
PLATFORM EARTH
Ecomodernism in Tech-on-Climate Discourse
Rianne Riemens

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1. TWO ENCOUNTERS WITH APPLE

In 2021, the screen of my MacBook stopped working. I took the laptop to a certified Apple repair shop. In a slick white shopping space, a young man stood behind an empty desk. On the wall behind him hung a large canvas with a black and white picture of Apple co-founder Steve Jobs. The seller asked me how old my MacBook was, and after I told him, informed me that the shop could not repair it. Although the device was only a few years old, it already belonged to the category "vintage", and they no longer stocked the supplies to repair this generation of laptops. But, the salesman said with a smile, maybe this was the perfect opportunity to upgrade to a new MacBook?[1]

In 2023, Apple released a commercial titled "Mother Nature". In the video, Mother Nature, personified by the actress Octavia Spencer, pays a visit to the Apple headquarters in Cupertino, California, for a yearly sustainability update (fig. 1). The employees, including CEO Tim Cook, look nervous, but explain to Mother Nature that Apple is doing everything it can to make its production more environmentally friendly by investing in recycling, renewable energy, and reforestation projects. The employees gradually become more confident and proudly present the first "carbon-neutral" Apple product: a smartwatch.[2] Mother Nature and her assistant (nicknamed Henry David Thoreau) look impressed and after an intense stare down between Mother Nature and Cook, they leave the office in a good mood. Before she leaves, Mother Nature urges the Apple employees to keep up the good work: "don't disappoint your mother!"

These rather contradictory examples present two of my encounters with Apple, one of the largest tech companies in the world. They also represent two sides of Apple's position in a world that is increasingly witnessing and experiencing the consequences of climate change. On the one hand, Apple continues to be a large producer of tech devices with its significant Apple design, sold to customers worldwide for high prices. In February 2024, the company reported there were more than 2,2 billion devices in use ("active") globally (Apple 2024a). On the other hand, Apple is increasingly presenting itself as a company that is concerned with the climate crisis and wants to reduce its environmental footprint. The "Mother Nature" video was part of a broader sustainability campaign Apple launched in the fall of 2023, which also included a call to action for customers to do what they could for Mother Nature. How to align these two modes of corporate practice? How can Apple be both a company that wants to do everything in its power to combat climate change, and a company that wants to continue creating and selling new products instead

1 Another repair shop asked 800 euros for the repair. Eventually, I found an independent repairer who charged me 150 euros. The lifespan of the laptop has so far been extended with 3 years. Apple products become "vintage" five years after they were last distributed for sale. Two years later, they become "obsolete".

2 The carbon-neutrality claim is contested, as the improvements Apple is making regarding its operations are debatable and difficult to measure. The term carbon-neutral is critiqued for being misleading, because it gives the impression that the production of the device did not lead to carbon emissions. This is false: Apple only *compensated* the emissions through carbon compensation programs (Bryan 2023).

Figure 1: Mother Nature (played by Octavia Spencer) visits the Apple headquarters in the "2030 Status | Mother Nature | Apple" video (2023). Screenshot by the author.

of repairing existing ones?[3]

The short answer to this question is: by popularizing the myth that Apple, and tech companies and their products in general, are unequivocally good for the planet.[4] This myth, and the dilemmas and contradictions that emerge when the extractivist tech industry is presented as sustainable, form the core subject of *Platform Earth*. The dissertation provides an environmentally focused discursive analysis of major tech companies and figures against the background of "platformization" and the climate crisis. My goal is to understand how leading actors in the tech sector legitimate their operations in a changing environmental reality and thereby create a potentially influential perspective on the climate crisis. I have coined the term "Platform Earth" to refer to the myth produced by North American tech actors that their activities are essential for "managing nature" and "solving" the climate crisis.

The dissertation offers a critical study of digital platforms and processes of platformization, at the intersection of the environmental humanities and media studies. I understand "platforms" as an architectural intertwinement of digital and physical infrastructures, of hardware and software, services and applications, owned by companies such as Amazon, Alphabet/Google, Meta, Microsoft and Apple. Platforms have fundamentally

3 Apple does offer a repair service for products that are not vintage or obsolete, but its products are notoriously difficult and expensive to repair. New regulations in the EU are designed to protect the "right to repair" by lowering the price of repairs and improving customer service (European Parliament 2024).

4 The study of green myths in relation to media is not new: Maxwell and Miller (2012, 9), for example, countered the myth "that the printing press, telegraph, phonograph, photograph, cinema, telephone, wireless radio, television, and internet changed the world *without* changing the Earth" (italics in original). In this dissertation, I study this myth in relation to the platform society, not only to debunk the myth, but to understand how it is constructed.

changed how the web is organized and how users can access it (Van Dijck et al. 2018). The expansion of platforms has often been described as platformization (Helmond 2015; Plantin et al. 2016; Poell et al. 2019). Thomas Poell, David Nieborg and José van Dijck (2019, 5-6) define platformization as "the penetration of the infrastructures, economic processes, and governmental frameworks of platforms in different economic sectors and spheres of life". Since the 2010s, platforms have come to provide essential infrastructures, devices and services and have constructed an immense industry around the production, storage and analysis of data. Many individual users, companies and (governmental) organizations now depend on these infrastructures for their access to and use of the internet, which has become a predominantly privatized space. Tech companies have further cemented their central economic positions by developing so-called "artificially intelligent" (AI) tools, which are now strongly intertwined with the cloud infrastructures of Google, Amazon and Microsoft, and to a lesser extent Apple and Meta (Luitse 2024; Van der Vlist et al. 2024). All these elements make platform companies key players in a cross-sectoral industry that has an enormous cultural, economic but also environmental impact.

Digital platforms represent not only a particular type of (tech) company, but also an economic model that is constantly looking for ways to expand into new sectors (Van Dijck et al. 2018). Some refer to the economic model of tech companies as platform capitalism (Srnicek 2016) or surveillance capitalism (Zuboff 2019), while others such as McKenzie Wark (2019) or Yanis Varoufakis (2024) debate whether we can still speak of capitalism. I choose to approach and critically discuss tech companies as capitalist actors whose economic model can be described as "platform capitalism". Documenting the impact of platforms on the US economy, Nick Srnicek (2016, 6) uses the term platform capitalism to describe how "The platform has emerged as a new business model, capable of extracting and controlling immense amounts of data", which has led to "the rise of large monopolistic firms". By using the term capitalism, I also align my work with that of Luc Boltanski and Eve Chiapello (2005), who, building on the work of Max Weber, theorize the dialectical relation between capitalism and critique as the "new" spirit of capitalism. Based on an analysis of business management texts, they describe a constantly adapting spirit that characterizes the economic model of capitalism by alternately legitimizing and constraining its practices. As example, they discuss how capitalism has gradually adapted values of freedom, creativity and authenticity to legitimize unequal, exploitative labor conditions (420). In this dissertation, I focus on the dialectical relation between platform capitalism and environmental critiques.

As my research draws a connection between platform capitalism and green critiques, the work of Jesse Goldstein (2018) forms a key inspiration. In his work *Planetary Improvement: Cleantech Entrepreneurship and the Contradictions of Green Capitalism*, Goldstein identifies a new "green" spirit of capitalism, arguing that tech entrepreneurs have incorporated environmental critiques on their practices, thereby proposing a greener, more enlightened version of capitalism. Goldstein calls this spirit "planetary improvement", which offers a plan for a sustainable transition that does not require fundamental transformations of industries. The entrepreneurs Goldstein interviewed propose harmless solutions, or what he calls "non-disruptive disruptions" (10). In my research, I take inspiration from Goldstein to analyze platform capitalism and the expression of a green spirit in the discourse of prominent tech actors.

In the early 2010s, the environmental impact of internet technologies and facilities such as data centers became well known through news articles (e.g. Glanz 2012), reports by NGOs (e.g. Greenpeace 2015) and academic research (e.g. Maxwell and Miller 2012).[5] The energy and water needs of data centers, the resources and critical materials that go into the production of devices, and the expanding global supply chains of production and waste are a few examples that illustrate the extractivist nature of the technology and media industry (Jaikumar and Grieveson 2022; Valdivia 2024). Tech companies have responded to environmental critiques by reorienting their businesses and explaining their sociocultural and economic value in new ways. The efforts of repositioning have been conceptualized as "green capitalism" (Buller 2022), meaning that companies continue to support capitalism while trying to green it, or making it appear greener. Such strategies are accompanied by a specific, rather optimistic, public outreach through which companies positively relate themselves to the new reality of climate change. American tech actors are central figures in the projects of green capitalism and platform capitalism, that overlap and fuse into what I call "green platform capitalism". I will research the strategic discursive work platform companies do to turn increased platformization into an attractive narrative in light of the climate crisis. In this sense, this dissertation examines the cultural processes of platformization, which Poell et al. (2019, 6) define as "the reorganization of cultural practices and imaginations around platforms".

This sustainable reorientation is not unique to the (North American) tech sector, but presents a more general movement in society; it is a new phase in the capitalist positioning in the climate crisis, as response to the fact that "the grand campaign to deny the problem has run out of breath a little" (Stengers 2015, 8). For Isabelle Stengers, this phase marks the rise of "the new grand narrative in which Man becomes conscious of the fact that his activities transform the earth at the global scale of geology, and that he must therefore take responsibility for the future of the planet" (9). What Stengers alludes to, and what this dissertation is also concerned with, is that an important part of taking action for companies, is to develop new narratives and campaigns which are related to, but do not always align with the actual, material changes companies are making. In other words, there is a gap between the discourse that has been developed in quite an optimistic vein in the past decade(s) and the necessary actions, change and transformation to actually achieve a greener future.

Stengers' notion of a "new grand narrative" is precisely what I study through the concept of "Platform Earth": a project that dreams of improving the planet on a global scale through the infrastructures and practices of US tech companies. This project cannot be understood separately from the region and network of actors it has emerged from. The

5 Critiques have also emerged from within the companies, for example through protests organized by Amazon Employees for Climate Justice, an organization founded in 2018 (Amazon Employees for Climate Justice 2023).

geographical, entrepreneurial and cultural context of Silicon Valley, including its many contradictions, is crucial to understand "Platform Earth". I use the term "Silicon Valley" to refer to the conglomeration of actors associated with the prominent tech sector of the United States. Building on existing cultural analyses of the concept, I understand "Silicon Valley" as a region in California that simultaneously presents a broader American cultural phenomenon (Kenney 2000; Turner 2006; Streeter 2011; Katz 2015; O'Mara 2019). For my research, I conceptualize Silicon Valley as a center of gravity for the US tech sector, encompassing both its cultural discourse and its global techno-infrastructural materiality. Although the companies Amazon (headquarters in Seattle), Microsoft (headquarters in Redmond, Washington), Google and Apple (headquarters in California) are a central topic in this dissertation, I do not solely focus on the environmental activities that can be directly linked to them, but also analyze what powerful public figures such as Bill Gates, Elon Musk and Jeff Bezos undertake on a personal title. These entrepreneurial "environmentalists" further advance the agenda of green platform capitalism, as they do "the cultural work necessary to fuse capitalism and environmentalism" (Prudham 2009, 1608). Thus, I approach these individuals and companies as actors within a North American network that exceeds the boundaries of California. My conceptualization of the tech sector in the US as a network builds on the work of Ben Little and Alison Winch (2021), who describe the economic order of digital capitalism as a hegemonic, patriarchal network of predominantly male actors. The influence of (former) CEOs such as Mark Zuckerberg (Meta, Chan Zuckerberg Initiative), Jeff Bezos (Amazon, Blue Origin, Bezos Earth Fund) and Bill Gates (Microsoft, Gates Foundation, Breakthrough Energy) extends beyond the companies they have founded, because of their role as investors, philanthropists and public figures. The conceptualization of Silicon Valley as a cultural network is thus a core element of my research.

I conceptualize the public-facing promotional activities of these tech actors and how they navigate and approach the dilemmas of green platform capitalism as "tech-on-climate discourse". With this term, I refer to the discursive production of reports, websites, commercials, tools, and projects by corporate Silicon Valley actors in which they address the climate crisis in relation to the American tech sector. I look at visual and textual elements of my selected case studies, to understand how the texts and their visual identity together forward a "sustainable" agenda. A study of tech-on-climate discourse helps to understand how Silicon Valley reconfigures its powerful cultural, economic and geopolitical position by imbuing platform capitalism with a green spirit. In his analysis of "cleantech" entrepreneurs, Jesse Goldstein (2018) found a shared narrative about how innovation, technology and economic growth would bring about a better, greener world, giving new purpose to a profit-oriented tech industry. Like Goldstein (2018), I am interested in the project of green capitalism and what it wants or is able to achieve, but also what environmentally unfriendly system it might end up sustaining. To understand the different ways in which Silicon Valley actors foreground a sustainability agenda, my research looks at the different fields in which the actors operate and takes a historical perspective at the formation of Silicon Valley and its genre of environmentalism.

The central research question of my dissertation is as follows:

How do North American tech companies and actors associated with Silicon Valley position themselves in the climate crisis through their tech-on-climate discourse, and what are the historical and ideological underpinnings of their environmental worldview?

To answer this central question, I analyze tech-on-climate discourse from four different perspectives. These are:

1. the contemporary narratives developed in the promotional materials of Apple, Amazon, Microsoft and Google;
2. the historical and ideological origins of these narratives in the second half of the 20th century in the United States;
3. the worldview as it emerges in the discursive genre of so-called "exit projects" that propose homesteading, seasteading and spacefaring as long-term climate solution;
4. the worldview as it emerges in the discursive genre of tech-for-good discourse produced by the philanthropies of Bezos, Zuckerberg and Gates.

Together, these four perspectives allow me to analyze the different elements of "myth-making" that emerge across different genres of tech-on-climate discourse. To study these four perspectives, I have broken my central question down into four sub-questions, which I answer in the four chapters of this dissertation. In Chapter 1, I answer the question: *How do Microsoft, Apple, Amazon, and Google in their tech-on-climate discourse frame themselves as green and benevolent actors?* In Chapter 2, I answer the question: *How has North American tech culture, specifically the entrepreneurial community of the San Francisco Bay area (later called Silicon Valley), between the 1940s and 1990s conceptualized the relation between ecology and technology?* In Chapter 3, I answer the question: *What visions on the future of humanity in times of climate crisis are expressed in the expansionist and escapist exit projects (homesteading, seasteading, spacefaring) forwarded by Silicon Valley actors?* In Chapter 4, I answer the question: *How do Silicon Valley billionaires position themselves in environmental and geopolitical debates through their tech-for-good discourse?*

Across four chapters, I study the narratives and discursive strategies of tech actors to understand how they successfully construct campaigns through which they legitimize their operations, and what the consequences are of these narratives for wider political debates on the climate crisis. Put differently: I aim to understand how "Big Tech's" discursive practices shape dominant ways of thinking about technology and its relation to the climate crisis. I claim these actors are successful in solving the seeming contradiction between sustainability and increased platformization by creating a smooth narrative about a future of green growth enabled by technological innovations. As stated above, I refer to this project as "Platform Earth": the environmental worldview of Silicon Valley that imagines an affirmative relation between humanity, technology, and the environment, with the indispensable

help of tech companies and infrastructures.

In my view, Silicon Valley has not been duly acknowledged as a key actor in what Sanjay Chaturvedi and Timothy Doyle (2015) describe as the competition over what climate future is the most legitimate, salient and desirable. Chaturvedi and Doyle (2015) go as far as to say that the topic of climate change is slowly:

> turned into a site of shadow boxing where a variety of actors, institutions and agencies are implanting their own maps of meaning on spaces (terrestrial, oceanic, atmospheric) that they perceive as the most 'strategic', in pursuit of their respective geopolitical and geoeconomic agendas. (183)

My goal is to uncover the maps of meaning Silicon Valley creates, so that its discourses can be more widely recognized and critically discussed in tech and climate crisis debates as an essential part of its political and economic agenda. I take inspiration from Alberto Toscano and Jeff Kinkle, who in their work *Cartographies of the Absolute* (2015) reckon with the "problem of visualising or narrating capitalism today". Building on Fredric Jameson's notion of cognitive mapping, they argue that "picturing our social and economic world is a predicament at once technical and, so to speak, philosophical" (48). Their book analyzes creative works that through visuals and narratives aim to map the role of individuals and collectives in capitalist systems (45). Through my analysis of tech-on-climate discourse, I study how green platform capitalism is visualized and narrated and thereby provides a partial cartography of the interrelations between humans, nonhumans, technology, and Earth. I theorize the rise of tech-on-climate discourse as a new development of the last fifteen years, while also situating it in the longer American history of technological developments, internet culture and environmental concerns.

