femke Herregraven achieves in her artwork: *The All Infrared Line* is both a model for mapping complexity and for speculating on it. Its parts all together compose an elaborated mapping device that reveals many aspects of finance: its

⁹¹ Reed, P. p. 4.

⁹² As a theoretical act and not intended here as financial speculation.

⁹³ Reed, P. p. 12.

virtual processes and physical architecture both on the micro and macro scale,
documenting its past and speculating on its future.

Conclusion

After the 2008 meltdown of global economy, the limits of neoliberalism has been exposed together with the broken logic supporting it. Instead of triggering a process of economical and ideological re-evaluation and re-thinking, the reaction pointed to a structural strengthening of the same logic. This fact is surprising (to say the least) as neoliberalism empirically failed to deliver the core promise of an 'always better' future. Economical disasters (such as mass unemployment, unpayable debt, resources consumption etc.) are accompanied by consequential psychological crisis (depression, panic and anxiety), yet we are stuck in a recursive system, neoliberalism 2.0, from which no escape seems possible as political imagination withdrew from the creation of a new logic.⁹⁴

In this situation an artistic involvement in re-thinking the future becomes even more urgent. In a moment when imagining utopias feels too ambitious, speculation provides the right tool to create alternatives. *The All Infrared Line* is, in my opinion, the most fascinating art project that, at the current moment, points to the direction of the formulation of a new logic. Herregraven presents to the beholder a complex narrative, that is made intelligible in its parts by providing an anatomy of finance: financial capitalism is made tangible by focusing on its infrastructure, its physical presence. Once deducted from the abstract realm in which is usually imagined to be, finance is confined to the network on which it survives and is dissected; from this position an analysis is finally possible. The spectator follows Herregraven in the unfolding of her narrative, from the history of the infrastructure up to the present configuration, reaching as final (or initial?) step the clash between past and future in *Malleable Regress*.

The colonial past of the financial infrastructure, stemming from the telegraph system, grounds the development of contemporary capitalism in the early capitalist investments in the logistic system, supported by colonial powers among which the United Kingdom had a prominent role. The analysis of this infrastructure helps in

⁹⁴ Reed, P. p. 11.

comprehending the political and social importance of this structure, paired by the different narratives hidden (consciously or not) in its configuration. For this reason addressing the design of the infrastructure constitutes a critical act towards the geography that is pushed forward in the dominant narrative. The planetary scale gesture of mapping the cables around the world, led me to investigate the complex relation between nature and financial capitalism; considering finance as hyperobject represents a shift in the perspective. The physical presence of finance, its infrastructural flesh, researched by Herregraven represents a different point of view on a topic which is mostly dealt with on the abstract level. Nonetheless the virtual aspects of the financial system have been analysed through Herregraven's artworks in order to explore the ongoing abstract processes and present a different scenario. On the one hand a specific (often apocalyptic) narrative surrounds the ecological understanding of capitalism, on the other hand it is coupled by the dystopian scenario of machinic domination of algorithms on reality. Both possibilities are encompassed in the dominant aesthetic narrative, because both follow the same capitalist teleo-logic; conversely, *The All Infrared Line* breaks the rules by daring to imagine an alternative speculative fiction. Precisely in *Malleable Regress*, speculation becomes evident as a counter-action to the dominant logic. The original gutta-percha blocks can be regarded as financial fossils of a previous capitalist era washed ashore in the north of France from where the artist collected them (archeology of finance?). The recasting process in a hitech material, such as silicone, prevents them from being carriers of a purely historical narrative; on the contrary they become referents of that history that can be charge with new meanings. The artist's planetary scale gesture of mapping is translated in the creation of speculative coordinates and soil capsules, a new imaginative signification.

The All Infrared Line has not been displayed yet in its entirety, only few parts have been: some landscape pictures and videos at various symposia, such as Global Imagination and Transmediale, and *Malleable Regress* at CCS Bard in May 2016 in occasion of the Third Nature group exhibition. There has been no hint by the artist of an imminent exhibition of the entire project, for this reason this thesis

represents an high risk investment of time and energies on the possibility of the artwork to be shown. It is a financial speculation which success or failure depends on the artist's will and many other uncontrollable factors. In writing this thesis I gambled not only on the relevance of the text itself in the current discourse around finance and art but also on the effectivity of the artwork. If the bet is wrong, the epistemological force of the artwork will jeopardize and probably dissolve, but if it is right the impact of the artwork on the discourse and on society at large will magnify as much as the public will invest attention and interest into it and maybe it will open an even larger space of critical reflection and debate.

