

Femke Herregraven, *A timeframe of one second is a lifetime of trading #2*, 2015. Installation view at Witte de With, 2015. Photographer Cassander Eeftinck-Schattenkerk.

Femke Herregraven and
Natasha Hoare

IN CONVERSATION

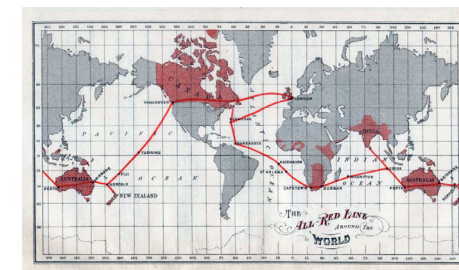
Natasha Hoare: In your work you explore how finance carves out forms of geopolitics. Why have you taken this focus?

Femke Herregraven: For a long time I have had an interest in the complexity of certain information or data and how this could be connected to a specific geographic location. During an artist-in-residency in the financial district The Zuidas in Amsterdam, these things came together. When considering why so many companies are based there, it became clear that it is not because of any local conditions other than the friendly tax climate, which makes it an important node in complex global financial structures. While the immaterial field of finance uses many similar modes to design and art, such as information and speculation, it needs physical places and materials to create infrastructures that circulate the most dominant form capital has taken: information. For me, this understanding was accelerated when traveling to places such as Mauritius, Dakar, and Curacao. They might seem to be on the margins of the global economy, but they are becoming increasingly important precisely because they are geographically far away from Western democracies. Multinationals and wealthy individuals are (on a surface level) headquartered in Western democracies but manage their financial business out of sight, on the margins.

Natasha Hoare: So you saw global finance as a meta-narrative that overlays contemporary culture...

Femke Herregraven: Yes. It might seem like

a limited way of looking at contemporary culture, but for me it opens up a conceptual space around how we deal with culture, ecologies, communities, and even the notion of self. Finance often triggers images of stock exchanges, trader screens, and charts, but that is only the surface we interact with. I was captivated by how global finance is everywhere, yet I cannot see, hear, touch, or meet it anywhere. Finance penetrates us all the time but does not manifest itself in any specific time or place. It's non-local; its dimension is not perceivable to the human eye. It is there and not there — at the same time. Finance could be a 'hyperobject', a term coined by Timothy Morton, and I'm interested in what material base this hyperobject needs in order to function. To me, processes of financialization are everywhere. Financial logic is part of how we look at the world and even how we look at ourselves. I have, for example, a student debt. The motivation behind taking on a student loan is often to invest in your own future. To consider yourself as an investment is a financial concept. Saskia Sassen has stated that finance is not just about money, but that it is a capability. Finance sells something it does not have, and in order to do so, it must invent instruments and invade other sectors. It is a creative force in that sense. She has also mentioned how finance can invade every aspect of life through a little bridge called 'debt'.



"All Red Line" network maps, 1902. A British-controlled and operated network of around 100,000 miles of submarine telegraph cables stretching around the globe was completed.

Natasha Hoare: Is there an inherent critique in your work of the financialization of the world, culture, and the self?

Femke Herregraven: Yes, I think so. For me, financialization is a dehumanizing process which can potentially turn everyone and everything into an entity from which value can be extracted. The logic of financialization is about reducing the world into properties that can be remixed, interpreted, and valued in financial terms. When everything can be turned into a derivative — a contract that derives its value from the performance of its underlying entity — this also means that everything can be owned by other parties. Random investors could own my student debt or the insurance coverage in case my house should be destroyed by a hurricane. Jonathan Nitzan and Shimshon Bichler propose that capital is a direct form of power, because it is, “neither a material entity, nor a productive process, but rather the very ability of absentee owners to control, shape, and restructure society more broadly.” Through my work, I try to grasp this process of financialization and the power structures produced by it.

Another point is that financialization exploits precariousness. Financial logic applies itself to situations where some form of uncertainty or risk can be exploited. In financial markets, for example, the biggest profits are not made from buying or selling actual things, but from the manipulation of risk and debt. That is why investors are betting on student loans, foreclosures, the spread of diseases, water, and food wheat scarcity. In my work I explore ways to understand the consequences of this logic and the interpretation of value that comes along with it. Finance has very arrogantly positioned itself as a science of value.