In the next section, I clarify my concept of "Platform Earth". In the subsequent sections, I explain how my work aligns with ideological critiques on green capitalism, offer an overview of the different fields of literature this dissertation builds upon, explain the methodological approach and lastly, present the outline of the dissertation.

2. DEFINING "PLATFORM EARTH"

The concept "Platform Earth" draws attention to the significant role Silicon Valley plays in shaping how the climate crisis is discussed. With "Platform Earth" I refer to the central myth that this dissertation studies, but also to the processes of mythmaking underpinning this myth and to the ways in which it materializes through climate debates and the expansion of platform capitalism. "Platform Earth" encapsulates the modus operandi of "Silicon Valley" through which actors *naturalize* platform capitalism and *platformize* the climate crisis, positioning platforms as a mediating layer between humanity and planet Earth. Platform Earth represents both my research object, as well as a perspective on that object, thereby taking inspiration from Benjamin Bratton's (2015) concept of "the Stack" and Tung-Hui Hu's (2015) concept of "the Cloud". Both concepts serve as metaphors that encompass the historical, geopolitical, infrastructural and cultural aspects of the internet. Such approaches take into account that the internet is not merely an object or medium: it is a system that is always in development and fully integrated into everyday lives, as much as it is a fantasy (Hu 2015), a governing architecture (Bratton 2015), and a set of cultural expectations (Streeter 2017).

With the term "Platform Earth", I relate to existing work on technology and nature as important tropes in American culture. I take inspiration from Leo Marx' seminal *The Machine in the Garden* (1964) in which he explores the "garden", as a particular understanding of cultivated "pastoral" nature and the "machine", representing technological development and industrialization. Marx offers a literary analysis of how these two tropes emerge in American literature, demonstrating how writers have described technology as a disruption of an idealized form of nature.[6] Whereas Marx wrote about the entrance of the "machine" in the garden, I take this up as the relation between platform (companies) and (planet) Earth. Moving away from literary sources, I offer a cultural analysis of commercially produced texts and images that aim to harmonize the machine and the garden by explaining technology-nature relations as mutually beneficial.

My concept of "Platform Earth" is inspired by the work of several thinkers, including designer Buckminster Fuller, who popularized the notion of "Spaceship Earth" in 1963, and sociologist Jennifer Gabrys, who developed the concept "Program Earth" in 2016.[7] Buckminster Fuller was an American design thinker, architect and writer who used the term "Spaceship Earth" to describe planet Earth in his book *Manuals for Spaceship Earth* (1963). In the book, he addresses humans as the crew (astronauts) who make sure the planet "functions" properly. Fuller was a techno-optimist who saw technology as means to achieve a high quality of life for all, while recognizing ecological limitations of, for example, resource use (Stanford Libraries n.y.). In her historical analysis of the concept of "Spaceship Earth", Sabine Höhler (2015) writes that to think of the Earth as a spaceship assumes an

6 For a contemporary exploration and discussion of the work of Marx, see for example *Rereading the Machine in the Garden* (Erbacher et al. 2014).

7 Platform Earth is also the name of a charity organization in the UK, that combines artistic and scientific insights in their environmental programs (platformearth.org).

understanding of the planet as something that can be controlled, or as a vessel that could be exchanged for another in case of catastrophic events. The "Spaceship Earth" metaphor has informed a debate about the environment in which, she writes:

> the alleged power of humanity to choose a technologically enhanced nature over a once-pure but now polluted environment by constructing a superior, more economic, robust and sustainable earth than the one that is now literally at disposal. At stake in these debates are not so much the moral issues of a 'natural' versus an 'artificial' environment and whether humans should abandon their home planet or stay and act responsibly. At stake are the consequences of humans' renewed confidence in their ability not only to pose these questions but also to resolve them. (138)

Such questions about the potential of humanity to design and redesign the environment which was once a "pure" and now polluted space, demonstrate how metaphors such as the spaceship foster very specific discussions of environmental concerns and the relation between humanity and nature. Likewise, I will argue, "Platform Earth" works to resolve questions and dilemmas by presenting a soothing narrative about these relations.

In her work *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet* (2016), Jennifer Gabrys discusses techno-optimism and the problem-solving abilities of humanity in relation to sensing technologies. Following Marshall McLuhan's notion that space technology made the Earth programmable, she argues how sensing technologies have ushered in even more versions of a modifiable planet. With the concept of "Program Earth" she theorizes how the "becoming environmental of computation" has altered our engagement with the environment (4). The result of this, she writes, is that technologies have disappeared into the background, and have unnoticeably become a connecting layer within many human-nonhuman configurations. Gabrys argues that "wiring up environments" has led to a relational, co-shaping process between sensor technologies and environments, which in turn shapes what forms of citizenship and collective relations can emerge (8-9). Building on Gabrys' notion of "Program Earth", I aim to take a broader category of internet technologies and devices into account, with a specific focus on the corporations that produce and control these technologies and thus benefit from making the Earth programmable, or, "platformizable".

With the concept "Platform Earth", I analyze what new ways of seeing, new forms of knowing, new relations and engagements Silicon Valley as a network of cultural actors envisions and promotes. I am interested in how these visions on the relations between humanity, technology and Earth reflect but also shape wider cultural developments and debates. "Platform Earth" captures the hopes and fears that emerge around the climate crisis, within a story about the creative and problem-solving potential of platforms, building on long-standing desires of connectivity, freedom, and progress.

In this perspective, my concept of "Platform Earth" includes an ideological critique on the worldview underlying tech-on-climate discourse. What kind of Earth is programmable, or platformizable, and what does this conceptualization include or exclude? I am thus interested in the dreams, myths, and visions that underly "Platform Earth" and its plans for "terraforming Earth", which Benjamin Bratton (2019) explains as a "planetary design initiative". As Silicon Valley takes part in this design initiative, I aim to better understand what plans and visions are proposed, and what future plans are perhaps overlooked. In his work on the "unconstructable earth", Frédéric Neyrat (2019) has critiqued the fantasy and narrative that he calls "geo-constructivism", which assumes humanity has full power over nature and that by a reconstruction of Earth – a strategic redesign or vision of terraforming – we could solve all environmental problems. In line with Stengers' argument, Neyrat observes a new grand narrative that might sound fantastical but nevertheless has real consequences. This narrative is "not a mere fiction without any true repercussions but a discourse capable of legitimizing real economic decisions, social practices, lifestyles, laws, institutions, and the guiding orientations for civilization" (2). Neyrat's work underlines the relevance of analyzing discourse as the legitimization of ideology. Despite the differences per company, individual, and case study, I identify a common worldview that informs all the proposed plans, strategies and choice of framings. As I will explain below, this worldview expresses a form of ecomodernist ideology that legitimizes platform capitalist practices. In the next section, I situate the efforts of Silicon Valley within the broader movement of green capitalism.

3. THE LOGICS OF GREEN CAPITALISM: AN IDEOLOGICAL CRITIQUE

I critically question the myth of "Platform Earth" and its green platform capitalist project at a time in which the consequences of inadequate climate regulations are becoming painfully apparent. It is undisputed that the rising global temperature as well as the increases in draughts, floods, and other forms of extreme weather, as well as the loss of biodiversity, are caused by industrialization and globalization (Intergovernmental Panel on Climate Change 2023). As the 2023 IPCC synthesis report states: "It is unequivocal that human influence has warmed the atmosphere, ocean and land", since at least 1971 (5).[8] The report elaborates that more than three billion people "live in contexts that are highly vulnerable to climate change" and their vulnerability interrelates with that of the ecosystems they are part of. The consequences of climate change have affected some populations and regions much more than others, leading to water and food insecurity. In the past decade, "human mortality from floods, droughts and storms was 15 times higher in highly vulnerable regions" compared to other regions (5). Climate change has already caused substantial damages and mass mortality or extinction of a range of species, and this is ongoing: "Impacts on some ecosystems are approaching irreversibility" (5). The report (2023) is crystal clear (claims with "high confidence"): "Climate change has caused widespread adverse impacts and related losses

8 A lot of what this report states has been known or expected for much longer, as I for example discuss in Chapter 2 of this dissertation.

and damages to nature and people that are unequally distributed across systems, regions and sectors" (6). These effects will continue to intensify, their severity depending on the increment of global warming. The report states that it is likely that global warming will exceed 1,5 degrees Celsius this century (in contrast with the Paris Agreement), and that it will become more and more difficult to limit warming under 2 degrees (10, 12).

The term "green capitalism" captures how companies try to convince other parties capitalism can reinvent itself into a greener version, a version that is good for the planet. Adrienne Buller (2022) describes green capitalism as a project that responds to ecological crisis "and the unprecedented threat to capitalist systems is presents" (12). It is for Buller both an "effort to preserve existing capitalist systems and relations" as well as to ensure "new domains for accumulation" in the transition towards a new economy (12). Green capitalism is often critiqued, for example by Adrienne Buller (2022), Naomi Klein (2014) and Isabelle Stengers (2015) as a deeply contradictory concept that can be situated within neoliberalist politics. It holds a particular vision of what progress means, in close connection to economic growth. The rigorous climate adaptations publications such as the IPCC report call for, will probably not be initiated by a neoliberal capitalist system, which can, as Stengers writes, never "hesitate" or stop finding opportunities for profit-making (8).

At large, green capitalism is built on the belief that for-profit organizations can enable a future of green growth by "decoupling" growth from environmental impact. The promise of decoupling has become a central concept in political green growth discourse (Fletcher and Rammelt 2017; Hickel and Kallis 2020). Decoupling most often refers to a decrease in resource use or in carbon emissions, both made possible by technological innovations. Hickel and Kallis (2020) have shown why absolute decoupling can never, not sufficiently, be achieved:

> The empirical evidence opens up questions about the legitimacy of World Bank and OECD efforts to promote green growth as a route out of ecological emergency, and suggests that any policy programs that rely on green growth assumptions – such as the Sustainable Development Goals – need urgently to be revisited. That green growth remains a theoretical possibility is no reason to design policy around it when the facts are pointing in the opposite direction. (17)

These serious doubts make it necessary to scrutinize climate futures built around these green growth scenarios.[9] Decoupling economic growth from environmental impact is, understandably, an attractive fantasy for the current economic order as its "blind optimism" does not prerequisite systemic changes, which is precisely its problem (Fletcher and Rammelt 2017). Often, green capitalism is not about realizing actual material changes in the production and consumption of digital goods, but about creating compensation programs and carbon off-sets (e.g. Bryan et al. 2024).[10] It also includes the launch of new products and services with a greener appeal, such as Apple's carbon-neutral smartwatch. This is why tech companies, which have a long history of developing and promoting techno-fixes (Morozov 2013; Johnston 2020), have also adopted the logic of green capitalism and become promotors of the "fable" – as Stengers (2015) calls it – that is green capitalism.

The term decoupling plays a key role in my research, as well as the ecomodernist movement that employs the term and promotes the project of green capitalism. In a defining text of the movement, "An Ecomodernist Manifesto" from 2015, decoupling is used as a term to describe how economic growth can help us achieve a "great Anthropocene" (Asafu-Adjaye et al., 31).[11] The many co-authors of the manifesto urge for a positive view on the climate crisis, expressing a strong belief in the values of progress, freedom and the abilities of (technological) innovation. As other authors have shown, the manifesto does not reflect on the consequences of its radical plans for transformation (Rodrigues et al. 2019). It puts human freedom and human beings, but only a selective group, above anything else (Crist 2015; Latour 2015). It presents technological innovation as an apolitical, necessary tool (Hällmark 2023), while echoing the modernist idea that humans can control and transform nature (Hamilton 2015). Or, as Bronislaw Szerszynski (2016, 243) questions: "what if the attempt to decouple society from nature results in an even greater entanglement between human projects and non-human becoming, in ways that are hard to predict?".

9 It is important to distinguish relative from absolute decoupling. Vadén et al. (2020) write: "Relative decoupling means that economic growth is faster than the growth of environmental damage or resource use, even though the latter may still be growing. Absolute decoupling, in turn, means that the economy is growing while the amount of resource use and/or environmental impact is decreasing" (238). In their review of existing research, they find examples of successful forms of relative decoupling, but not of absolute decoupling. And they add, the former does not necessarily lead to the latter. They conclude: "with regard to the goal of ecological sustainability, the empirical evidence on decoupling is thin", noting that some *decouplings* lead to *recouplings* that are even more harmful (243). In ecomodernist discourse, absolute decoupling is seen as a viable solution to the climate crisis, which this dissertation critiques.

10 See for example the report by the *Financial Times* (Bryan et al. 2024), which demonstrates how compensation structures such as Renewable Energy Certificates cloud the understanding of the environmental footprint of tech companies. While they claim to be (on their way to) carbon-neutral, their operations are still fueled by oil and gas. The article describes how Microsoft and Amazon lobby for a loosely defined concept of compensation, while Google is stricter in what it counts as compensation (e.g. not including renewable energy generated in the past or in another country). See also Pasek et al. (2023) for a discussion on the difficulty of measuring the footprint of the IT sector.

11 The term Anthropocene is the (unofficial) name given to the current geological epoch, referring to the dominance of humanity's industrial activities as a geological force on the planet since the late 18th century onwards (e.g. Crutzen 2006).

Szerszynski points to a relevant contradiction not addressed in ecomodernist texts: the dream of decoupling might create new "couplings", which problematizes the clean separation the ecomodernists dream of (see also Vadén et al. 2020). Yet, while ecomodernists might dream of clean separations, they also have been noted to discursively emphasize favorable connections, between, for example, technology and nature. Neyrat (2019) summarizes the ecomodernist discourse as one that "hermetically seals" certain elements, what he calls "abusive" separations, but also "welds" elements together, what he calls "excessive" connections (14). These strategic couplings and decouplings will return in my analysis of tech-on-climate discourse.

In *Platform Earth*, I question how decoupling plays a crucial role in tech-on-climate discourse. In my analysis and critique, I employ the concept in two ways. First, as I have discussed above, decoupling operates as an ideological signifier that encapsulates ecomodernist thinking. Throughout the chapters, I address how decoupling emerges as symbol of ecomodernist ideology in the visions of Silicon Valley actors. Second, I employ decoupling as an analytical concept, that helps to understand processes of mythmaking in tech-on-climate discourse. Taking the contradictions of ecomodernism into account, I use "decoupling" and its counterpart "coupling" as an analytical tool, analyzing the discursive mechanisms that help to narrativize the project of "Platform Earth" and smooth over its contradictions. Discursive mechanisms to conceal or erase these contradictions are, as I will show, a core design element of green platform capitalism – not a flaw in its system. Studying these discursive mechanisms helps to unpack the strategic (re)positioning of tech actors vis-à-vis the environmental critiques on capitalism. In other words: focusing on ecomodernism and decoupling allows me to study how the green spirit of platform capitalism is expressed through tech-on-climate discourse. To further introduce green platform capitalism as a research subject, I now turn to the state of research in the field of environmental media studies.

4. STATE OF RESEARCH: A SHORT HISTORY OF ENVIRONMENTAL MEDIA STUDIES

The term "Platform Earth" aptly positions this research at the intersection of two research fields: platform studies (as a subfield of media studies) and environmental humanities. This intersection is often referred to as the study of ecomedia, environmental media or green media. In the introduction to their edited volume, Antonio López et al. (2024, 2) describe ecomedia as the field that is dedicated to ecologically oriented media productions as well as the ecological impact of media. For the authors, reckoning with the materiality of media and the material consequences for non-humans and humans is a necessary aspect of media studies. This reckoning requires an "ecological reboot" of media scholarship "to include the other-than-human world and its biotic communities; and acknowledging the legacies of Western colonial epistemology (such as the nature-culture binary) which continue to shape academe and its relations with the broader world" (López et al. 2024, 1). In what follows, I introduce some of the foundational works within environmental media studies, which reads as a short history of the burgeoning field between the 2010s and the mid 2020s.[12]

A large section of the work I discuss here fits into a broader development in cultural studies that has been referred to as "the material turn", which brought new attention to the materialization of powers in objects and institutions (Bennett and Joyce 2010). The field of new materialism also introduced new perspectives to media studies. Jussi Parikka (2011, 2012), for example, coined the term "medianatures" – derived from Donna Haraway's notion of the "natureculture continuum". With medianatures, Parikka aims to expand the techno-materialist approaches of German media theorists such as Friedrich Kittler into a grounded media theory that pays attention to the exploitation of nature associated with the use and production of media. In *A Geology of Media* (2015), Parikka demonstrates how a focus on the metals, minerals and waste related to media allows for a more layered, temporal and spatial perspective on media. There are other foundational works on the environmental impact and the materiality of the ICT sector; a particularly early work is by Christian Fuchs (2008, 298), who dismantles the myth that "The information economy is weightless and dematerialized which reduces environmental impacts" and that virtualization equals sustainability. Similarly, Richard Maxwell and Toby Miller's *Greening the Media* (2012) draws attention to the scale and intensity of the waste and pollution media technologies cause.