Illustrations

(All images are courtesy of the artist)



1. Femke Herregraven, *Geographies of Avoidance*, 2011, prints, book.



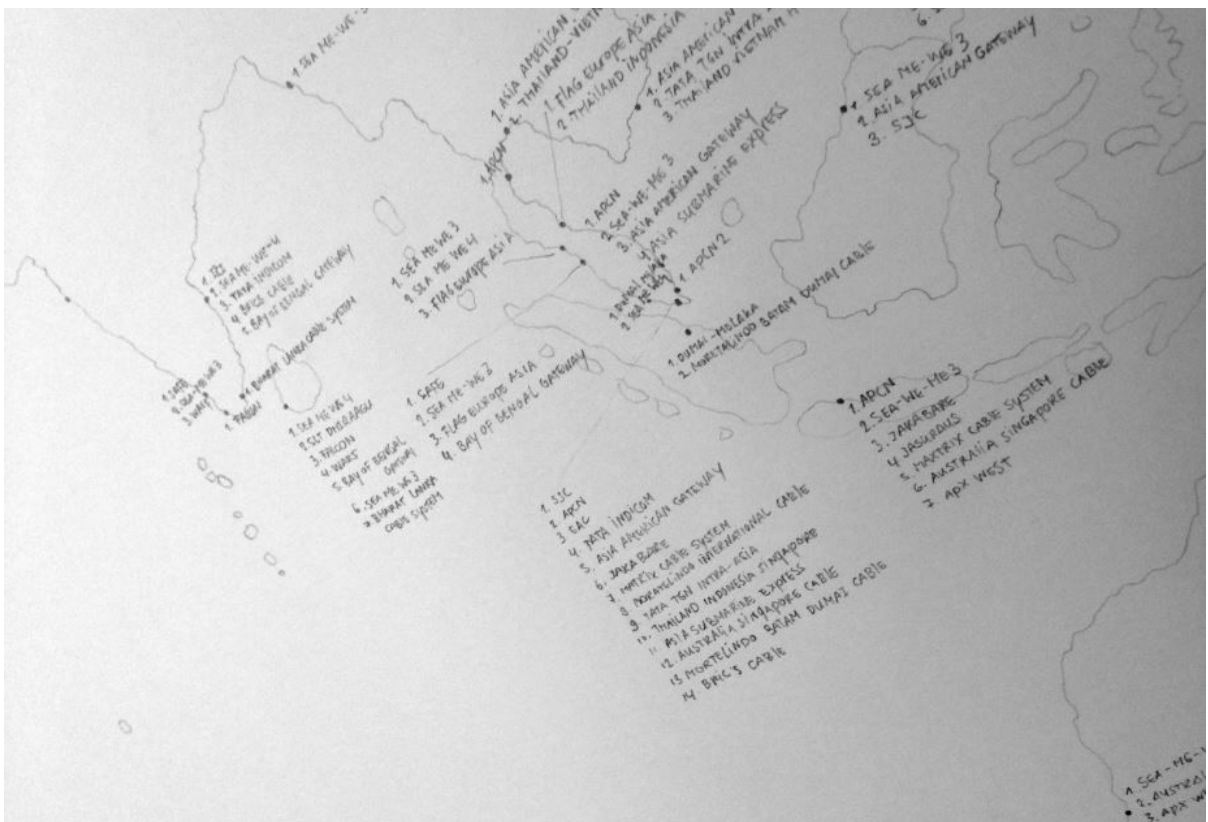
2. Femke Herregraven, *Geographies of Avoidance*, 2011, prints, book.