Natasha Hoare: In an interview with *Rhizome*, you note how the dematerialization of money in the 1980s coincided with the dematerialization of the art object. This is really interesting for us, given our efforts to examine art’s relationships to computation, raw material, energy, and war. How far do you see art

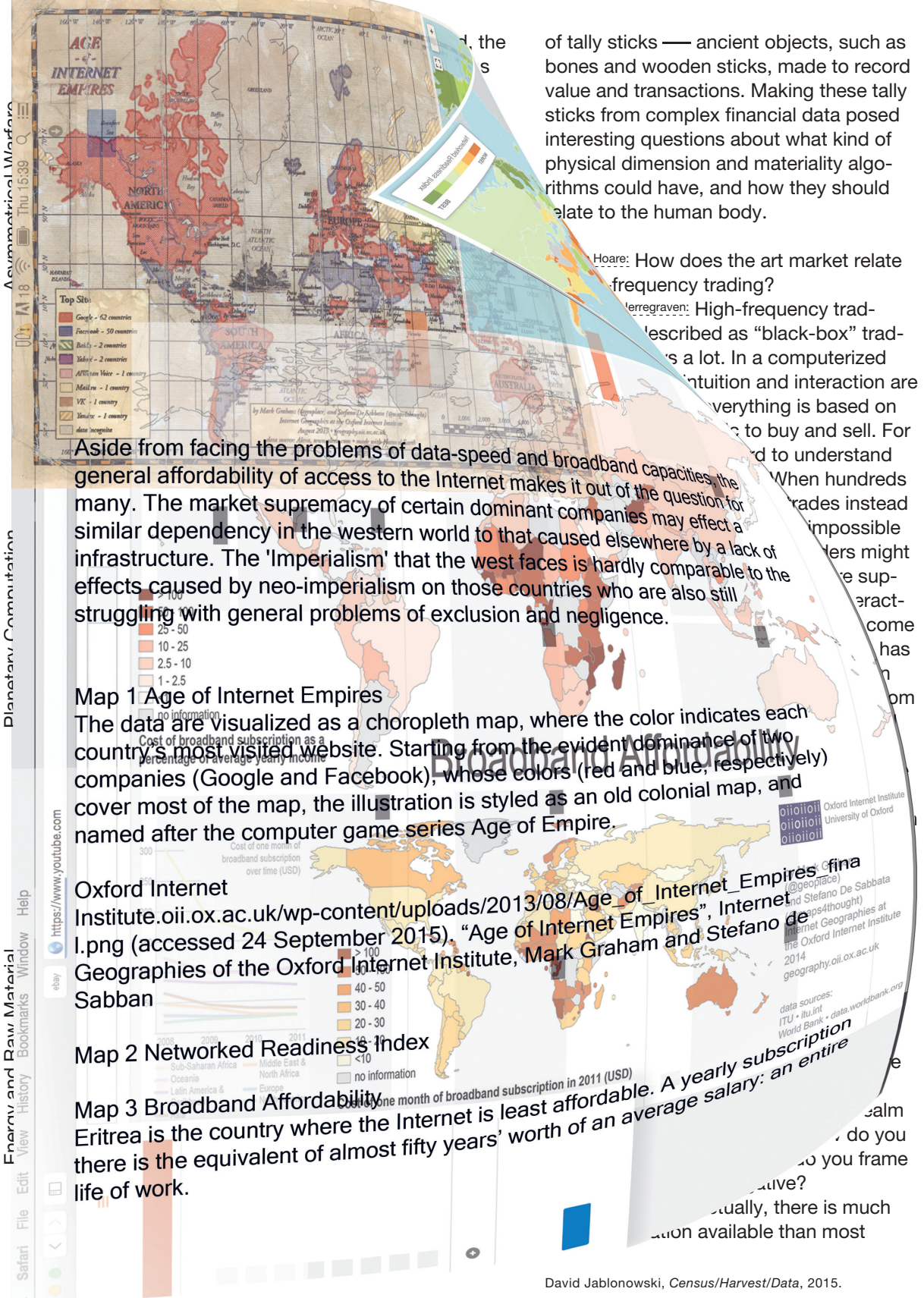
mapping onto high finance, and what implications does high-speed trading have for art?