Works pointing to the materiality of media are sometimes referred to as the study of elemental media, of which *The Marvelous Clouds: Towards a Philosophy of Elemental Media* (2015) is a prime example, in which John Durham Peters connects media to elements such as sky, water, fire, and light. In the same tradition, Shannon Mattern (2017) studies the historical interplay of urban and media materialities. Focusing on contemporary infrastructures, Mél Hogan (2015) writes about the extensive water usage of a data center in Utah, showing how surveillance infrastructures are intrinsically linked to conflicts over water usage. Nicole Starosielski (2021) addresses the role of heat and thermocultures in processes of mineral extraction, used to produce devices such as mobile phones (see also Velkova 2021). And Jennifer Gabrys' study of electronic waste provides a new perspective on the physicality of Silicon Valley and its relation to water and soil, describing how "the sedimentary layers of waste consist not only of circuit boards and copper wires, material flows and global economies, but also of technological imaginings, progress narratives, and material temporalities" (2013, 4). Gabrys' point that narratives and imaginaries around technology also shape and are shaped by its materiality is key for my research. Related to Gabrys' work is Sean Cubitt's *Finite Media* (2017), in which he discusses how fossil fuels, nuclear power and hydropower all intersect with manufacturing and recycling processes linked to media production. To study the complex internetworks of materials, media and humans, other authors use the term "ecology", in reference to Felix Guattari, to address how media technologies reorganize humans and nonhumans in media or big data ecologies (Fuller 2005; Hogan 2018; Taffel 2019).

12 Of course, there is a significant collection of earlier works that have questioned and theorized the construction of "nature" and the nature-culture binary in relation to technology, including Carolyn Merchant (1980), Donna Haraway (1990) and Bruno Latour (1993).

Since the late 2010s, the environmental approach to media studies has become a more institutionalized field of interest. This is for example reflected by the launch of the publications *Media+Environment* (2019) and the *Journal of Environmental Media* (2020). These journals have been set out to study the intertwinement of media and environment and their mutual transformations (Chang et al. 2019), within an interdisciplinary subfield that explores "the deepening relationship between our environment, culture, and media" (Shriver-Rice and Vaughan 2020). In a more recent editorial letter in the *Journal of Environmental Media* (by new editors), the goal of the field is described as "understanding how we relate to the entangled ecologies and processes of the so-called 'natural' and capitalist world, defined and ordered as it is by human-centered and largely extractive projects that rely on the ongoing separation of the natural and the human" (Brodie et al. 2023, 7). This aim reflects the approach of this dissertation, as I engage with "medianatural" constellations in the light of platform capitalism.

Materiality has remained a key concern, especially in relation to the use and management of resources and energy. Such a focus on energy has itself turned into a tradition referred to as the "energy humanities", posing critical questions about the links between fossil fuels, capitalism, and (digital) culture (LeMenager 2014; Szeman and Boyer 2017; Wilson 2018; Diamanti 2021; Szeman and Barney 2021) or the connections between energy and media ecosystems (e.g. Pasek et al. 2023). Works in this direction combine insights into capitalism and modernity, media and its use of energy and resources. This field has also produced apt critiques of ecomodernist ideology.

Although not always focused on the environmental effects of media, the study of infrastructures is another field that helps to understand how energy systems, factories, data centers, offices, mining sites, internet cables, computer systems, mobile devices and so on form complex, material structures. This approach is sometimes referred to as the "infrastructural turn" in media studies (Plantin and Punathambekar 2019). Edited volumes such as *Down to Earth: Satellite Technologies, Industries, and Cultures* by Lisa Parks and James Schwoch (2012) and *Signal Traffic: Critical Studies of Media Infrastructures* by Lisa Parks and Nicole Starosielski (2015) help to shift the attention from the content of media to the systems that enable communication and the distribution of content. Jean-Christophe Plantin et al. (2016) argue that platforms are becoming more and more infrastructural, whereas existing infrastructures that have been shaped and constructed over time are becoming more and more platformized. Some scholars study how infrastructures function as mediating actors, representing and even transforming reality (e.g. Kurgan 2013). Works that focus on specific infrastructures such as data centers (Hogan 2015; Brodie 2020) or sea cables (Starosielski 2015) offer grounded understandings of the local implications of global structures. In his empirical research on Indian media and infrastructures, Rahul Mukherjee (2020) describes how the formation of "environmental publics" around so-called radiant infrastructures, must be understood in relation to the mediation (for example through commercials or news coverage) of such infrastructures, thus combining a focus on media content with media infrastructures.

Media practices affect the lives of people in different ways, whether as citizens in a platform society, users of a platform, or laborers (coders, marketeers, warehouse workers, manufacturers, miners, content moderators, and more) for whom the working conditions can vary strongly. But there are also many people whose living conditions are affected by the arrival of a new data center, or the exploitation of cobalt or gold mines near their communities. Importantly, many postcolonial researchers draw attention to the ways in which media companies appropriate not only data, but also labor, land, and materials, mainly in the Global South, sustaining and creating new imperialistic practices (Larkin 2008; Yusoff 2018; Couldry and Mejias 2019). Depending on their cultural and geographical focus, such analyses can bring to the fore how the relations between practices of extraction, production and consumption play out differently in different contexts (Iheka 2021). More abstractly, the postcolonial perspective can educate "us on the extractive pasts of media and modernity, which must be written in order to enable different futures" (Jaikumar and Grieveson 2022, 201).

The field of environmental media studies aims to reflect on the developments of the fast-paced media industry. Since the 2020s, the rise of artificial intelligence (AI) presents a central concern. The dilemmas of green platform capitalism become even more pressing now that companies advance AI applications that further inflict environmental harm and deepen the companies' connections to fossil fuels companies, while at the same time being presented as crucial technologies to "accelerate" greener futures (Brevini 2020; Crawford 2021; Brevini and Doctor 2024; Markelius et al. 2024). Books such as Benedetta Brevini's *Is AI good for the Planet?* (2022) and Peter Dauvergne's *AI in the Wild* (2020) critically assess the potential of AI within the climate crisis. They make clear that one cannot say that all forms of AI are equally bad for the planet; AI and other forms of tech can for example help to monitor the state of natural habitats or track forms of illegal deforestation (Gabrys 2016; Dauvergne 2020). At the same time, Anne Pasek and colleagues (2023, 10) have shown that the environmental footprint of digital infrastructures is complex to measure, and that assessments are deeply "intertwined with disparate visions for the sector and its technologies". Whether AI is good for the planet is not easy to determine and should be critically assessed, thereby being specific about the scale and level of computation one is speaking about. For this dissertation, it is relevant to consider how such technologies are discussed in public debates and how these technologies can shape (and are already shaping) our view of the planet and its environmental condition. In her contribution to the handbook on ecomedia, Jennifer Gabrys (2024, 135) for example writes that the environmental values of technologies might be overpowered by the damage they cause, as they can create new material realities that alter the problem at hand, or result in new forms of pollution and waste that then need to be monitored and solved, creating a loop of solutions and issues. Bridging environmental approaches with those of political economy, the edited volume *The Nature of Data* (Goldstein and Nost 2022, 3) proposes a political *ecology* of data, that studies "how new data technologies shape access to and control of the environment, land, and resources". In line with these authors, I maintain that it is crucial to understand how big data and data infrastructures shape ecological practices and knowledge.

As my research focuses on the corporate response to the environmental impact of technology, the dialectical relation between critique and capitalism, I am also indebted to literature on how these companies themselves shape the public understanding of the material realities of media. Tarleton Gillespie (2010) famously scrutinizes the term "platform", drawing attention to what such a strategically chosen term hides as well as reveals. In a similar but more historically driven approach, Tung-Hui Hu (2015) shows how the metaphor of the "cloud" works as a cultural fantasy that distracts users from considering the massiveness of the internet, as well as its historical, material dimensions and its relations to older infrastructures. Similarly, Nathan Ensmenger (2018) argues that the ahistorical appearance of technologies benefits tech companies, as they "can claim the positive benefits of technological progress without bearing any of the burdens of the larger technological history of which it is only the most recent iteration" (26). Combining the insights about discourses with those about green capitalism are works that study forms of "greenwashing". Ester C. Vanvik explains greenwashing as:

> a strategy companies employ to enhance their public image and maintain or expand their market presence. They achieve this by portraying themselves as advocates for environmental causes and poverty alleviation, even if their commitment to these objectives may be insincere. (2023, 172)

Greenwashing thus points to the contradictions inherent to green capitalism and to its counterproductive nature, motivating my study of the promotional efforts of companies. Although I do question the sincerity of these company's efforts, I am more interested in the strategies they use to construct a green public image and co-shape environmental debates.

My brief literature review shows how media companies and producers are implicit in the climate crisis in many ways. The dissertation critically studies what the project of "Platform Earth" allows us to see and what it obscures. While aware of the inescapability of the mediated reality of climate change, I want to dissect how Silicon Valley's tech-on-climate discourse absorbs, transforms and mediates knowledge about or imaginaries of "nature", and turns it into something (economically) productive for the project of green platform capitalism. Understanding "Platform Earth" as a cartography helps to critically study how human-nature-tech relations are mediated through tech-on-climate discourse in different textual and visual forms. *Platform Earth* thus deals with the questions of representation in line with Kate Crawford's *Atlas of AI* (2021), in which she critiques how "the AI industry is making and normalizing its own proprietary maps, as a centralized God's eye view of human movement, communication and labor" (11). In the next section, I show how the notion of a cartography and the discursive, historical, and material critiques of media inform my methodological approach.

5. METHODOLOGY: THE APPROACH OF *PLATFORM EARTH*

With my study of tech-on-climate discourse, I aim to understand how Silicon Valley actors position themselves in the climate crisis, and thus, how they (re)produce the myth that platform capitalism is unequivocally good for the planet. This myth and its "green spirit" have the power, as I have explained, to morally justify capitalist practices, but my goal is to understand how this process of mythmaking works. In this section, I explain the approach of my dissertation in relation to three central concepts: discourse, myth, and ideology. I also introduce the methodological framework that guides the analysis of my case studies.

This dissertation focuses on a subset of a larger category of discursive materials, called "platform discourses", which was the subject of the ERC project this research has been part of. The project does not only address platforms as infrastructures that influence or organize the production of culture (Poell et al. 2022), but also as cultural producers in their own right. In the larger research project, my colleagues Niels Niessen, Nuno Atalaia and I have therefore approached "platform discourses" as corporate materials produced by tech companies that offer an insight into tech ideology. In line with the work of Louis Althusser, we have approached each case study as an embedded form of hegemonic power, by which users are "interpellated" and through which the ideology of "Big Tech" gets reproduced (Niessen 2025). Our approach is concerned with the way in which the power of platforms is operationalized through the infrastructures, products but also public outreach of the companies.

To answer my research question about how Silicon Valley actors position their companies in relation to the climate crisis through their tech-on-climate discourse, and the historical and ideological underpinnings of their environmental worldview, I closely analyze a selection of sources from the category of tech-on-climate discourse. These are publicly available and public-facing texts and images in which actors directly address the climate crisis, their own climate impact and potential climate futures. The case studies include websites, sustainability reports, commercials, digital initiatives and blogposts. In my choice of materials, I have limited myself to texts and images produced by Amazon, Alphabet/Google, Microsoft and Apple, as well the organizations, projects and initiatives directly related to these companies or the figures Tim Cook, Jeff Bezos, Mark Zuckerberg, Bill Gates, Elon Musk and Peter Thiel.[13] As this amounts to a large set of materials, I have selected a number of case studies for close reading that allowed me to compare different companies or figures. The precise criteria I have used for the selection of case studies are explicated in each chapter. All the texts and images are primary source materials; an overview of which – in the case of Chapters 1, 3, and 4 – can be found in the appendix (1-3).

Tech-on-climate discourse is an archive that is expanding rapidly. This also makes it a challenging research object. The case studies reflect a particular moment within a con-

13 Meta is largely excluded from this research for several reasons. Different from the four companies I study, Meta has not developed an elaborate sustainability campaign. Its operations as a social media company also makes its portfolio as a platform less diverse.

tinuously developing discourse, largely between 2019 and early 2024. During the research period (2020-2024), I have followed the developments of new materials closely. While some sources are static, others, mainly the websites of the four companies, have been (and still are) constantly updated. To build my archive, I have collected static research objects such as videos and reports and made screenshots of the online sources. These online sources are also retrievable by using the Internet Archive's "Wayback Machine". This tool allows one to find earlier versions of websites by tracing their URL (through web crawls) and therefore serves as a knowledge infrastructure of the web. But the tool has several limitations (e.g. Ogden et al. 2024). The research for example depends on the available screenshots of a page, so the tool does not always offer enough information to trace the evolution of each page, or it combines different versions of a page into one. It is also dependent on the steadiness of the URL.

Although I acknowledge the importance of having a web archive and discuss the difficulties of mapping the evolution of tech-on-climate discourse in Chapter 1, it has not been the goal of this research to fully trace the evolution of these companies' discourses. The company websites form important starting points for my research, but most of my analysis refers to the static sources such as published videos and reports. This dissertation therefore does not echo works that offer a multi-layered "platform historiography" or an evolutionary web history of Big Tech's sustainability discourse (Brügger 2018; Helmond and Van der Vlist 2019). Instead, I have worked with a selection of sources that allowed me to closely analyze the processes of mythmaking across different genres of tech-on-climate discourse.

The analysis of tech-on-climate discourse provides insights into how tech companies frame themselves as drivers of ecological change, and what narratives they construct to communicate that message. I understand this persuasive effort as a process of "mythmaking". My use of the concept of myth is inspired by the work of French theorist Roland Barthes. In his text *Myth Today*, Barthes (1957) defines myths as a type of speech: "a system of communication" and a "mode of signification" (107). Building on works about semiology, the study of signs, he describes how things, subjects, words, can stand for something else, how a rose (signifier) stands for passion (signified), as goes a classic example. Barthes writes how we keep seeing messages reiterated in slightly new forms, in order to signify a continuous message. My aim is not to "decipher" every message according to the sign, signified and signifier order, but I do approach tech-on-climate discourse as a collection of texts that convey myths about the sustainability of green capitalism. Barthes writes:

> Myth does not deny things, on the contrary, its function is to talk about them; simply, it purifies them, it makes them innocent, it gives them a natural and eternal justification, it gives them a clarity which is not that of an explanation but that of a statement of fact. (1957, 143)

Myths, conveyed through texts, images or objects simplify and justify "things", in my case the sustainability of the platform society, as "it organizes a world which is without contradictions because it is without depth" (Barthes 1957, 143). This process of simplification and

naturalization is how ideology is conveyed, according to Barthes. Because of the communicative and persuasive power of myths, the concept plays a role in studies of marketing and communication, such as *Toby Smith's The Myth of Green Marketing* (1998). Inspired by the work on hegemony by Ernesto Laclau and Chantal Mouffe, Smith places green consumerism in a long historical struggle of power and its materialization through discourse. Smith uses the term "myth" to study marketing materials ("productivist discourse") as a social construction that holds cultural power. He writes:

> productivist discourse subsumes criticism into its own logic in much the same way that myths have always appropriated current events to reinforce the timelessness of their principles. Myths help to maintain a hegemonic system by supporting central belief structures. A distinctive feature of myth is its structure as a story. The narrative begins but is prevented from running smoothly to its teleological end by a disruption. The problem and cause are identified; a solution is proposed. Its application results in a resolution of the rupture, whereby the story ends. (30)

For Smith, green marketing reveals a common narratological structure of how the good life, made possible by a product or company, is threatened by a problem, such as the climate crisis, but can then be overcome. In their absorption of critiques and their acknowledgement of (climate-related) issues, myths can thus be seen as expressions of the green spirit of capitalism.

Smith's use of the term myth is related to another relevant study: Vincent Mosco's *The Digital Sublime: Myth, Power and Cyberspace* (2004). Mosco describes myths as stories whose relevance is not determined by their truthfulness, but by their ability to "lift people out of the banality of everyday life" and "offer an entrance to another reality" (Mosco 2004, 3). This understanding of myth relates to the concept of enchantment, that also draws attention to how readers of promissory narratives are drawn in and convinced of "green" messages (Maxwell and Miller 2012). Focused on cyberspace, Mosco writes that "we can say that cyberspace is mutually constituted out of culture and political economy, out of the interconnected realities of myth and social institution" (10). Following Mosco, I contend that a cultural analysis of myth requires a political economic dimension, thus addressing the political, economic and sociocultural significance of "Platform Earth". I therefore offer a cultural analysis of myths concerning tech-nature relations against the background of platformization and the climate crisis.