3. Femke Herregraven, *taxodus.net*, 2013, online game.

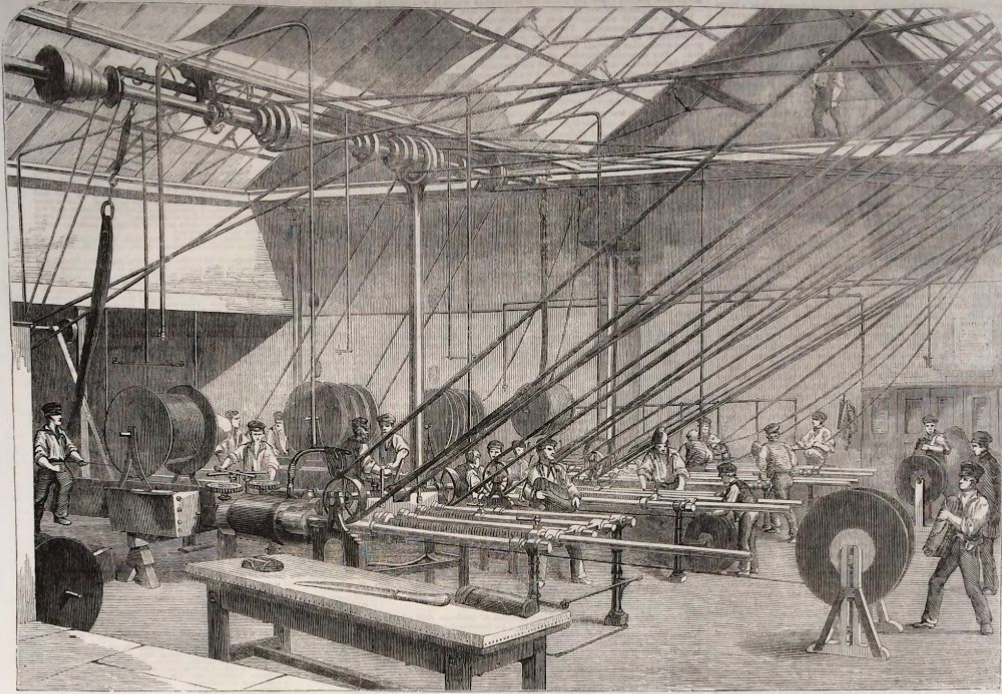


4. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, map, pencil on paper, 100 x 70 cm



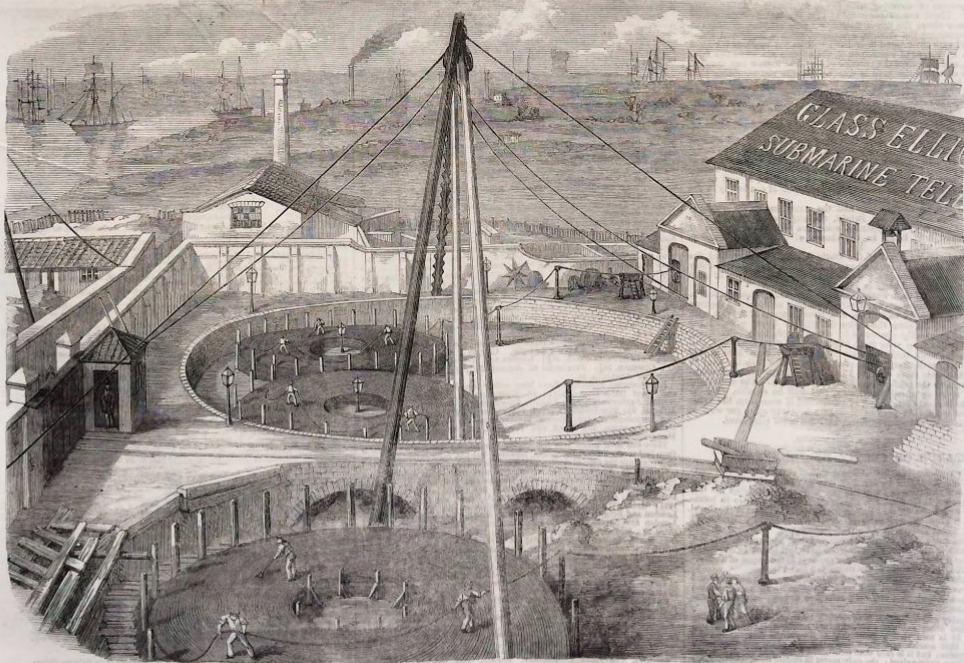
5. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, detail, pencil on paper

MANUFACTURE OF THE ATLANTIC TELEGRAPH CABLE.



MACHINES COVERING WITH GUTTA PERCHA THE ATLANTIC CABLE WIRE, AT THE GUTTA PERCHA COMPANY'S WORKS, WHARF-ROAD.

The several extensions of the Electric Telegraph present rare combinations of science and the arts, which are fraught with interest. Of the submarine cable which is to connect the Old and New Worlds the public has already heard much; but comparatively few persons are aware that it differs in structure, weight, and other conditions from most of the ropes hitherto laid, and embraces several valuable improvements suggested by success or failure with previous lines. The cable from Dover to Calais, that of the Magnetic Telegraph Company between England and Ireland, and others less generally known, being laid for the greater part of their length in comparatively shallow water, where the consideration of danger from anchors is a very grave point to be met, weigh seven or eight tons to the mile.