Femke Herregraven: On a conceptual level, most contemporary capital flows can be read through the language of (conceptual) art: they are no longer based on territorialized assets, but on abstraction and the circulation of signs, ideas, information, and linguistic exchange. On a practical level, mapping flows within high finance through art is a paradox. Stock exchanges, for example, have become highly automated environments in which more than sixty percent of trading is executed by algorithms instead of humans. High-frequency trading even uses algorithms to exploit information advantages between different stock exchanges worldwide within a time-frame of milliseconds. Could you imagine



Femke Herregraven, *The All Infrared Line* (2012–ongoing), video still showing cable landing point Mauritius. Courtesy of the artist.

Mark Lombardi making ‘narrative structures’ about this? How to map these ultra-fast complex systems is, in that sense, a non-question for two reasons: First, in a complex system, the interactions between parts are more than the sum of its parts. You might be able to trace back who is operating in a market and what their strategies are, but it is impossible to predict or re-enact the results of all of the orders, algorithms, and strategies interacting all together. In reverse, to ask retrospectively what, for example, caused the ‘Flash Crash’ in 2010 is also a nonsense question, because in a complex system there is not a singular cause and chain of events that



Natasha Hoare: Is there an inherent critique in your work of the financialization of the world, culture, and the self?

Femke Herregraven: Yes, I think so. For me, financialization is a dehumanizing process which can potentially turn everyone and everything into an entity from which value can be extracted. The logic of financialization is about reducing the world into properties that can be remixed, interpreted, valued in financial terms. When even can be turned into a derivative — tract that derives its value from the performance of its underlying entity means that everything can be sold to other parties. Random income, like my student debt or the value of my house shot up in case my house survived a hurricane. Jonathan Bichler proposes a similar dependency in the western world that caused elsewhere by a lack of infrastructure. The 'imperialism' that the west faces is hardly comparable to the effects caused by neo-imperialism in those countries who are also still struggling with general problems of exclusion and negligence.

Map 1 Age of Internet Empires

The data are visualized as a choropleth map, where the color indicates each country's level of internet usage. Starting from the evident dominance of the companies (Google and Facebook), whose colors (red and blue, respectively) cover most of the map, the illustration is styled as an old colonial map, and named after the computer game series Age of Empires.