As stated earlier, my analysis is concerned with tech-on-climate discourse. The analysis of corporate discourse allows me to study how myths are conveyed through carefully designed stories and images. Discourse analysis is often thought of in two main traditions: critical discourse analysis in the tradition of Norman Fairclough (2010) or of Michel Foucault (Jäger and Maier 2009). I draw inspiration from both traditions. This dissertation, and the project it is part of, are related to Foucauldian approaches to discourse, a tradition that is strongly embedded in media studies, as it helps to understand how power is produced and exercised (e.g. Chun 2011; Parikka 2015; Apprich 2017). Critical discourse

analysis (CDA) aims to study the role of language in capitalist societies, thereby understanding discourse as a set of relations of communication that in turn relates to existing systems and structures (Fairclough 2010, 1-6). Combining a Foucauldian discourse analysis with a critical discourse analysis, I study how "discourses exercise power in a society because they institutionalize and regulate ways of talking, thinking and acting" (Jäger and Maier 2009, 35). A text by Eve Chiapello and Norman Fairclough (2010) brings together the concepts of "spirit" and "discourse", as they argue that the spirit of capitalism can be regarded as an "order of discourse", "a particular configuration of discourses enacted as genres and inculcated as styles" (279). They write that "Discourses include imaginaries – representations of how things might or could or should be", or projects of possible worlds (266). These elements resonate with my approach: analyzing discourse helps to understand how tech actors configure the relation between themselves and climate change, and what possible futures they envision.

To operationalize my study of mythmaking in tech-on-climate discourse, I have constructed a methodological framework for the analysis of a set of promotional materials that has not, beyond some individual case studies, been studied before. Through the framework, I focus on four elements of mythmaking. These four elements are:

- narratological structure
- greenspeak
- visual identity
- environmental worldview

I have selected these four categories based on a literature review of existing analytical works. From these authors, I have identified the concepts that they, depending on the focus of their research, use to address these different elements. I have converted these analytical focus points into guiding questions for my analysis. I break down these four elements of mythmaking in the following paragraphs.

The first element is narratological structure. Studying narratives is a common approach in media and culture studies (e.g. Bal 2009). In my analysis of case studies, I follow Smith's discussion (1998) of how green myths follow a specific structure that presents a narrative about a problem that needs to be overcome. Similarly, Harré et al. (1999) point to the relevance of analyzing "story lines" within green discourses. Dissecting the narratological structure of my selected case studies helps to analyze how tech actors legitimize or justify their operations and promote them. The focus on legitimation and persuasion is common in communication studies that analyze how companies position themselves through strategically crafted narratives, whether in reports, keynotes or elsewhere. Øyvind Ihlen (2009) for example, discusses corporate reports and rhetorical strategies "as the means corporations employ to persuade the readers of their reports that they are dealing with the issue appropriately" (248). Similarly, Theo van Leeuwen (2007) refers to the "language of legitimation", which he characterizes as an answer to the question of "why" something should be done in a certain way. In my case: what is the current situation according to actors, what can be done about it, and why is that the best approach?

The second and third elements of my approach are greenspeak and (green) visual identity. My analysis of case studies from tech-on-climate discourse is equally concerned with language and images, both central elements in the construction of a sustainable identity that provides moral justification to Silicon Valley. I therefore study the use of "greenspeak", concerned with the textual means of persuasion and techniques of advocacy (Harré et al. 1999) and the construction of a "green visual identity", concerned with the visual rhetorical features in the communication of corporate actors (Greenwood et al. 2019). To guide my analysis of these two elements, I build on previous empirical work on green discourses, mainly the discussion of rhetorical strategies of cleantech investors by Jesse Goldstein (2018), discursive mechanisms in environmental reporting by Leanne J. Morrison (2019) and framing strategies in green PR by Melissa Aronczyk and Maria I. Espinoza (2022). Although the categories of greenspeak and visual identity partially overlap with narratological structures, my framework conceptualizes these as three different elements.

As my study of greenspeak is directed at tech actors, I also build on the findings of those that have analyzed forms of "techspeak". These works frame tech discourses as strategic interventions in public debates surrounding the socio-economic role of digital platforms (e.g. Gillespie 2010; Natale et al. 2019; Nieborg and Helmond 2019; Canfield 2023). Such works demonstrate how carefully chosen terms and narratives of "progress", "innovation", "connectivity" and "community" shape the image and expectations we have of these companies (Van Dijck 2013; Natale et al. 2019; Nieborg and Helmond 2019; Muldoon 2022). Simone Natale et al. (2019), for example, analyze the promotional materials of "Big Tech" and argue how a new form of technological determinism helps to position these companies as drivers of social change, by creating narratives about the companies' key roles in the past, present and future of societies. The narrative that platforms benefit the common good is part of their strategy to present themselves as actors that safeguard public values, while normalizing the commodification of everyday activities (Van Dijck et al. 2018). This has a political function, as their "embalming promotional rhetoric implicitly dismisses democratically governed institutions and regulation as inefficient obstacles to a platform utopia" (Van Dijck et al. 2018, 24) . Following Natale et al. (2019), I am interested in studying the "improved mythical future" (333) promised by tech companies, and the strategic ways in which they "take possession, adapt and exploit existing narrative patterns" (327). In this sense, my analysis is concerned with what Henrik Rahm et al. (2020) call corporate dreams: "stories depicting the value systems and moral premises undergirding the capitalist logic within which companies operate" (83). This view is closely related to what Goldstein (2018) describes as the narrative of planetary improvement that advances and sells a green capitalist future vision. All these authors point to the legitimating powers of carefully constructed narratives, that help to advance "a common capitalistic narrative which gives both meaning and legitimacy to everyday actions within organizations and to the decision making of managers" (Rahm et al. 2020, 83). Importantly, these valuable approaches mostly focus on the textual elements of discourses, whereas I contend that visual elements play a central role in the construction of green myths. As I have previously

demonstrated in an article with Nuno Atalaia (2023), promotional materials work to make certain futures more visible, attainable, or preferable than others, and construct a (visual) narrative about how a new technology can improve a user's life (or a company's operations).

The fourth element of my analysis is concerned with the worldview that underpins tech-on-climate discourse. By mapping plans, projects and marketing materials across genres of tech-on-climate discourse, I aim to study the process of mythmaking by actors in the network of Silicon Valley, and to make visible how these actors "see" the world and their role in it. The fourth element of my analysis is therefore an ideological critique of the project of "Platform Earth" and its promotion of green platform capitalism. In my understanding of ideology, I build on Chiapello and Fairclough (2010), who define it as "a system of ideas, values and beliefs oriented to explaining a given political order, legitimising existing hierarchies and power relations and preserving group identities" (257). The schematic understanding of ideology and its legitimating power are indispensable for my analysis of the Silicon Valley network. The process of persuasion and legitimation is however not straightforward. I therefore agree with Thomas Streeter (2017, 86) who writes (in reference to Raymond Williams) about the role of cultural imagination in the development of the internet that "Technologies are perhaps best understood, not so much as agents in their own right, but as thought-objects for the collective enactment and exploration of hopes, desires and political visions". By analyzing discursive formations in tech-on-climate discourse, I aim to enrich the understanding of digital technologies as thought-objects, imbued with hopes, desires and visions about greener futures.

Based on these studies on narratological structures, greenspeak, visual identity and ideology, I have constructed a methodological framework. In every chapter, I use the methodological framework to analyze and discuss the strategies companies employ to present themselves as green actors, highlighting the central metaphors, arguments and visual elements that return throughout the case studies.

6. OUTLINE OF CHAPTERS

In order to answer the main research question: *How do North American tech companies and actors associated with Silicon Valley position themselves in the climate crisis through their tech-on-climate discourse, and what are the historical and ideological underpinnings of their environmental worldview?*, I research and analyze four elements of tech-on-climate discourse. These are: 1) contemporary corporate materials, 2) the historical origins of the narrative presented, 3) the worldview as it emerges in the discursive genre of exit projects and 4) the philanthropic activities of tech CEOs. These four elements correspond with the four chapters that make up *Platform Earth*.

Chapter 1 studies contemporary tech-on-climate discourse: it introduces a letter by Apple's Steve Jobs (2007) as the beginning of this discourse and presents an analysis of recent promotional materials published by Apple, Amazon, Google and Microsoft. My analysis reveals how companies use a number of textual and visual framing strategies in

their mythmaking practices. I explain these strategies as forms of "decoupling" through which companies make small solutions seem sufficient, obscure climate impact, emphasize the responsibilities of others and direct the connections between nature and tech that are made. Altogether, I argue, tech-on-climate discourse offers a set of pragmatic short-term plans and long-term ideals. These plans are underpinned by an environmental worldview that instrumentalizes the value of nature and naturalizes companies and their technologies. Here, I offer a first in-depth theorization of ecomodernism and "Platform Earth".

Chapter 2 takes a historical approach to challenge the a-historicity created by the contemporary myth of 'Platform Earth". Through a historical analysis, I trace the metaphor of the "ecosystem" and traditions of "whole-systems thinking" in tech and environmental discourse between the 1940s and 1990s. I argue that American tech culture has gradually created a worldview in which nature is portrayed as an "ecosystem" that can be controlled and managed through technological innovations and applications. The chapter relates the development of tech culture to the rise of American environmentalism and the changes in environmental discourses. In these cultural conceptions the freedom of the human subject, economic progress and technological optimism play a central role, which, especially from the late 1980s onwards, have become central elements in the ecomodernist narrative now widespread in climate debates. "Platform Earth" thus reflects longstanding dreams about technology, progress and the world as ecosystem that gradually emerged in the cultural history of the US.

Chapter 3 looks at a different section of tech-on-climate discourse that presents future-focused, long-term plans for realizing new living communities based on political ideals or insulated from apocalyptic events. The chapter demonstrates that the representatives of Silicon Valley place their bets not only on small-scale short-term solutions for the climate crisis, but also on risky plans to escape current societies or Earth altogether, by proposing plans for homesteading, seasteading and spacefaring. The Seasteading Institute (Patri Friedman, Peter Thiel) and space companies SpaceX (Elon Musk) and Blue Origin (Jeff Bezos) are the focus point of the chapter. I critique the escapist responses to potential apocalyptic events as forms of mythmaking. These exit projects present undemocratic and elitist forms of "worldbuilding" and "design thinking" that divert attention from more democratic solutions that need to be executed on the short-term. Even if not realistic, I argue, the projects are a way to present Silicon Valley and its masculine work culture as risk-taking, innovative and sustainable. The economic sector of platform capitalism is thus promoted as a work force capable of reaching new "frontiers" to innovate "our" way out of a crisis, thereby materializing libertarian ideals and perpetuating colonialist practices.

Chapter 4 studies how the ideology of ecomodernism is expressed through the philanthropical projects that originate in Silicon Valley. I theorize the promotional materials in this field as another genre of tech-on-climate discourse, titled "tech-for-good" discourse. The chapter zooms in on the personal efforts of three figures: Jeff Bezos, Mark Zuckerberg and Bill Gates and their organizations the Bezos Earth Fund, the Chan Zuckerberg Initiative, and the Gates Foundation. While the importance of celebrity figures such as Jeff Bezos, Elon Musk and Stewart Brand as the representatives of Silicon Valley has been discussed

in earlier chapters, I here conceptualize these patriarchal figures as network actors within climate and humanitarian debates. Through their philanthropic efforts, these influential entrepreneurs create myths about their unique qualities to "engineer" solutions to humanitarian issues. The analysis demonstrates how tech actors are advocating for and investing in green technologies and geoengineering solutions, thereby shaping climate debates in line with the interests of green platform capitalism.

Finally, the Conclusion answers the central research question and offers an overview of the strategies of mythmaking that play a role in tech-on-climate discourse. I will summarize how Silicon Valley positions itself in the climate crisis and legitimizes its operations by promoting the myth of "Platform Earth". I argue that contemporary tech-on-climate discourse expresses longstanding myths about the sector's ability to manage, reconstruct and protect the "Whole Earth", which are rooted in the history of environmentalism and tech culture in the United States. As an imperialist project that approaches the climate crisis as its new "frontier", I urge researchers and policymakers to scrutinize the ever-shifting economic and political activities Silicon Valley engages in. The difficulty of studying a moving target such as tech-on-climate discourse underlines the urgency of critiquing green platform capitalism in light of the ongoing climate crisis. The dissertation ends with a plea to keep other climate futures in perspective, even though "Platform Earth's" dashboard view does its best to obscure these.

Dreams of (De)coupling: Framing Strategies in Tech-on-Climate Discourse

Today is the first time we have openly discussed our plans to become a greener Apple. It will not be the last.

- Steve Jobs, "A Greener Apple", 2007

1. INTRODUCTION: TECH DISCOURSE AND THE SEARCH FOR LEGITIMACY

Halfway through the black-and-white animation, a globe appears in the center of the frame. Overlaying the image of planet Earth is a six-angled figure resembling a computer chip. Clouds, birds and the sun move around the edges of the "chipped" globe. Five figures, each of them sitting behind a desk in front of a computer, appear in the frame. Their computers, in turn, are connected to the digitized globe, with digital signals traveling back and forth, visualized as ones and zeros that flow from the computers into a loop (cable) around the Earth. Then, a lightbulb appears next to one of the researchers: the flow of code has led to a new insight (fig. 2).

This scene is part of a video (2020) made by Microsoft presenting the company's initiative for a "Planetary Computer". The Planetary Computer, visualized through the digitized globe, is an online database in which people can consult data and visualizations collected and uploaded by third parties. This interaction is visualized through the streams of data between the researchers and the globe. In an earlier scene of the video, trees, rabbits and birds transform from their organic shape into binary code (fig. 3). The video presents the shared database, which is available through Microsoft's cloud service Azure, as a solution that allows researchers and developers to collect and share information about the Earth's condition and its biodiversity. This raises the question: if a centralized archive of environmental data is the solution, what then exactly is the problem?

The Planetary Computer animation was published in 2020 as part of Microsoft's overarching "AI for Good" campaign. The animation provides a fascinating example of how tech companies present the climate crisis: as a puzzle that needs solving, or a problem for which they have a tailor-made solution. But the video can only deliver its sustainable message because it works with strong simplifications of what "nature" is, of doing research, of the environmental crisis, and of what it takes to counter ecological decline. To emphasize the potential of the company, Microsoft is framed as an ahistorical and immaterial entity with no link to the problems at stake.

In this first chapter of my dissertation *Platform Earth*, I analyze examples such as Microsoft's video to map the rise and the design of tech-on-climate discourse. Through my analysis, I will show how the multi-modal and ever-changing corpus of discursive materials created by tech companies Amazon, Apple, Google and Microsoft is carefully designed. In the introduction, I defined "Platform Earth" as the environmental worldview by which American tech companies imagine the relation between humanity, technology, and the environment through the lens of platform infrastructures. In this chapter, I research

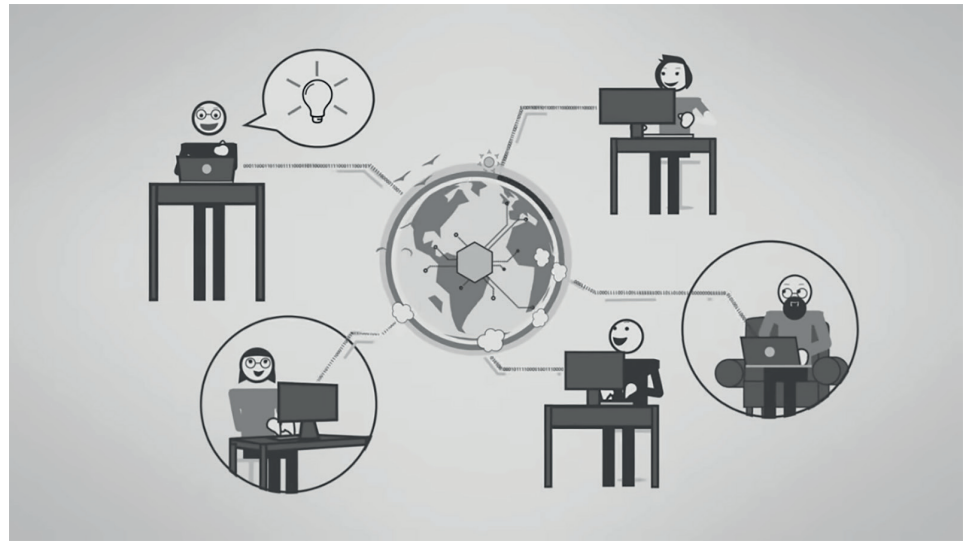


Figure 2: A lightbulb appears next to a user: the Planetary Computer has led to a new insight in the "explainer" video by Microsoft (2020). Screenshot by the author.