THE ATLANTIC CABLE, READY FOR SHIPMENT, MORGES WHARF, EAST GREENWICH.

7. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, newspaper, 28 x 40 cm

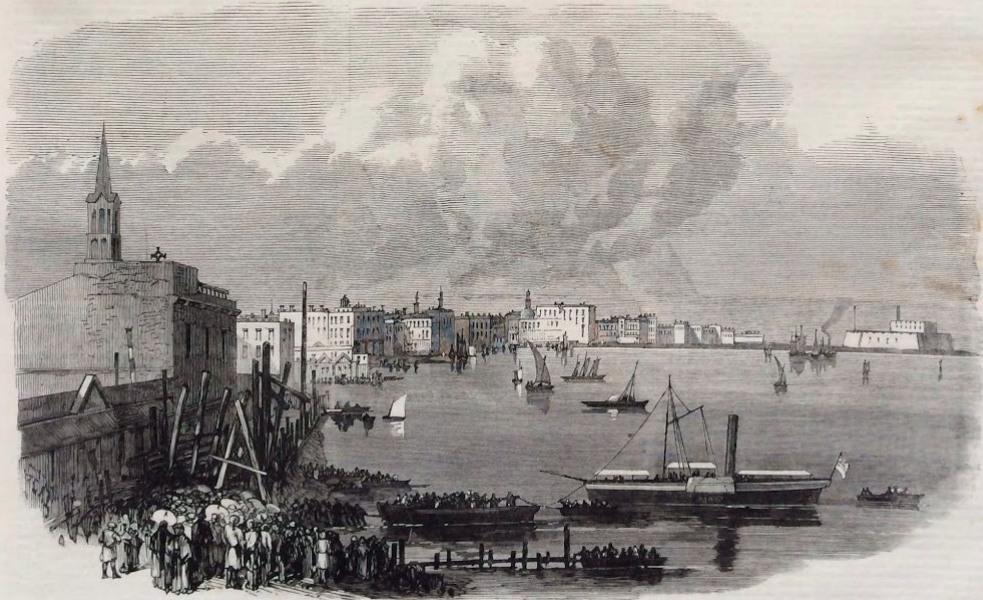


LAYING THE SUBMARINE CABLE BETWEEN MALTA AND ALEXANDRIA.

The new telegraph cable between Malta and Alexandria has been successfully laid. It has long been considered necessary to connect these two important ports by telegraphic communication, and so far back as 1858 a cable was laid between them. Owing, however, to the failures which, up to that time, had been experienced in laying deep-sea cables, it was thought advisable to lay this one in shoal water, which was done by taking it from Malta to Tripoli, and then following the coast of Africa to Alexandria. Since it was laid it has been continually breaking down, owing to

the action of the sea causing it to chafe against the hard rocky ground at the bottom, and a ship has been almost constantly employed in repairing it. The success attending the laying of the Atlantic cable immediately turned the attention of the Mediterranean Telegraph Company to providing a deep-sea cable between Malta and Alexandria, and a contract was entered into with the Telegraph Maintenance Company for a cable to be laid between the two ports suited to the requirements of the bed of the Mediterranean. The cable differs in some important particulars

from the Atlantic cable, being much smaller and heavier in proportion to its size. The copper wires which serve as the conductor, as well as the outer covering of gutta-percha, are nearly identical with that of the Atlantic, but the outer covering is essentially different, the protection to the latter being formed by strands of iron wire overlaid with Manila hemp laid round the wire which protects the gutta-percha, while the Mediterranean cable is protected only by iron wire. The steam-ships Chiltern and Scandria arrived in Malta, with



LANDING THE SHORE END OF THE CABLE AT THE NEW PORT OF ALEXANDRIA.

8. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, newspaper, 28 x 40 cm



LANDING THE SHORE END OF THE SUBMARINE CABLE NEAR DURBAN, NATAL



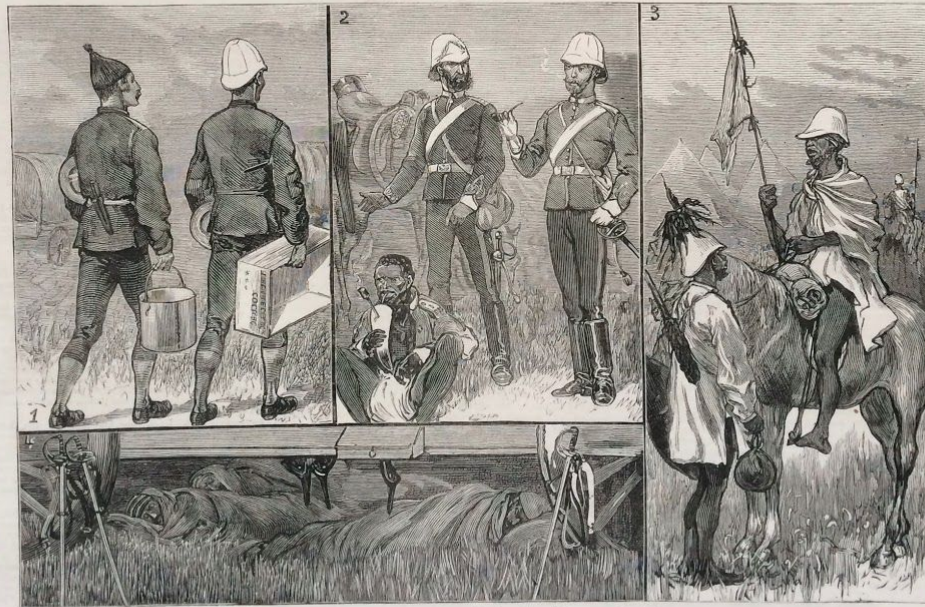
CAPTAIN DAVID B. MORIARTY, 80TH REGIMENT
Killed in Action at Intombi



LIEUTENANT REGINALD WILLIAM FRANKLIN, 24TH REGIMENT
Died of Fever at Helpmakoar



LIEUT. F. J. COKAYNE FRITH, 17TH LANCERS
Killed in Action at Emidiblangwana



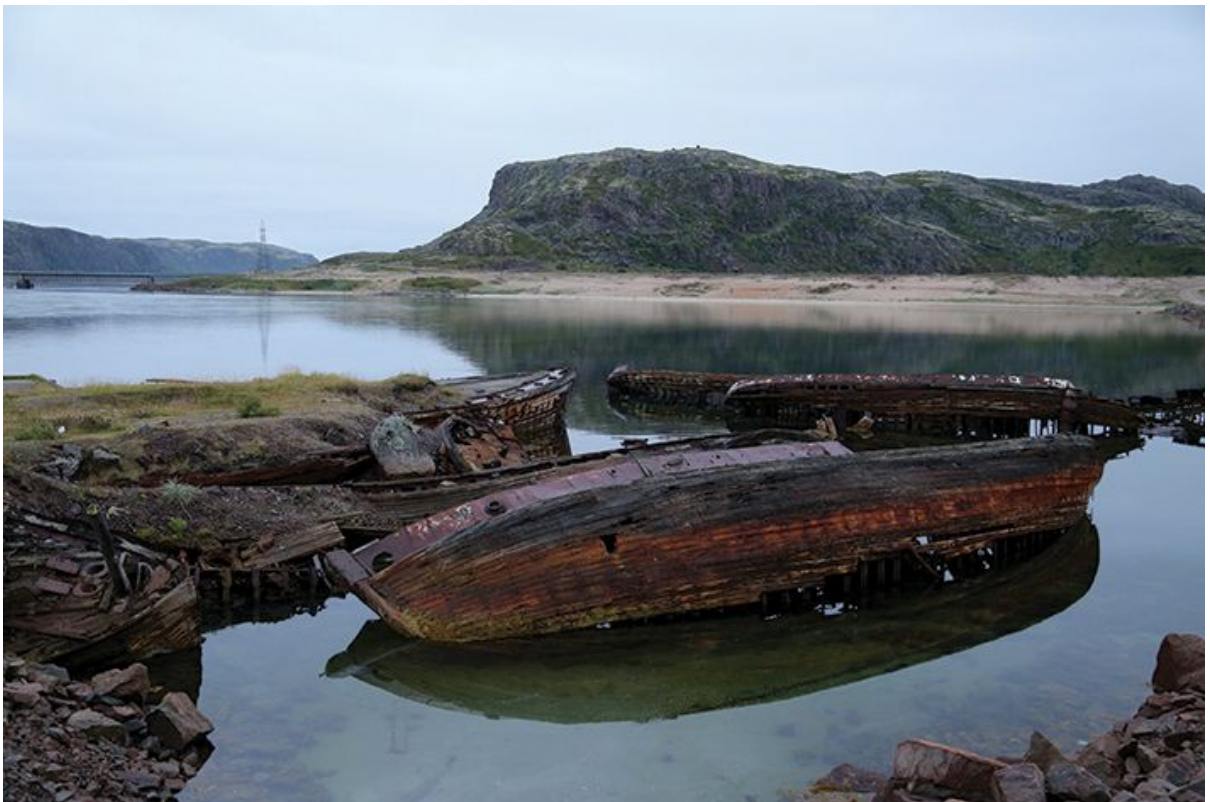
1. Officers going out to Dinner.—2. The King's Dragon Guards.—3. The 17th Lancers.—4. Sleeping Quarters.