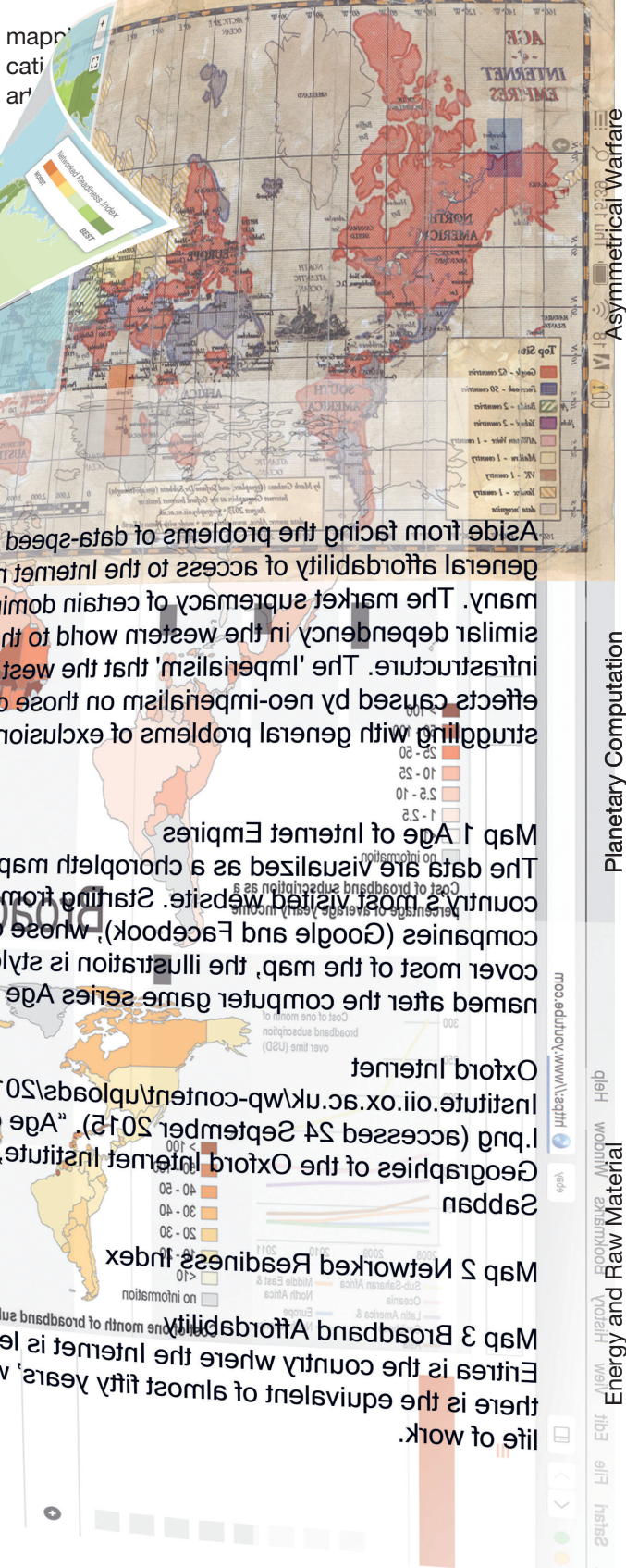
Map 2 Networked Readiness Index

Geographies of the Oxford Internet Institute, Mark Graham and Stefano I. (p. 24) (accessed 24 September 2015). "Age of Internet Empires", Internet Institute. http://www.ox.ac.uk/wp-content/uploads/2013/08/Age_of_Internet_Empires.pdf

Map 3 Broadband Affordability

Entire is the country where the internet is least affordable. A yearly subscription of an average salary, worth of an average salary, is the entire life of work.

note how the 1980s, the entire of the art world, given our relationships to computers, energy, and war. How far we



Planetary Computation

Energy and Raw Material

could be traced or re-enacted. Second, the paradox of mapping financial interactions lies in the discrepancy between human time and machine time. Financial interactions embed many meaningful connections that are imprinted on such a timescale of milliseconds that they are only perceivable and meaningful to computing processes, not to the human eye. Instead of focusing on the actual interactions, I reflect on the conditions that are necessary for financial interactions to take place — market players, trading strategies, physical communication infrastructure — and the aesthetic symptoms it produces — visual language,



Stamp in honor of the cable laying between Bermuda and Tortola (British Virgin Islands). The co-axial cable was laid for, and operated by, Cable & Wireless, and opened for service in June 1966 having a capacity of 80 telephone circuits.

semiotics, conceptual metaphors, urban planning, landscape architecture. It's about the transformative and imaginary qualities of finance.

It's hard to say what implications high-frequency trading has for art, but for me it introduces a really interesting discrepancy between human time and machine time. I have been experimenting with how to melt a super-ephemeral moment of 1/1,000th of a second into a work that exists and takes up space until you consciously destroy it. *Rogue Waves* (2015), for example, consists of a series of engraved aluminum sticks that each carry a cut-out of trading patterns connected to a specific event in which algorithms illegally manipulated financial markets through quote stuffing, spoofing gold prices, and stock manipulation. It follows the tradition

of tally sticks — ancient objects, such as bones and wooden sticks, made to record value and transactions. Making these tally sticks from complex financial data posed interesting questions about what kind of physical dimension and materiality algorithms could have, and how they should relate to the human body.

Natasha Hoare: How does the art market relate to high-frequency trading?

Femke Herregraven: High-frequency trading is also described as “black-box” trading, which says a lot. In a computerized system, human intuition and interaction are non-existent, and everything is based on pre-programmed logic to buy and sell. For us humans, it is very hard to understand what is actually going on. When hundreds of algorithms are executing trades instead of a human being, it becomes impossible to predict what will happen. Traders might know what their own algorithms are supposed to do, but when they start interacting with other algorithms, markets become unpredictable. High-frequency trading has turned markets into complex systems in which autonomous behavior emerges from the interactions between algorithms, and cannot be predicted from the properties of each actor individually. Dynamics in the art market also emerge from the interactions between actors rather than from each actor individually, but the human aspect in that market is crucial. Although some artists have been working on this theme, it is unlikely that the art market will become automated according to some pre-programmed logic, since the role of individual artists, collectors, and galleries is so important.