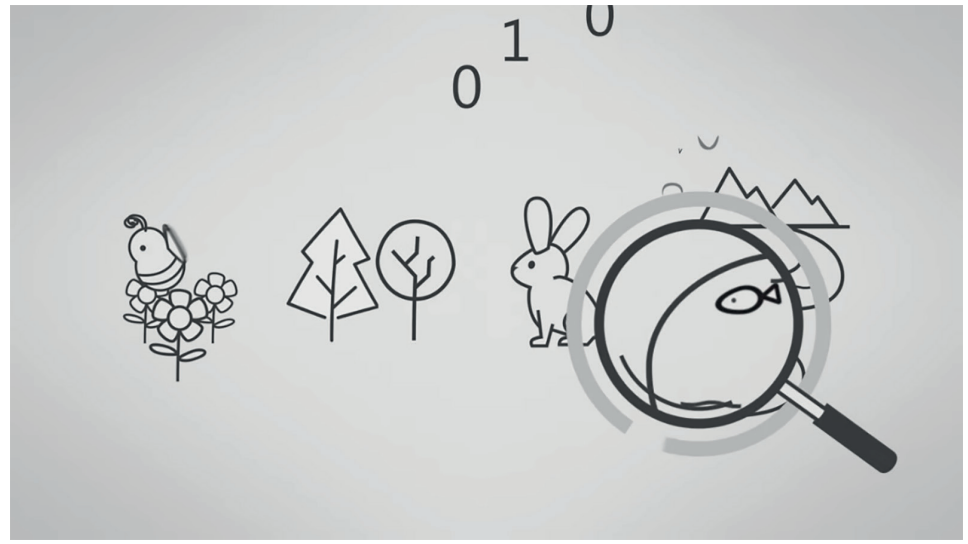


Figure 3: In the "explainer" video by Microsoft (2020), doing research is visualized through a looking glass, with animals and trees turning into binary code entering the Planetary Computer tool. Screenshot by the author.

what visual and textual framing strategies are used to promote "Platform Earth" and construct the myth that Silicon Valley is good for the planet. These framing strategies are an important aspect of how Silicon Valley, the network of actors who represent the cultural phenomenon of American tech culture, constructs a convincing narrative around its environmental impact.

The goal of the chapter is to better understand the processes of mythmaking which allow tech actors to promote the myth that their operations are (unequivocally) good for the planet. In his study on green myths, Toby Smith writes:

> The myth of green consumerism is a coordinating agent, which weaves together selected elements from available discourses. It pulls together a story that privileges only the utopian possibilities of science, technology, growth, development, and so on. A credible picture of how, in the face of severe criticism, these discourses can still hang together and reach a prosperous conclusion is presented in language and concepts that are comfortingly familiar. (1998, 133)

In reference to Smith, my analysis is concerned with the coordinating power of myths as they, across a range of promotional materials, compose a credible picture of and narrative about the relation between Silicon Valleys' operations and the climate crisis. As my analysis will show, there is not one narrative or strategy, but rather a range of stories, examples and objects that together persuade stakeholders of the benefits of tech companies and erase potential conflicts. I want to understand *how* tech-on-climate discourse creates a vision of a green future enabled by technological innovations by erasing the contradiction between sustainability and increased platformization through its efforts of greenwashing. By uncovering the rhetorical and discursive process of mythmaking, I provide an in-depth analysis of how greenwashing works, which is by itself a vague term that points to the discrepancy between plans and actions but does not explain how companies can be successful at hiding or soothing this discrepancy. Through a discussion and comparison of concrete examples of greenwashing, my goal is to theorize the overarching "formula" or "modus operandi" of the discursive practices of the tech sector.

The chapter answers the following question: *How do Microsoft, Apple, Amazon, and Google in their tech-on-climate discourse frame themselves as green and benevolent actors?* I answer this question through a close analysis of case studies from these four companies. Although the case studies operate differently and take different forms, I demonstrate that they share a narratological structure, visual identity and entrepreneurial mindset which makes them part of a coherent discourse that is specific to Silicon Valley.

The case studies I analyze include reports, videos, websites, and initiatives published by the companies, mainly between 2019 to 2024. Because each company has developed and is continuously developing a wide range of materials, I have limited my analysis to a selection of 34 sources. An overview of these sources can be found in the attachment (Appendix 1). This overview documents the type of source, the year of publication (or latest modification), the type of material and the source where it can be found, all categorized by company. I selected my case studies in order to account for the different forms of content (e.g. video, report, website, tool) the companies use to explicate their sustainability agenda.[14] The selected case studies are all contemporary examples that provide insight into prominent, recently developed campaigns and materials. I situate the analysis of these "contemporary" sources in a longer historical perspective on the foundation and growth of these tech companies. As I explain in the next section, it is difficult to reconstruct when each company has started publishing sustainability materials (and whether they have deleted certain materials). To nevertheless contextualize the rise of tech-on-climate discourse, I introduce the letter "A Greener Apple" (2007) by Steve Jobs. From there, I move on to materials from 2015-2024, which give a more recent impression of tech-on-climate discourse. Altogether, the close reading of the selected case studies allows me to point to shared strategies, but also to the richness and variety in the narratives the four companies create.

The approach of the chapter is based on the methodological framework I have explained in the Introduction. The framework allows me to analyze processes of mythmaking by focusing on four interrelated, discursive elements: narratological structure, green techspeak, visual identity and ideology. In this chapter, I do not discuss all these four elements for each of the 34 sources in detail, because the chapter does not offer the space to do so. Instead, I introduce the main framing strategies that I have identified in my case studies, thereby giving a few examples of case studies that best represent each strategy. I do however differentiate between visual and textual strategies in the chapter. Section 3 discusses four textual strategies, whereas section 4 discusses three visual strategies. Through my discussion of textual and visual strategies, I demonstrate how different discursive elements together form compelling myths about the environmental impact of the four tech companies. Although I separate visual and textual strategies, I also point to the ways in which these strategies overlap or reinforce each other. Lastly, in section 5 I build on my analysis of the seven strategies to reflect on the overarching worldview and ideology – the fourth element of my framework – communicated through tech-on-climate discourse.

The main goal of my analysis is to understand *how* the companies construct the myth that their operations are beneficial to the planet, by specifically framing their negative environmental impact as well as their sustainable efforts. As I have argued before, to succeed in doing so, the companies develop narratives that resolve contradictions. To understand this productive use of contradictions, I employ the ecomodernist concept of "decoupling" and its counterpart "coupling". Decoupling serves as both means and end to construct a hopeful vision of the climate crisis: not only as a goal to be reached, but also as a rhetorical strategy to achieve that goal. As I have discussed in the Introduction, decoupling is a term from the ecomodernist discourse that expresses the dream to separate human progress and prosperity from environmental decline. But in this chapter, I demonstrate how decoupling also serves as a discursive concept, as an overarching discursive mechanism that frames the project of "Platform Earth". Couplings and decouplings, I will show, help

14 The content of this chapter partially overlaps with a forthcoming article about greenwashing and Silicon Valley. In this paper, I analyze three case studies that I also discuss in this chapter: Apple's Mother Nature, Amazon's Climate Pledge and Microsoft's Planetary Computer and AI for Good campaign.

to understand how companies emphasize certain elements of their actions and manifestations, while obfuscating others. These discursive mechanisms guide what nature-tech relations are made explicit and are emphasized and which relations are left undiscussed or denied. By employing these strategies, tech-on-climate discourse can present a sanitized, frictionless impression of tech-nature relations. Such a framing benefits the project of "Platform Earth" as it foregrounds the myth that these companies can "eliminate" their negative environmental impact and thus help solve the climate crisis. This myth, and the strategies used to construct this myth are what I refer to as the "dreams of (de)coupling" this chapter studies.

My choice to work with the concepts of coupling and decoupling is not only motivated by their role in ecomodernist terminology but is also in dialogue with Jesse Goldstein. In his book *Planetary Improvement: Cleantech Entrepreneurship and the Contradictions of Green Capitalism* (2018), Goldstein does not literally speak of decoupling, but he describes how the contradictions of green capitalism are managed through the construction of conceptual and practical separations (119). Goldstein uses these strategic divisions to point to the productive contradictions in the narratives of green capitalism in general, and more specifically, cleantech entrepreneurs. He argues that if companies want to position themselves as part of a green capitalist movement, they need to carefully manage a balance between displaying care for the environment and their business interests. Goldstein discerns four forms of division: 1) personal versus professional, 2) doing versus thinking, 3) abstract versus the concrete and 4) now versus later (119). These oppositions describe how entrepreneurs discern their personal opinion from less radical professional environmental action, favor taking action over doing more research, strategically switch between being abstract or specific about their plans and treat the present and future as separate worlds. Together, Goldstein argues, these separations support the imaginary of "planetary improvement" which promotes the idea that entrepreneurs are doing whatever they can to ensure a greener future, but also rationalizes what they are *not* doing. The work of Goldstein demonstrates how discursive strategies work to create certain future visions as more desirable and sustainable, thereby drawing attention to the vital link between discourse and the legitimation of ideology this dissertation is concerned with.

By uncovering strategies of persuasion and legitimization in tech-on-climate discourse, I thus also begin to conceptualize the environmental worldview and ideology of Silicon Valley. Through my analysis of framing strategies and persuasive narratives, I study how companies address the environmental crisis and envision certain climate futures. In my ideological critique, I take the specificity of platform companies into account by connecting the companies' discursive efforts to the infrastructures and production sites that form the physical architecture of their operations. Through the analysis of contemporary tech-on-climate discourse and environmental ideology in relation to platform capitalism, this chapter lays the groundwork for the remaining chapters.

The chapter is structured as follows. In the next section, I introduce my four American tech companies of focus. I sketch the process of their evolution and explain their development of tech-on-climate discourse shortly. In the subsequent two sections,

I present my textual and visual analysis of sources in relation to the main framing strategies of coupling and decoupling that I have observed. In the fifth section, I discuss the worldview that underpins this environmental discourse including its assumptions about technology and nature. In the conclusion, I summarize the core narratological elements of tech-on-climate discourse, and the vision that arises about the relations between technologies and nature. I conclude that despite some differences, tech actors propose a similar, pragmatic approach to the climate crisis. They display a particular (humanistic) understanding of nature as something only of instrumental value, present techno-fixes as satisfactory solutions and above all, picture their own companies as benign actors.

2. THE EVOLUTION OF "BIG TECH" AND TECH-ON-CLIMATE DISCOURSE

When Microsoft published the "Planetary Computer" video in 2020, many companies had by then developed a tech-on-climate discourse, dedicating at least a webpage and a yearly report to the topic of sustainability. But earlier, especially before the 2010s, the topic had not been, at least not publicly, on the corporate agenda of tech companies. An early example of a publication that *did* acknowledge the relationship between tech and the climate is a letter written by former Apple CEO Steve Jobs. In 2007, Apple published a letter in which Jobs explained that Apple had always been a green company, but that it would become even greener in the future. In this section, I reflect on the emergence of tech-on-climate discourse in relation to the evolution of these companies and discuss Jobs' letter as the beginning of tech-on-climate discourse. This evolution has eventually led to a fully-fledged genre of promotional materials. The section ends with an overview of the types of material found in this discourse. Altogether, this section sets the stage for the rest of the chapter by problematizing the partial disclosure of information about the environmental impact of these companies, which stresses the need for an analysis of this impact, but also illustrates the difficulty of assessing companies' promises and plans.

2.1 Microsoft, Apple, Amazon, Google and the Underbelly of Silicon Valley

Although my analysis in this chapter focuses on contemporary sources (mainly) published between 2019 and 2024, I want to contextualize these sources within the history of these companies. This section therefore starts with some details about the development of Microsoft, Apple, Amazon and Microsoft, discussing them in chronological order as representatives of the cultural phenomenon of Silicon Valley.

Microsoft was founded in 1975 by Paul Gardner Allen and Bill Gates (William Henry Gates III) in Albuquerque, New Mexico. Since 1986, its headquarters are in Redmond, Washington, with partner offices in Mountain View, California, and elsewhere. Bill Gates stepped down as CEO in 2000 and has been succeeded by Steve Ballmer (2000-2014) and later Satya Nadella (2014-now). Microsoft started as a producer of personal computers and the operating system Windows and grew into a corporate conglomeration known for its

personal devices, cloud service Azure, search site Bing and recently AI tools (mostly because of a collaboration with the company OpenAI). The company today has 122.000 employees. According to Forbes (2024d), the company's revenue in 2023 was 207,6 billion US dollars (the lowest of the four companies), whereas its profits were 69 billion US dollars. Over 2022, Microsoft noted its carbon emissions to be 13 million tons Co2e (report 2023).[15]

Apple was founded in 1976 (one year after Microsoft) by Steve(n Paul) Jobs, Ronald Gerald Wayne and Stephen (Steve) G. Wozniak in Cupertino, California, where its headquarters are still located. After Steve Jobs stepped down as CEO in 2011, a few months before he passed away, Tim Cook, the current CEO, took over. The company started as a producer of personal computers and has grown out to be one of the biggest producers of a range of electronic devices including the iPhone and MacBook. It also owns streaming service and production company Apple TV, cloud service iCloud and is developing AI services for its products titled Apple Intelligence in collaboration with OpenAI (Apple 2024b). The company has 164,000 employees. In 2023, its revenues were 385,1 billion US dollars, and its profits were 94,3 billion US dollars (Forbes 2024b). Over 2022, Apple noted its carbon emissions to be 20,6 million tons Co2e (report 2023).

Amazon was founded in 1994 by Jeff Bezos in Seattle, Washington. Its current headquarters are still in Seattle, with partner offices in Cupertino, Palo Alto, San Francisco, and elsewhere. While Bezos is still chairman, Andrew R. Jassy took over as CEO in 2021. The company started as a web shop, which has massively expanded throughout the years. Next to the web shop, Amazon owns the successful cloud service Amazon Web Services, produces devices such as smart home applications and owns streaming service Amazon Prime. The company has 1,5 million employees, which makes it significantly larger in terms of staff than the other three companies I discuss in this chapter. Its revenue in 2023 was 524,9 billion US dollars (the highest of the four companies), its profits were (only) 4,3 billion US dollars. Bezos is one of the richest people in the world (number 2 at the time of writing) with a current net worth of 193 billion (Forbes 2024a).[16] Over 2022, Amazon noted its carbon emissions to be 71 million tons Co2e, making it by far the most polluting company of the four (report 2023).

Google was founded in 1998 by Sergey Brin and Lawrence E. (Larry) Page in Menlo Park, California. Its current CEO is Sundar Pichai (since 2015) and its current headquarters are in Mountain View, California. The company started with its Google Search page, and is now, as part of the company Alphabet, a producer of devices and the owner of services such as Google Maps, browser Google Chrome, Google Cloud, the Android operating system and AI program Gemini. Most importantly it has a large advertising division, with programs such as AdWords, AdSense and Google Analytics. The company has 190,711 employees (Forbes 2024c). Its revenue in 2023 was 305,63 billion US dollars (Bianchi 2024). Its profits are not disclosed by Forbes. Over 2022, Google noted its carbon emissions to be 10,2 million tons Co2e, making it the least pollutive of the four companies (report 2023).

15 Co2e stands for Co2 equivalent. These numbers are taken from the sustainability reports of the four companies. Later in the section, I discuss the limitations of these numbers.

16 Jeff Bezos is listed second before Larry Ellison (founder of Oracle, 174,9 billion) and after Elon Musk (245,5 billion). The current top 10 of billionaires shows the concentration of wealth in the American tech sector, with Mark Zuckerberg listed 4th (Meta), Bill Gates listed 7th (Microsoft), Larry Page listed 8th (Google), Steve Ballmer listed 9th (Microsoft) and Sergey Brin listed 10th (Google) (Forbes 2024e).

The introduction of these four companies demonstrates that the cultural phenomenon of Silicon Valley, which these companies represent, is not the same as the region of Silicon Valley, California. The dispersed presence of these companies, especially if one counts all their offices, manufacturing sites, outsourced labor and energy sites, makes it difficult or impossible to conceptualize where the material presence of these companies begins and ends. This scattered presence presents a challenge for the assessment of their environmental impact. Together with the different ideas about how their environmental impact should be calculated, this hampers the measurement and comparison of the footprint of these companies.