ON THE ROAD TO ULUNDI
THE ZULU WAR

9. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, newspaper, 28 x 40 cm



10. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



11. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



12. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



13. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



14. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



15. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



16. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



17. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



18. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



19. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



20. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



21. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



22. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, photograph, 60 x 40 cm



23. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, HD video, loop, stereo sound



24. Femke Herregraven, *The All Infrared Line*, 2012-ongoing, HD video, loop, stereo sound



25. Femke Herregraven, *Malleable Regress*, 2016, polyurethane, acrylic tubes, bauxite, granite, aluminium, iceland spar, desert sand, carbon, fiber, magnets, 28,5 x 33,5 x 2,5 cm



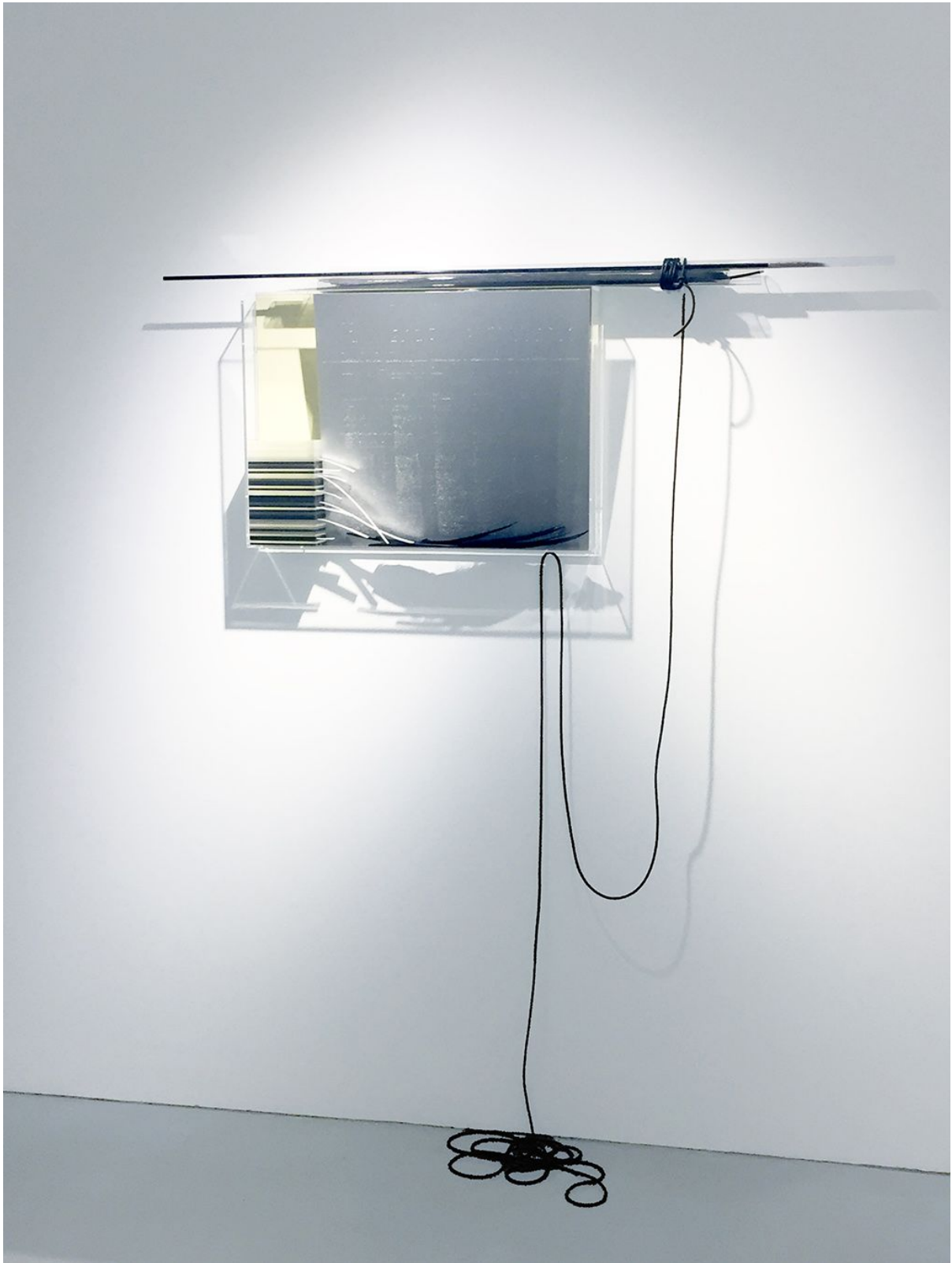
26. Femke Herregraven, *Malleable Regress*, 2016, PU rubber, 33,5 x 22,5 x 2,5 cm