Natasha Hoare: A lot of the information you are accessing (on offshore tax havens, for example) doesn't exist in the public realm except behind high paywalls. How do you access this information, and do you frame your practice as investigative?

Femke Herregraven: Actually, there is much more information available than most

people think, but it is not neatly organized in one central place. Most of the time it is difficult to find, in non-logical places or scattered throughout different sources. With *Geographies of Avoidance* (2011), I mapped fake mailbox companies based on information from the Chamber of Commerce registers. There is indeed also information locked behind paywalls, but there are ways around those, obviously. For *Taxodus* (2013), I used fiscal data from countries worldwide that is mostly used by accountants and tax lawyers. A simple strategy around those kinds of paywalls is to apply for a trial subscription that is valid for a few days. This way you can scrape the database before your access is withdrawn. Altogether, this means spending a lot of time collecting information and finding ways to combine information from different sources. In that sense, it could be framed as investigative. Self-made databases, spreadsheets, and indexes are somehow always part of my works. Sometimes I turn them into coherent interfaces for an audience; sometimes I only use them myself as a research tool.

Natasha Hoare: How does your graphic design background meet with your work now as an artist?

Femke Herregren: As a graphic designer, the material I learned to work with was information and data. So I work with different ways of communicating, organizing, translating, editing, publishing, distributing, and sort of sculpting this material. An underlying question in this process is how and from whom you receive information in the first place. Do you receive it from someone? Do you need to go out and find, get, steal, or generate it yourself? Even the smallest snippets of this material are potentially surrounded by complex politics. My work often starts with collecting complex information that is difficult to obtain or visiting places that have a hidden function or are hard to access. This process is mostly about exploring the physical or digital territory surrounding information and mapping

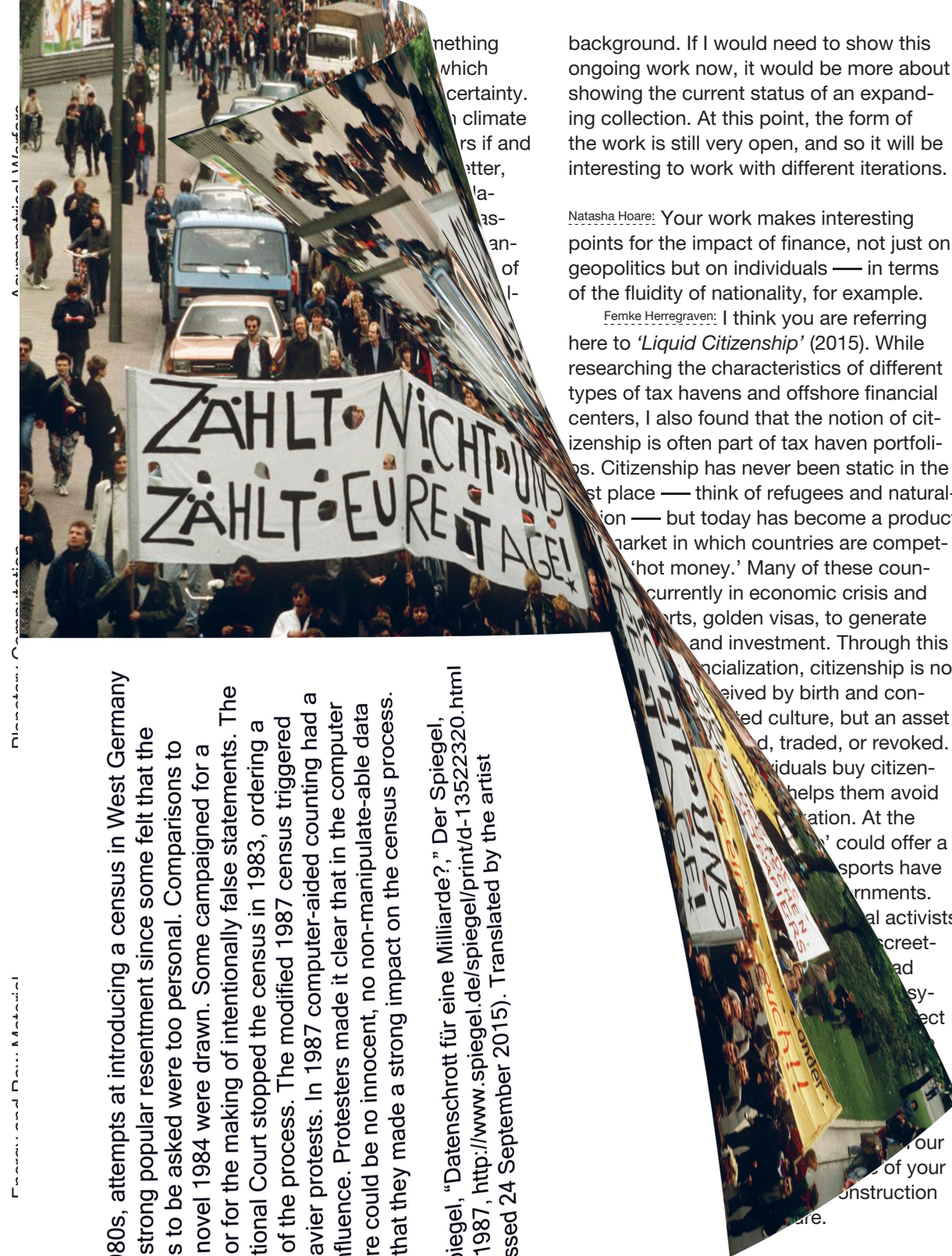
it onto politics and borders, and then finding strategies to trespass them. Certain parts of my mapping process are still very much about graphic design and cartography, I would say. At the same time, this is also very limiting, because there is a question of what the reality is behind points A, B, and C on a map? And so I am researching more and more the material reality behind these graphic representations, data, and interfaces. This has led me to start using video installation and sculpture as well, which is quite liberating.