The name Silicon Valley was given to the Californian region in the early 1970s, named after the chemical element "silicon", which is used to produce electronic devices (e.g. computer chips). The region has faced environmental critiques since the 1980s, when the health risks of the toxic chemicals used to produce electronic products became apparent. The news coverage of that time exemplifies how Silicon Valley's promise of a new, clean economy was from the beginning challenged by reporting about health issues and forms of water pollution, consequences of a "business of particularly dirty manufacturing since the start" in the 1950s (O'Mara 2019, 263). These negative consequences of the computer industry have never been solved. Instead, the companies moved the pollutive parts of their operations to new locations, where they faced less regulations and could cut production and labor costs (O'Mara 2019, 264). The environmental damage done to the Silicon Valley region has now been "outsourced" to other, often marginalized communities (Pellow and Park 2002; Park and Pellow 2004; Irani 2018). As Jussi Parikka (2015) writes, "The underbelly of Silicon Valley is one of toxic capitalism" which is "a feature of that one specific territory but is also moved to other places of production of the global digital economy" (112). Put simply, the environmental impact of Silicon Valley is felt worldwide but is not evenly distributed.

In the 1990s, the rise of the internet gave Silicon Valley the opportunity to create a new narrative about a post-industrial economy. This narrative stressed that the internet economy and Silicon Valley's operations were focused on information (with its immaterial connotations), took place "online" and therefore did not have a negative impact (Hu 2015; Parikka 2015; Ensmenger 2018). This has proven to be a false claim: the production of digital products has massively grown since the 1990s, and the material impact of the internet economy, including its use of critical materials, water, energy and its carbon emissions, has surged. I want to stress the long history of pollution, and reporting about that pollution, of the North American tech industry in relation to the emergence of tech-on-climate discourse, as it makes clear how late the companies were in publicly acknowledging their environmental impact (Ensmenger 2018).

As this chapter zooms in on four companies, I aim to understand how these companies have acknowledged the climate crisis and responded to critiques. Based on

my archival research through the Wayback Machine, the oldest account of environmental impact emerges in the late 2000's and can be linked to Apple. The oldest retrievable materials (report, webpage, letter) are all linked to Apple, although this might also mean that other companies deleted the materials they once published online. Apple's climate reporting dates back a few years further than that of the other three companies. The oldest report that is still visible on Apple's website dates back to 2008, whereas Google's report is from 2016, Amazon's from 2018 and Microsoft's from 2020. This difference is confirmed by tracing the earliest version of the sustainability pages through the Wayback Machine. The oldest retrievable version from Google's website is from 2018.[17] The Amazon website can be retraced back to 2019. The Microsoft website can only be traced back to 2020. This makes the Apple page by far the oldest, dating back to 2004. It could be the case that the companies have started using another URL for their sustainability page, but this at least indicates that they have redesigned their sustainability approach and disconnected their early sustainability materials from the ones they currently disclose. Before I give an overview of the materials I included in my analysis, I want to zoom in on the letter that confirms the longer history of environmental action by Apple and provides some (partial) insight into how tech-on-climate discourse came to be developed in response to critiques.

2.2 The History of Apple's Tech-on-Climate Discourse

Out of the four companies, the history of Apple's environmental discourse is the easiest to trace. According to a timeline that was visible on their website in 2008, Apple already implemented an environmental policy regulation in 1990. Apple's environmental webpage was first published almost fifteen years later, in 2004 (fig. 4). On this oldest retrievable version of the page, Apple mentions the conservation of natural resources and the reduction of their environmental impact as two of its concerns.

A notable change to the page was made on May 3rd in 2007, when a letter written by Steve Jobs, titled "A Greener Apple" was published on the company's website. The letter appeared a few months after Jobs announced the first iPhone, which was eventually released in the US in June 2007 (Apple 2007). As Jobs' letter explicitly positions Apple as a "green" company, I view it as the beginning of public-facing tech-on-climate discourse. In the letter, Jobs shares his discomfort with the negative comments about Apple's environmental footprint made by the NGO Greenpeace (Keizer 2007). Jobs claims that Apple had been taken environmental action for years already but had "failed to communicate" about this. The letter thus demonstrates the green spirit of capitalism: the company is repositioning itself in response to critiques on its environmental impact. Jobs (2007) writes:

> It is generally not Apple's policy to trumpet our plans for the future; we tend to talk about the things we have just accomplished. Unfortunately this policy has left our customers, shareholders, employees and the industry in the dark about Apple's desires and plans to become greener. Our stakeholders deserve and expect more from us, and they're right to do so. They want us to be a leader in this area, just as we are in the other areas of our business. So today we're changing our policy.

17 The overview in Appendix 1 contains a link to the current sustainability websites of the four companies and to the overview of archived versions available for each page through the Internet Archive's Wayback Machine.

The style in which the letter is written is noteworthy. Jobs describes that it is not in the nature of the company to look forward, which is quite strange for a company that centers on technological advancements. The statement also reveals what a good company is supposed to do or not, according to Jobs. Apple has not wanted to make (empty) promises or brag about its future plans, but the company does want to respond to the societal plea that calls out corporations to be open about their environmental footprint and plans. The letter is directed at stakeholders: if they want Apple to be a leader, Apple will take that position. However, in that same year, Jobs was stimulating customers to buy their first iPhone, demonstrating how Apple also tapped into the giant market of mobile phones,

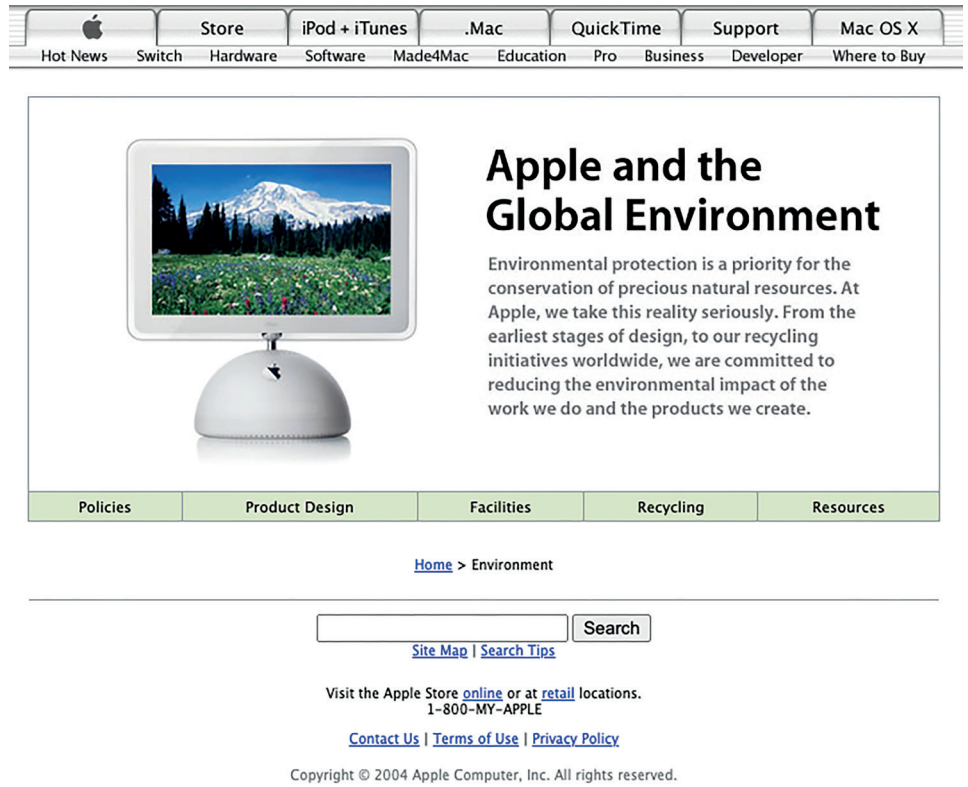


Figure 4: Early version of the sustainability webpage by Apple (2004). Screenshot by the author (retrieved through the Wayback Machine).

which affected the environmental impact of the company.[18]

Apple's development aligns with the growing public concern about the environmental impact of the tech sector.[19] Unfortunately, it is hard to precisely map the dialectic relation between environmental critiques and corporate climate actions. Still today, these companies make it difficult to retrieve when and in what form they started to report about their ecological footprint. As Kate Crawford (2021) writes in relation to AI, the extent of their energy use also remains unknown, because it is information that companies do not eagerly share. Crawford even argues that "the data economy is premised on maintaining environmental ignorance" (43). Now that the four companies all report on their environmental impact, the discussion has shifted to the trustworthiness of their reports and the feasibility of their plans and discussions (Pasek et al. 2023). In my research, I zoom in on how these materials are designed, how legitimation works and what the companies both foreground and hide. The rest of this chapter is dedicated to answering these questions. In the next subsection, I give an overview of the materials I have studied.

2.3 The Materials at Hand

In my analysis of tech-on-climate discourse in this chapter, I distinguish four content forms that together make up green corporate discourse 1) yearly sustainability reports, 2) the companies' sustainability websites, 3) promotional videos, and 4) project initiatives and online tools. The latter category includes interactive data tools such as Microsoft's "Planetary Computer". These categories are not exhaustive and also partly overlap; project initiatives are often an overarching category existing of a separate website and a promotional video, such as in the case of Amazon's "Climate Pledge" and Microsoft's "AI for Good". Below, I explain the four categories.

The first category I distinguish is that of sustainability reports. Corporate reports have long been recognized as valuable policy documents (Ihlen 2009). They also read as narratives about the role a company wants to play in the world, disclosing their dreams, aspirations and promises (Rahm et al. 2020), which might evoke cultural "myths" (David 2001). Environmental reports more specifically, are seen as valuable sources to explore corporate positions towards the natural world (Morrison 2019). They are carefully designed and contain a lot of images and figures. The companies also publish thematic reports about specific products or supplier chain responsibility, but my analysis focuses on the general sustainability reports of the companies. Occasionally in the analysis, I reference another

18 The hypocrisy of Jobs has also been noted elsewhere. In the same year, 2007, Jobs urged customers to buy a new iPod every year to stay up to date, as is noted in a critical blogpost by Giles Slade (2007) which is in turn referenced by Maxwell and Miller (2012, 22).

19 Another case further indicates that green tech became a topic in Silicon Valley around this time. Margaret O'Mara writes about the investor John Doerr who in 2007 started working together with Al Gore, former vice-president and maker of the documentary *An Inconvenient Truth* (2006), to lobby for investments in the development of green tech. Both were concerned about climate change, but publicly also emphasized the economic opportunity green tech would bring along. The plea however was not successful, and the business did not yet take off in these years (O'Mara 2019, 396).

type of document, such as two AI reports by Microsoft and Google.

Sustainability websites form the second category of materials. These are webpages that are part of the corporate website of companies. They are made up of an extensive combination of pages, tools, text and images, and links to other pages. Each forms an intricate web of information, of which the design and content changes regularly. These dynamic pages are often updated, which makes their analysis tethered to a specific moment in time. They are important because they form the entry point through which most of the other materials can be located.

The third category consists of commercials with a sustainability theme. These videos often disclose information about the company's sustainability approach and share the vision and mission of the company. Most commercials are displayed on the corporate sustainability websites, although some disappear from the websites in the occasion of a redesign. In most cases, the videos are also posted on the YouTube channel of the company.

Lastly, the fourth category encompasses project initiatives and online tools. This includes multimedia projects such as interactive data tools like Google's "Your Plan, Your Planet" or Microsoft's "Planetary Computer". The category partially overlaps with the previous: project initiatives are often an overarching category existing of a separate website and a promotional video, such as in the case of Amazon's "Climate Pledge" and Microsoft's "AI for Good".

In the next two sections, I analyze and discuss the materials in relation to the main framing strategies that I extrapolate. Section 3 zooms in on textual strategies, section 4 on visual strategies. In section 5, I reflect on the contradictory elements of tech-nature relations as they emerge in the promotional materials and theorize the ecomodernist worldview of "Platform Earth". In the conclusion, I summarize my findings and address the shortcomings of the companies' pragmatic approach to the climate crisis.

3. GREENSPEAK: FOUR TEXTUAL FRAMING STRATEGIES

In this section, I discuss textual framing strategies I have found through the analysis of my selection of case studies. The strategies help to understand how the four companies present persuasive stories, and thereby rely on specific forms of greenspeak to promote green myths about the environmental impact of Silicon Valley. I discuss four strategies that summarize the most prominent narratological structures and elements of greenspeak (the first two categories of my methodological framework). These strategies are not unique to tech-on-climate discourse, but I argue that they are used for specific purposes by the tech companies to convince readers and stakeholders of their good intentions and legitimize their position as large companies that use large quantities of energy, materials and more. The strategies that I identified are: 1) temporal differentiation, 2) material differentiation, 3) ambiguous authorization and 4) ambiguous accountability.

3.1 Temporal Differentiation

A central strategy in tech-on-climate discourse is to carefully manage how past, contemporary and future events relate to one another. Especially the terms "future" and "progress" are ubiquitous in the greenspeak I find in tech-on-climate discourse. In what follows, I discuss different examples of how promotional materials rhetorically separate past and contemporary events from the future. The separation of the "now" and the "future" is a division that Jesse Goldstein (2018) identified based on his analysis of green entrepreneurs. For him, it is the core element of the narrative of planetary improvement. Inspired by Goldstein, the first strategy I highlight is what I call "temporal differentiation", which emerges in case studies of Google, Amazon, Apple, as well as the sustainability reports of all four companies. I give a number of examples and end by explaining *why* temporal differentiation is strategic.

Google and Apple: "We" Have Always Been Green

All four companies use timelines or goals set in the future to express that they are taking environmental action in the coming years. To emphasize the progress they have made, some companies take a historical perspective. In Google's "Third Decade of Climate Action" commercial from 2020, for example, the company puts its climate actions in a historical context, sketching a timeline from Google's founding in 1998 until the present. The message of the video is that at the start of the third decade of the company's existence, Google will be more ambitious than ever, while at the same making clear the company has always cared about the environment. The video shows the company's history through home video footage and a timeline that "scrolls" through time, pausing at the sustainability highlights the company has reached in the past years, for example celebrating its own investments in renewable energy by comparing itself to other companies. The video shares milestones such as that Google was "the first major company in history to be carbon neutral". Halfway, the video switches style and music, moving from a summary of past actions into a list of steps yet to take (fig. 5). The video lists a range of goals, stated by the voice-over and visible in text on screen, with drone footage of cities and renewable energy sites in the background. Having reached "zero carbon" already, Google states that the future of the company will be about helping others to become less climate intensive and build "a carbon-free future for everyone".

The video serves as a good example of how promotional materials carefully present the past, present and future of a tech company, in this case Google. The use of the timeline allows Google to present a beneficial story about the development of the company, in which quantified goals and targets are used to underline the positive impact the company has made. The video thus tells a simplified and nostalgic narrative about the development of Google, providing partial information and rewriting the development of the company as a sustainable success story. In order to be successful, the teleological structure has to balance the message that there is room for improvement, but that Google has never been a "bad" actor, unconcerned about climate change.

The video presents a first example of the strategic use of vague statements that

Figure 5: In Google's "Third Decade" video (2020), a timeline visualizes the highlights of the company over the years, with home video footage of the company as background. Screenshot by the author.

I observe across tech-on-climate discourse. Although the video quantifies the actions Google will take (enabling 5 gigawatts of energy, helping 500+ cities), it does not make clear *how* these lofty goals will be reached and how investments in reforestation and renewable energy will be carried out. By overwhelming the viewer with information, the video shares a positive message about the past, present and future of Google, even though its claims remain superficial and unsubstantiated. Perhaps most vague is its claim to "offer 1 billion people the tools and information to live more sustainably". It does not touch upon the paradox that people searching for information and using Google services (such as its cloud service or YouTube) might cause the opposite, enlarging the company's carbon footprint. As I will point out throughout this chapter, companies only propose certain types of solutions that align with their business interests, while ignoring others, even if those might be more effective.

The self-congratulatory function of the timeline is also visible in an earlier mentioned example: the letter by Steve Jobs (2007). Although Google's video does not state it literally, the underlying message of the video is similar to the statement Jobs "Greener Apple" letter makes, directly addressing his stakeholders:

> I hope you are as delighted as I was when I first learned how far along Apple actually is in removing toxic chemicals from its products and recycling its older products. We apologize for leaving you in the dark for this long. Apple is already a leader in innovation and engineering, and we are applying these same talents to become an environmental leader. Based on our tangible actions and results over time, hopefully our customers, employees, shareholders and professional colleagues will all feel proud of our ongoing efforts to become a greener Apple.

This quote by Jobs and the statements in the Google video demonstrate how the companies are speaking to a large community of their customers and stakeholders. They claim they want to make a difference for a large group of people and make their users proud. The narratological structure here is that the company wants to apologize not about its past actions but about its lack of transparency, so that the sustainability of the company is actually not questioned. At the same time, the plans the company proposes to become a greener Apple are not yet crystallized and are said to happen in the future.