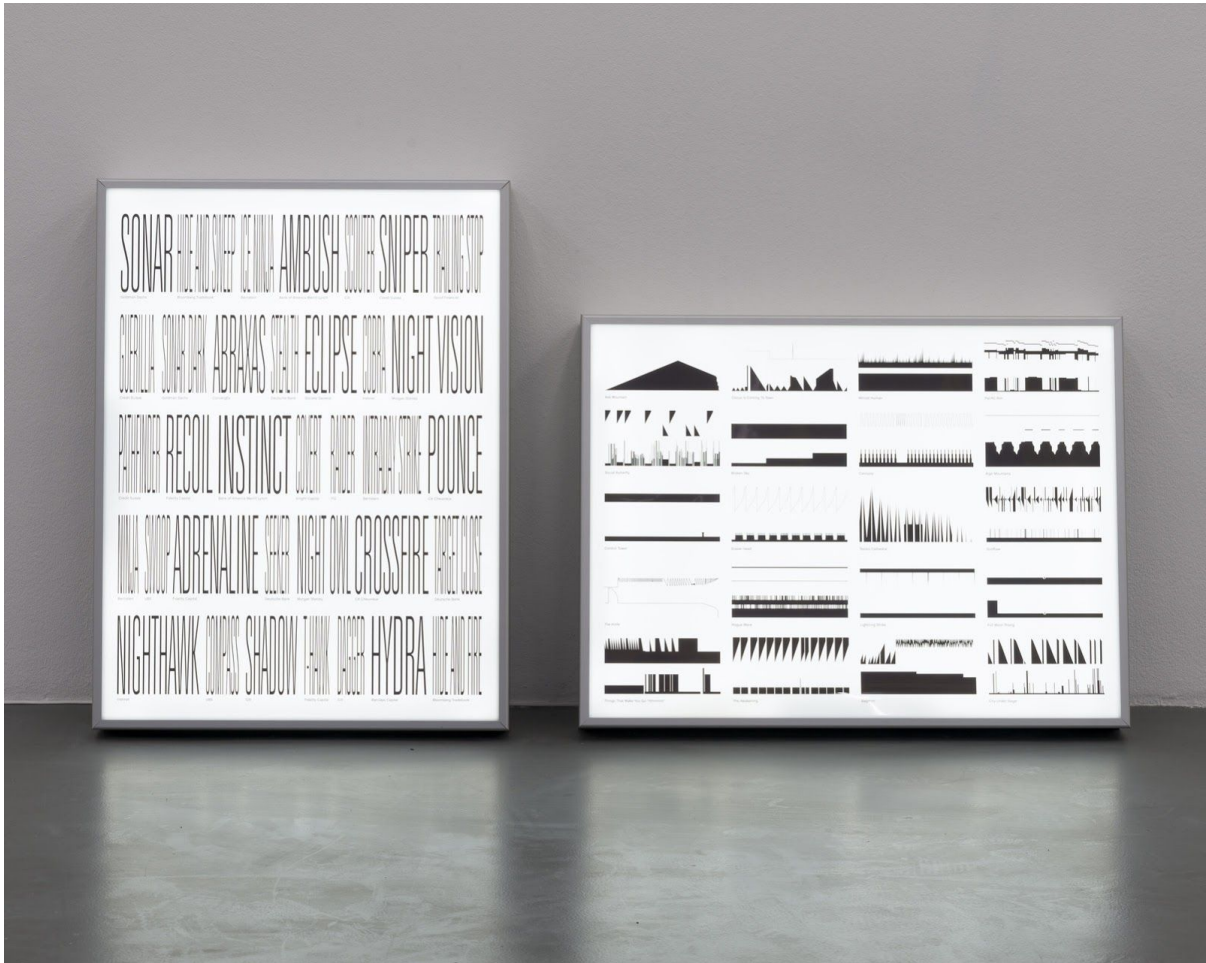
27. Femke Herregraven, *Malleable Regress*, 2016, detail, acrylic tubes, bauxite, granite, aluminium, iceland spar, desert sand, carbon, fiber, magnets.