Natasha Hoare: I am interested in the way you examine material histories as underpinning immaterial processes. Natural rubber is one example of such a material, its history similar to what coltan is for the digital age. How far does the physical world underpin the digital one?

Femke Herregren: I think that the more invisible and immaterial experiences and processes become, the larger the material base they need in order to function. There is an immense material world necessary to create the illusion of an 'immaterial' digital world. The so-called 'cloud' is just a very complex network of materials, places, colonialism, physical infrastructures, legislation, interfaces, and devices. Every new technology creates its own material, political, and environmental conflicts, but because these impacts are distributed throughout so many different places, times, and materials, we never experience them in the same way that we experience the impact of, for example, an industrial area. In this lies an interesting question: How can we make these scattered impacts tangible as a more connected experience?

Natasha Hoare: Your recent work explores how climate change will impact finance. What were your findings?

Femke Herregren: Basically, why climate change is interesting for financial investors is the unpredictability and increasing volatility of weather. Weather represents one of the last forces that is beyond our control



In the 1980s, attempts at introducing a census in West Germany sparked strong popular resentment since some felt that the questions to be asked were too personal. Comparisons to Orwell's novel 1984 were drawn. Some campaigned for a boycott, or for the making of intentionally false statements. The Constitutional Court stopped the census in 1983, ordering a revision of the process. The modified 1987 census triggered even heavier protests. In 1987 computer-aided counting had a larger influence. Protesters made it clear that in the computer age there could be no innocent, no non-manipulate-able data and by that they made a strong impact on the census process.

Der Spiegel, "Datenschrott für eine Milliarde?," Der Spiegel, Nr. 12/1987, <http://www.spiegel.de/spiegel/print/d-13522320.html> (accessed 24 September 2015). Translated by the artist

Der Spiegel, "Datenschutz für Unternehmen", Der Spiegel, <http://www.spiegel.de/bilder/abspiegelung-1-bildung-f-3235350.html>,
Nr. 15/18, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 245

[illegible]

Femke Herregraven: It hasn't yet. The *All Inframed Line* (2012-ongoing), a work about the physical backbone of financial markets, is an ongoing one, and I do not think it will ever be finished. It mainly consists of visiting, researching, and documenting submarine cable landing points and reflecting on the new landscapes and logics that these nodes of critical infrastructure produce. Sometimes these cable landing points appear as banal and random places; other times they are high-security zones or protected natural areas. In the last three years, this work has been slowly developing in the

Femke Herregraven