In another, more recent, video by Apple, customers are addressed in a particular, caring manner, which allows the company to demonstrate its concern for the future. In the commercial from 2020, titled "A climate change promise from Apple" a voice-over directs its message to a baby. The video only contains the whispering voice-over and footage of the baby lying on a large bed in what seems to be his parents' room (fig. 6). The video is made by Apple to share the sustainability goals it wants to reach by 2030. It is a promise presented as something that will become reality when the child is grown up. We hear:

> Hello Idan. What a beautiful name. It means magic. You don't know us. You don't understand what we're about to say but one day, Idan, you will. Because we want to make you a promise. And we want to be held to it. And every year for years to come we will remain committed to it. A promise between you and us and the planet. (Apple, 2020)

In this case, the timeline is used to make a connection between the current situation and a future ideal. Yet, the video does not create a timeline of company successes but rather paints a picture of a company that is concerned about the future and future generations of humanity. In other words: the company cares about its users, but also the children of its users (or more cynically: the company's future users).

The video creates certain alliances, for example between the company and its customers. By portraying a child so centrally, family values and company values seemingly align: the video creates a "we" with a shared mission to ensure a greener future. When the voice-over speaks of a "promise between you and us and the planet", the commercial emphasizes the alliance between the company, its users, and the planet. Although it is not clear who "we" refers to, the video assumes that this "we" shares an interest in certain solutions, and that a company can thus speak on behalf of a large community. The video also gives the impression of a bond between Apple and "nature" (the planet), which is, as I will show throughout this chapter, a strategy visible across the discourse, but one that most closely aligns with Apple's identity.

Amazon's Climate Pledge: Lofty Promises for a Better Future

Another, more corporate bond, is made by Amazon's Climate Pledge Initiative (2019). In this case study, the idea of the timeline returns. The Climate Pledge is an agreement between companies to do "all they can" to meet the climate goals as agreed upon in the Paris climate agreement in 2040 ("net-zero carbon") instead of 2050. Amazon launched the Pledge in collaboration with an organization called Global Optimism. On the website dedicated to

the initiative, a timeline gives the impression that each, even small, step is part of something bigger, indicating a transformative process.[20] The Pledge's slogan is "be the planet's turning point," urging companies to co-sign the pledge, which is done by 514 companies as of September 2024 (fig. 7). In addition, the Pledge initiative comes with a Climate Pledge Fund, investing two billion dollars in the development of sustainable technologies.

Figure 6: In the "A Climate Change Promise" video (2020) by Apple, a voice-over addresses Apple's promises to a baby lying on a bed. Screenshot by the author.

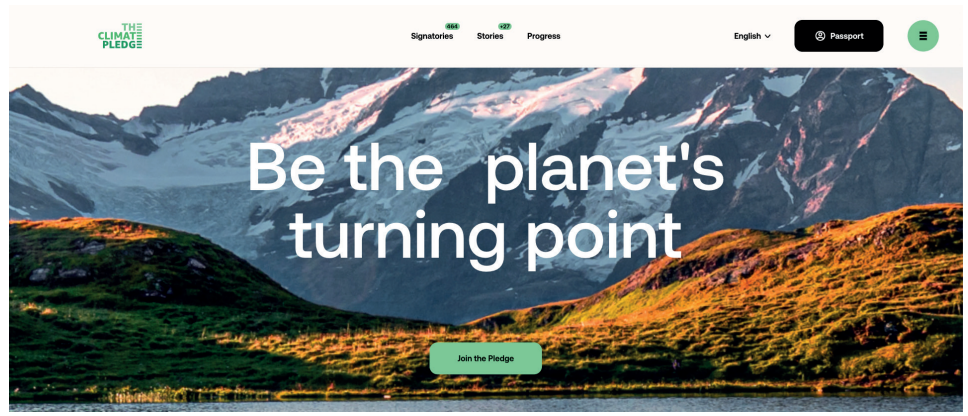


Figure 7: The homepage of the Climate Pledge website pictures its motto: "Be the planet's turning point", against natural scenery. Screenshot by the author (September 2024).

20 On a previous version of the page, the timeline was prominently visible on the Pledge's homepage, which has since moved to a page titled "progress" (see Appendix 1 for a link to both versions of the homepage).

Again, the case study demonstrates the use of a timeline as a powerful rhetorical device. In the case of the Pledge, the timeline is used to demonstrate that Amazon and other signees care about the future and envision an ambitious future goal they want to work towards and influence others to do the same. But, as with Google and Apple, this narratological structure gives little information about how present activities will help to achieve future goals. The timeline gives the impression of a clear path of actions, but only shares vague claims of progress by plotting previous blogposts on a timeline. The website gives no update on how close the companies are to reaching their goal of becoming net-zero; it is a pledge that is not linked to concrete actions. The website mostly explains why companies should sign up, not what is already achieved or remains to be done.

A strategic function of the timeline is that it allows companies to imagine a point on the horizon and present a victorious narrative about their evolution as company towards that point. The timeline is thus an example of the "journey" metaphor, common in sustainability discourse (Milne et al. 2006). In the case of Amazon, the analysis of their promotional materials shows how the Pledge serves as an anchor point and as a trope of sustainability across its materials. The Pledge features prominently in Amazon's sustainability discourse and allows the company to cast a clear goal to work towards, while separating actors who contribute to the challenge from the ones who do not. The Pledge is referenced on the corporate Amazon website and in its sustainability reports. Amazon's sustainability report of 2023 (covering 2022), titled "Building a Better Future Together", mentions the word "pledge" 69 times across 82 pages. And through the Amazon web shop, third-party shop owners can get their products labeled as "climate pledge friendly". The company has dedicated an animated video (2022) to this initiative, in which a voice-over explains the principle of Climate Pledge Friendly Certifications (fig. 8). With the Pledge as reference point, the company has given itself a clear timeline to work with, a point on the horizon that allows the company to divide its activities in things they have accomplished, things they currently undertake, and things they will undertake in the future. Despite concerns about the trustworthiness and effectiveness of such programs, the goal of reaching carbon neutrality or net-zero features prominently in many tech companies' sustainability campaigns.

A similar use of temporality can be found on the "Approach" page of Amazon's sustainability website. Here, Amazon explicitly connects present and future, by "backcasting": setting a goal in the future and assessing which steps need to be taken when to achieve that goal. Amazon states:

> We set big goals and work backwards to achieve them. We pledge to apply that same tenacity to how we address some of the world's biggest environmental and societal challenges, so we can help make every day better for our customers, our employees, our communities, and our planet. ("Approach")

In this statement, Amazon presents the act of setting big goals as core aspect of their business. The word "pledge" brings the Climate Pledge to mind again, while it also emphasizes Amazon's dedication to keeping its promises. For Amazon, everything is about

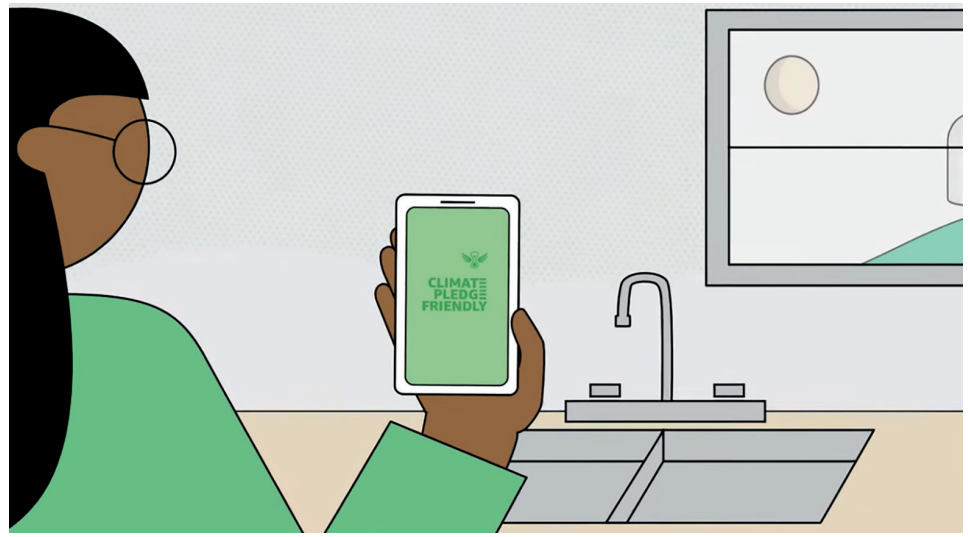


Figure 8: In the animated video (2022) about the "Climate Pledge Friendly Certifications" in white, green and blue tones, a voice-over explains how a user can shop more sustainably through Amazon. Screenshot by the author.

"tracking progress", according to one of the headers on its sustainability webpage. Tracking is also an indicator of the companies' interest to measure and quantify their success.

At the same time, the term "future" plays a more conceptual role in tech-on-climate discourse. The future is not only a specific moment that is yet to arrive, but also a symbolic concept, that denotes something better is coming, in the sense that the future is an upgrade from the current situation. My analysis shows that the concept of time has an ideological component, in which the future signifies progress. Such a conflation of terms (future equals progress, or smart equals good) is another key strategy of tech-on-climate discourse – and tech discourse in general. These terms are "coupled", so that they positively affect one another.

Amazon: Accounting for Insecurities

My analysis shows that the future is not only imagined as a point on the horizon: tech companies also claim they "are" the future and the future is happening "now". In some cases, the concepts of "future" and "now" are coupled to create an overall positive message of progress, in which the future symbolizes progress that is already made, thanks to tech companies. This framing, which underscores the innovative qualities of tech companies, can for example be found in Amazon's "Future of Energy" video (2020) that promotes the cloud service Amazon Web Services (AWS). The video shows how AWS can help energy companies work more efficiently and sustainably, values that are framed as two sides of the same coin. While I will return to the visual style of the video in section 4, the closing statement of the video is relevant to my textual analysis here. The voice-over states: "The world is changing, but the future is here. AWS is how." With the statement, Amazon advertises

itself to energy companies, stating they can help upgrade their operations, which will make their business more efficient, but also future proof.

The AWS video shows an example of how companies communicate they feel the urgency of the climate crisis and have developed tools for other companies to also act upon pressing environmental concerns. Although the statement "the future is here. AWS is how" is somewhat cryptic, it shows, I argue, that Amazon wants to imagine itself as an environmental frontrunner. It gives the impression that the future has arrived in the present because of Amazon's activities and technologies, and the company invites others to make use of these innovations. The video shares the message that companies using AWS are ready for the future of the climate crisis, whatever that might mean. So, in some cases of tech-on-climate discourse, we can see how the categories of future and present start to blur, whereas in other examples the future is discussed as a distant yet reachable point on the horizon. In both cases, what the future entails remains vague. In the case of Amazon's video, the duality of the concept is strategically used. The future is said to be here, but the company's approach is to make fossil fuel companies more efficient, thus profiting from not-yet sustainable companies. As Goldstein (2018) writes, this is a central element of the business model of cleantech, that relies on "a dirty world forever in need of cleansing" (139).

My discussion of the terms "past", "present" and "future" shows how these concepts are used to communicate that companies have always been sustainable and will become *even more* sustainable while helping others to achieve this too. However, by making promises, the companies make themselves vulnerable to scrutiny of how much of their goals become reality. This explains why my analysis also shows that connections between the present and future are rhetorically undermined by referring to the insecurities that might make plans unfeasible. Sustainability reports, for example by Amazon, include a disclaimer about the trustworthiness of their future-forward statements. This disclaimer may be understood as the company's attempt to safeguard its legal position regarding liability, but it can also be seen as a way to mitigate more general, publicly held expectations. The use of disclaimers is common in these reports, but as Amazon's campaign is built around a forward-looking pledge, the content of its disclaimer, part of the report's appendix, is especially noteworthy:

> These forward-looking statements are inherently uncertain and difficult to predict. We use words such as aim, anticipate, believe, commit, drive, estimate, ensure, expect, goal, intend, may, mission, plan, project, seek, strategy, strive, target, will, or similar expressions to identify forward-looking statements. Forward-looking statements reflect management's current expectations and inherently involve risks and uncertainties. (Amazon report 2023, 81)

The uncertainty engrained in this quote sharply contrasts with the bold statements Amazon makes elsewhere. The statement undercuts many of the claims made and the terminology of greenspeak used by Amazon and in tech-on-climate discourse in general. Some uncertainties are expected, but these uncertainties can also be used as a rhetorical strategy to avoid *any* unwanted responsibility. After the disclaimer statement, the company lists

multiple reasons why outcomes might not be as anticipated, including "expansion into new products, services, technologies, and geographic regions" (81). This statement implies that the economic growth inherent in the business model of tech companies is one of the things not included in the sketched timelines, which makes the trustworthiness of these claims more questionable. The different examples I have discussed show how companies try to find a balance between stepping forward as climate leaders who keep the interests of the planet, future generations and other corporations in mind while avoiding making promises about the future they cannot keep.

Why Temporal Differentiation Is Strategic

Through the examples from Apple, Google and Amazon discussed above, I have demonstrated how timelines and the concepts of past, present and future function as rhetorical devices in tech-on-climate discourse. I see these devices as applications of the strategy of temporal differentiation. Through this strategy, companies make strategic "couplings" between different temporalities to celebrate the evolution of companies, or "decouplings" which isolate the past from the present, or the future from the present. Earlier research by Rahm et al. (2020) critiques "the tendency to emphasize good news and obfuscate bad as well as to attribute positive outcomes to internal factors and negative outcomes to external causes" (80). How is this achieved through temporal differentiation?

This decoupling of the "now" from the "future" creates what Goldstein (2018) calls a "temporality of progress" and a never-yet future that cannot be used to hold companies accountable (120). He describes this form of differentiation in the green capitalist discourse as:

> offering a way of seeing the world as not-yet clean, and of seeing the future as a forever receding horizon of possibility whose radical transformation remains safely insulated from the status quo, which can therefore persist in perpetuity. Planetary improvement provides a temporality of progress that defers wholesale transformations to a not-yet, a never-yet that is too abstract and too cerebral to directly impact the here and now, where incremental improvements are pursued as the only pragmatic alternative. (120)

The narrative of planetary improvement thus highlights the necessity of a pragmatic approach to the climate crisis in the near future, while also alluding to large-scale transformations in a not-yet, never-yet future.

Other authors have also demonstrated the importance of the concepts of "future" and "progress" in the marketing of tech companies. Their promotional efforts are often designed to convince others that the companies are on a path toward a better future, creating what Rahm et al. (2020) call an "evolutionary dream" about never-ending development. The evolutionary dream of progress is also presented as an attainable future perspective for tech users. As Natale et al. (2019) note, central elements in tech discourse are "the incorporation of media histories into the companies' histories, the stated centrality of corporate actors in contemporary socio-technical innovations, and finally the

tautological claim that these actors will continue to anticipate and shape the future" (334). This narrative of "corporational determinism" (Natale et al. 2019) is also visible in tech-on-climate discourse, where companies expand their horizon and expertise to develop the argument that they are not only tech leaders, but also climate leaders. Companies continuously search for ways to connect the green changes they make to their corporate agenda. This is why Amazon's cloud service Amazon Web Services promises sustainability *and* efficiency to other companies. And why Google will help others by making its tools and products widely available in the company's third decade. In other words: positive economic changes are coupled with positive environmental changes. But as it can be risky to couple an economic agenda with (expensive) environmental actions, the companies keep certain promises deliberately vague.

The vagueness and non-binding qualities of timelines and promises are reasons to critique the strategy of temporal differentiation. Such a critique has already been expressed in relation to Amazon's Climate Pledge, which has not lived up to its lofty promises (Boylan and Dufour 2023). As Emily West (2023) argues, the Pledge is a form of self-regulation and carbon accountability that fits the operations of a company known for its lack of transparency and sustainability. The Pledge might motivate companies to publicly declare they want to reduce their climate impact, but it is also a narratological device that runs throughout Amazon's climate campaigns. This makes the Pledge an example of a "synthetic narrative," a narrative created around futures that could happen or be realized, but only if certain actions are taken (Aronczyk and Espinoza 2022). Such statements, estimates and outspoken goals create compelling narratives about the future and cast companies as leaders on a journey towards sustainability, but they do not bring any certainty about climate action.