28. Femke Herregraven, *Volatility Storms*, 2014, detail, online contribution



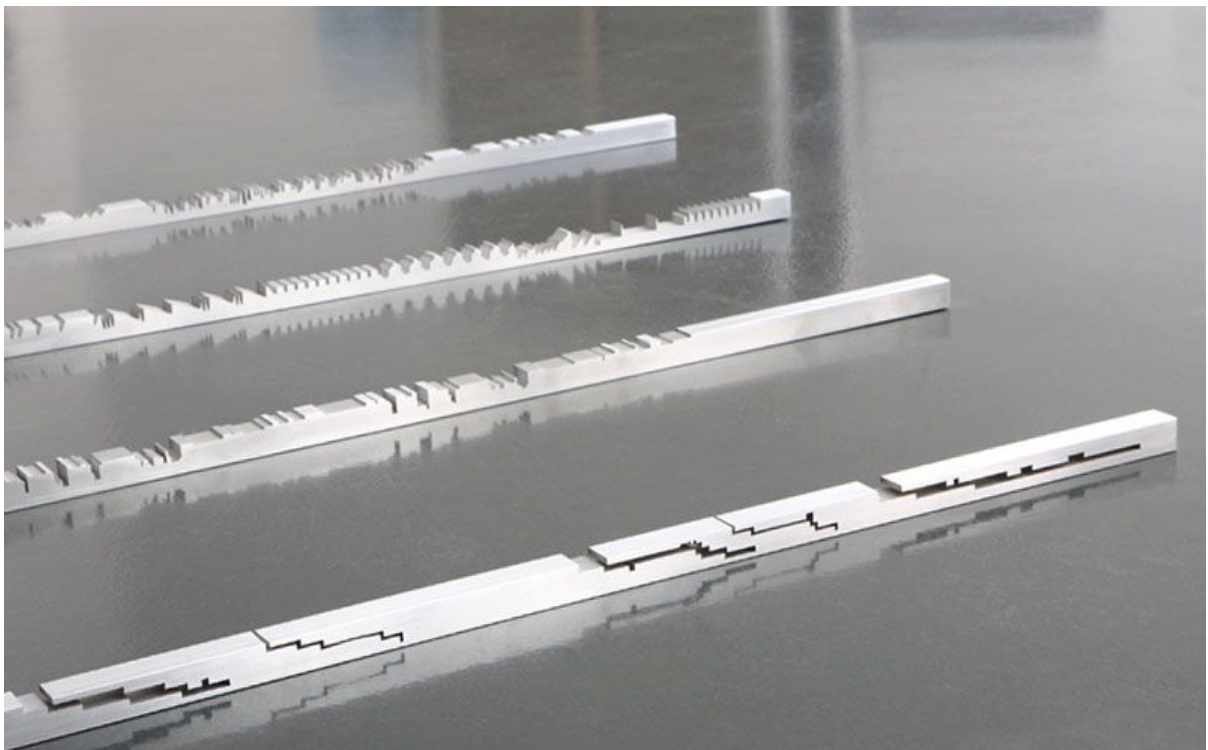
29. Femke Herregraven, *Subsecond Flocks – When you startle awake at four in the morning it's not because you're feeling happy*, 2016, acrylic frame, hand engraved aluminum, acrylic stack, acrylic tubes, feathers, desert sand, hand engraved carbon stick, rubber cord, 135 x 55 cm



30. Femke Herregraven, *A timeframe of one second is a lifetime of trading #2*, 2015, light boxes, 60 x 80 cm



31. Femke Herregraven, *Rogue Waves*, 2015, tally sticks, aluminium, waterjet cutting, 200 x 2,5 x 2,5 cm



32. Femke Herregraven, *Rogue Waves*, 2015, tally sticks, aluminium, waterjet cutting, detail, 200 x 2,5 x 2,5 cm

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<https://newleftreview.org/II/36/roberto-schwarz-a-brazilian-breakthrough> (14/06/16)

<https://www.youtube.com/watch?v=2BL5zuXKdC0> (0:42 min) (19/06/16)

<http://www.mosson.com/> (24/07/16)

Declaration

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material previously published or produced by another party in fulfilment, partial or otherwise, of any other degree or diploma at another University or institute of higher learning, except where due acknowledgement is made in the text.

Leonardo Dellanoce

21/07/2016

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