When tech companies address steps "we" have to take now to save the climate for future generations, I argue that there is a gap between the impact of the actions taken now and the final stability of the planet this is imagined to result in. The examples demonstrate how, as Goldstein argues, the companies offer a simplified "formula" of how a selection of small improvements can eventually lead to a fundamentally new, green economy. Sketching a shared horizon makes smaller ideas and suggestions that can be executed in the present seem more powerful and sensible. The strategy of temporal differentiation demonstrates how past or present activities remain strategically decoupled from a future that is never defined. The decoupling between different stages of corporate action is crucial, I argue, because it allows for the postponement of difficult decision-making to a vague future moment. The future, then, is not so much a realistic point on the horizon, but a concept to appear powerful and decisive in contemporary debates. Temporal differentiation allows tech companies to present a commercially attractive approach, instead of reorienting their operations and potentially challenging their economic position. At the same time, the companies' histories are rewritten to support a narrative of continuous improvement. And if there still are harmful relations between technology and nature, these will be solved in the future. In the next subsection, I highlight a second form of strategic separation.

3.2 Material Differentiation

With the strategy of "material differentiation", I address how companies discuss the materiality of their business practices in a variety of ways, giving readers a partial vision of their environmental impact. Material differentiation points to how vagueness and clarity about platform materiality are weaponized alternately. Through different examples from all four companies, I explain how companies offer a range of updates and quantified results about the geographical and environmental presence of companies. While the companies seem to give a lot of information, they offer little insight into their operations. In this section, I further reflect on the general discursive strategy of tech companies to harness vague terms such as "community" or "smartness" as part of their greenspeak, to sell their ideas and dreams as undoubtedly positive and desirable.

Sustainability Reports: Concrete Numbers, Anecdotal Evidence and Vague Claims

The yearly sustainability reports document the progress a company has made, but they are written in such a way that they read as a celebration of achievements. The reports from 2023 (covering 2022) by the four companies vary in length from 81 (Microsoft) to 114 pages (Apple). They all include updates on renewable energy, water use, office buildings, use of resources, but also on the work that companies do to "give back" to local communities or help the Earth "recover".

My analysis shows that the companies are most concrete when they set quantified goals or list their achievements. They often use numbers, percentages, graphs and figures to express their progress, especially in their sustainability reports. The reports from Amazon, Google, Microsoft and Apple published in 2023 all have at least one page that gives an overview of progress in numbers (fig. 9). The reports are made up of many vignettes in which a small sustainable initiative is highlighted. Through these vignettes, the companies offer anecdotal evidence. Amazon's report, for example, contains a page about its carbon footprint that offers a particular selection of facts. Instead of offering a number and an argumentation about its carbon footprint, the company states that they achieved a 0,4% decrease in absolute carbon emissions and a 7% decrease in carbon intensity (9). Google also discusses local projects around clean energy and lists the improvements they made to their offices. Microsoft highlights four key carbon removal projects (23) and shares its progress through a list of trends.

The preference for quantification and anecdotal evidence goes hand in hand with the use of vague formulations that dominate the greenspeak of companies. Apple's report opens with "reflections", explaining that "Apple is on a journey" (3). Then it moves on to discuss its plans for "smarter chemistry" and "supporting communities". Amazon's report is titled "building a better future together" and explains how it is "driving climate solutions", "protecting natural resources" and "respecting human rights" (2). Google's report is divided in sections titled "empowering individuals", "working together" and "operating sustainably" (2). Microsoft explains its goal of "enabling sustainability for our company, our customers, and the world" (4). These examples demonstrate how companies use generic terms to explain their concerns and engagements.

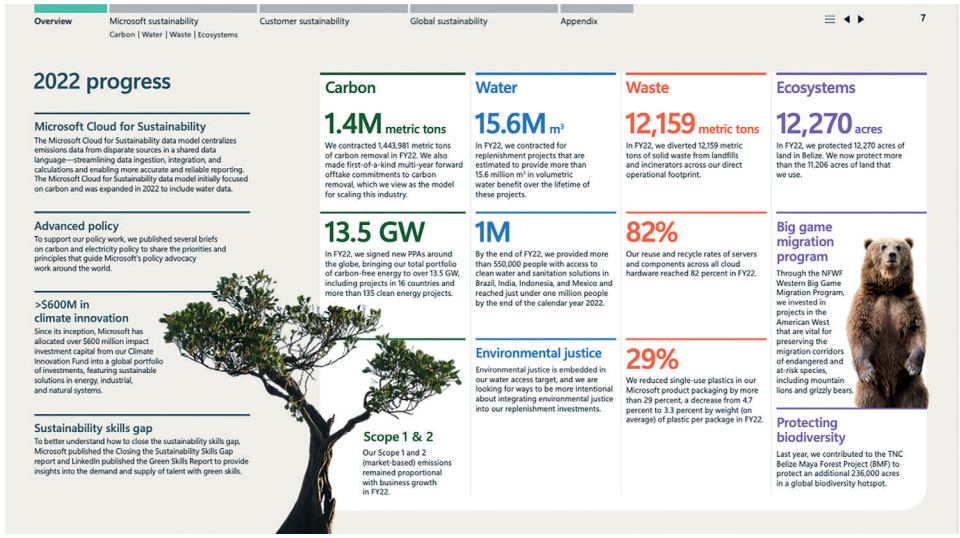


Figure 9: All reports, including Microsoft's report (2023, 7), contain a page that lists the progress of the company in numbers. Screenshot by the author.

Such vague statements appear across the case studies to position the companies as climate experts. On its sustainability website, Amazon, for example, describes it wants to help solve the "complex, urgent, and interconnected" environmental problems humanity is facing ("Approach"). The company imagines itself as a generous environmental agent. The term "carbon" appears especially often. Amazon's 2023 report alone mentions the terms carbon intensity, net-zero carbon, decarbonization, lower-carbon alternatives, neutralizing carbon, embodied carbon, carbon elimination, carbon-efficient and carbon-removal technologies. The company proudly states it is "decoupling emissions growth from our growth as a business" (12), meaning that its emissions are rising, but that, according to their calculations, it is decreasing per dollar of gross merchandise sales. The company also uses common tropes straight from the Silicon Valley "playbook" of techspeak, positing its "innovative," "tenacious," "growth-oriented," and "entrepreneurial spirit" as advantages. Such statements convey the idea that Amazon is the best suited party to "tackle" the climate crisis, differentiating the company from those that oppose their approach or promote alternative future paths.

The innovative qualities that Silicon Valley has always emphasized to justify its position as a leading economic agent, are now harnessed in a narrative about climate solutions. The companies cherry-pick examples that underscore their environmental activities. Although the numbers seem to offer clear updates, they are often not contextualized by additional information. Such isolated numbers and stories offer a very partial impression of these companies' efforts. The reports narrate the material impact of tech companies in ways that are highly stylized and carefully chosen. These are therefore not neutral documents, but marketing materials.

Amazon and Google: Companies as Elemental Media

The companies do not only discuss climate plans in general terms, sometimes they are more specific about the problems they want to tackle. This is a central observation drawn from my analysis: the companies often switch between grand, often vague statements and much more specific examples and solutions. When it comes to materiality, companies only address the material impact of their operations, the "elemental" foundations of their operations, in certain instances. I will give some examples regarding the topics of waste and water. Google, for example, addresses the problem of waste and recycling in its sustainability report, but focuses on the business opportunities the circular economy offers. Emphasizing their innovative qualities, they aim to "design out waste and pollution" (2023, 56). The approach is telling: Google portrays waste as a design problem that also requires a design solution.

Additionally, Google's "Your Plan, Your Planet" tool provides users with insights into the food, water and energy waste within their household. The interactive tool offers a quiz users can click through to learn more about the recycling of clothing or ways to save water. It is a small-scale initiative that promises users insight into how they can improve their sustainable efforts, but it is not connected to concrete actions taken by the company itself. Instead, it offers a gamified environment where users can "unlock" tips and save their progress through their Google account (fig 10). Similarly, Amazon's website gives a particular spin to the topic of waste, stating they want to "repair, reuse, recycle" and prevent that materials end up in landfills wherever they can. It also advertises with its "Amazon Second Chance program", that offers ways to buy secondhand Amazon products and shares information about reused packaging materials and recycling options.

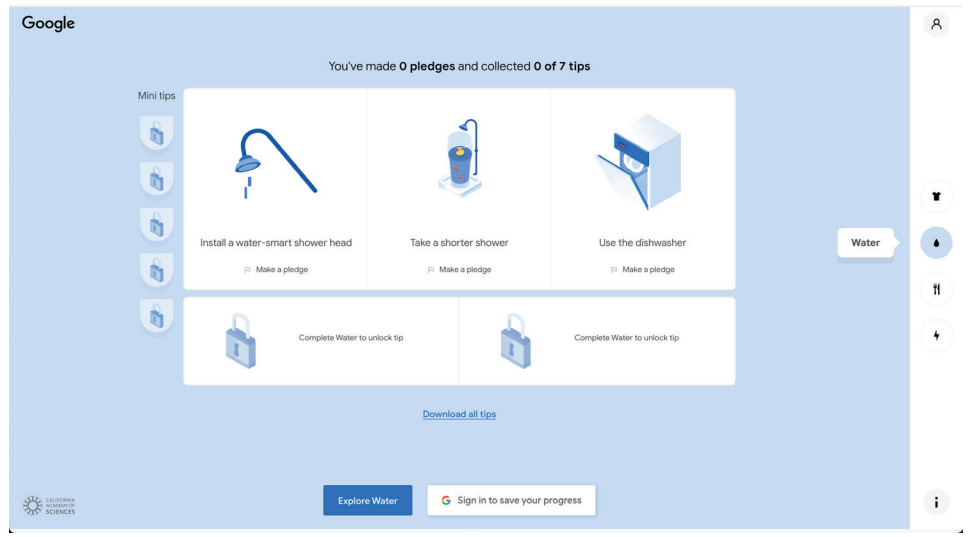


Figure 10: The "Your Plan, Your Planet" tool by Google allows users to unlock tips about topics such as water usage and save their progress through their Google account. Screenshot by the author.

At the same time, the webpage does not give the reader an impression of the enormous amounts of (plastic) waste created by Amazon (Calma 2020), nor of their history of destroying unsold products (Calma 2021a). Amazon says it designs products to last and offers the "Amazon Second Chance" program, but the company does not address the ways in which the Amazon web shop stimulates (over)consumption.

Another problem that is often addressed is water use and pollution. On the "Our Values" page of Amazon Web Services, Amazon shares its "pledge" to become "water positive" by giving back more water than they are using (reducing water use and supporting water initiatives). The webpage also includes a 6-minute video, shot as a short documentary in which different Amazon employees discuss the improvements they are making. The video (2022) is designed according to a common problem-solution narrative: first, it addresses problems of water shortage and pollution, then, it shares how different local departments are working to the goal of "water positivity" (fig. 11). The video ends on a list of goals for the future and the mission to ensure that AWS returns more water than it uses by 2030. Compared to other commercials, the video is not flashy, but rather designed as a seemingly objective infomercial.

On its sustainability website, Google also addresses "water stewardship" and the "circular economy" as two of its main concerns. Terms such as "water positive" and "water stewardship" show how the companies develop a careful vocabulary as part of their greenspeak efforts.

Figure 11: In a video on water usage for Amazon's AWS service, employees, such as this employee filmed while fishing, explain how they help to make Amazon water positive. Screenshot by the author.

These examples show how the companies do address environmental issues in their materials, often broken down into the topics of energy, water and waste. The style is either highly abstract or very specific, which results in a rather partial and vague understanding of the materiality of tech companies. The materials are designed to highlight isolated elements of the production chain of a company but do not give the tools to "map" the complex, global materiality of tech companies and their ecological effects. Instead, the companies highlight their offices, data centers, assembling factories and local energy sites, or certain success stories, but other locations remain out of sight.[21]

Together, these examples demonstrate how much these companies rely on anecdotal evidence and a smart framing of their achievements. They list a few small examples that together are supposed to amount to big changes, even though these initiatives are sometimes trivial and unrelated to one another. I theorize this as a form of "formulaic writing", in which the companies' modus operandi, but also the climate crisis at large, is divided into a set of issues in simple and abstract ways. Together, the strategies of temporal and material differentiation point to the temporal and spatial dimensions of the scattered narrative we find in tech-on-climate discourse. Different moments in time, events and actions stay "decoupled" from one another, and do not clearly lead to concrete and meaningful transformations in corporate practices.

Apple "Better": Everything Will Be Better

Another example further illustrates how the strategy of material differentiation creates a particular narrative about the materiality of the companies. This is the Apple "Better" commercial from 2014, an example that is slightly older than the other case studies I discuss in this chapter. In this commercial, it is the word "better" that is centralized and used to draw a connection between Apple (technology) and nature. In the end, CEO Tim Cook states the core message: "We will work to leave the world better than we found it and make the tools that inspire others to do the same". The video mentions reducing waste, improving products and investing in green energy as potential ways to make Apple a "better" company and the planet a "better" place. However, as the quote makes clear, Apple also wants to "make the tools that inspire others" to become better. While they do reflect on their own intentions, Apple, like the other three tech companies, emphasizes that the improvement of the planet is a collective effort.

The commercial hints at many improvements to be made in the process of production and packaging, but it remains vague what changes will be implemented. The video mostly derives its power from the carefully chosen visual imagery and the relation it creates between Apple and nature. In terms of text, the commercial uses the word "better" in so many ways that it becomes a somewhat meaningless term. What precisely will be improved, how, when, and by whom? Because of its diffuse message, the commercial does not present a clear stance in the climate discussion nor concrete solutions. Instead, it makes the claim that Apple wants to do better but was not so bad to begin with.

21 This partial view also excludes large groups of platform laborers that are not seen as platform employees (often hired by third parties or on freelance contracts) but are nevertheless crucial for the companies' operations and income. Various forms of platform labor are addressed by scholars, see for example Lilly Irani's (2015) discussion of Amazon Mechanical Turk, a digital work system owned by Amazon.

Why Material Differentiation Is Strategic

My analysis shows how in tech-on-climate discourse, companies use rhetorical strategies to create a material division between concrete measures and rather abstract future plans. I argue that this material differentiation is another form of decoupling, which does not separate different temporalities, but materialities. It allows the companies to "decouple" themselves from material realities that reflect poorly on their business by using vague terms and quantifications, but also to "couple" their businesses to positive local examples.

Most noteworthy in the strategy of material differentiation is everything that is *not* discussed. The showcasing of small-scale innovations, for example, can work according to Goldstein (2018, 157) as lightning rods that "deflect energy away from the underlying structures that they protect". The examples illustrate how the companies draw attention to certain issues and solutions, presenting a range of success stories. Such small case studies and grand statements are designed to offer a cloudy discourse that seems informative but actually obscures factual information. The strategy also further highlights the specific vocabulary companies employ, which is a combination of generic climate terms and positive valuations of tech companies as smart and innovative companies.

The companies can thus no longer be accused of denying the materiality of their operations, as they take a step forward to discuss their physicality in ways that fit their narratives of progress and sustainability. To make their approach convincing, the materials rely on simplifications. Objects such as data centers or factories, for example, are discussed as green assets to a community, not addressing the claims they make on local energy and water supplies (see for example Hogan 2015; Bresnihan and Brodie 2023). The partial representation of the environmental impact of the companies creates a misleading vision of an alignment between nature and technology, while decoupling the companies from landfills. As companies deliberately create an incomplete image of their material impact, we can also critique this as a form of "agnotology": the cultural production of ignorance (Proctor and Schiebinger 2008). Fossil fuel and tobacco companies have been extensively critiqued for employing such methods, questioning the truthfulness of scientific research or making sure that certain forms of knowing are overpowering others in public discourse.

However, work from scholars and journalists has helped to make the physicality of platforms intelligible. While the companies do address their factories and datacenters, the scale only becomes clear to those who understand what the numbers *mean*. Recent sustainability reports, for example, have pointed out that because of the surge in AI use, the energy need of companies is growing (Hodgson 2024). This has resulted in a new increase in the use of fossil fuels, which makes the PR focus of companies on investing in renewable energy less convincing. Ethnographic studies related to the contexts of electronic waste make clear how these networks of mining, recycling and discarding are much more complex and much less regulated than the companies make it seem (Gabrys 2013; Bresnihan and Brodie 2023). Moreover, researchers have criticized the lack of standardization for sustainability reports, which enables companies to present their numbers in favorable ways (Pasek et al. 2023). Such quantifications tend to offer information in a very reductive, generalizing, and often obfuscating way. In the case of environmental reports, graphs and charts may

also construct a distance between environmental events and the reader (Morrison 2019). In sum, the strategy of material differentiation helps companies to carefully address how they are perceived, by creating a seemingly objective story about their physicality that is in fact partial and highly stylized.

3.3 Ambiguous Authorization

The third strategy I want to highlight addresses how companies frame themselves as trustworthy agents in relation to environmental issues. Amazon, Google, Microsoft and Apple often point to their qualities as tech producers and innovators. Part of this framing strategy is to disregard other views, by setting them aside as unfeasible or undesirable, creating a cautionary tale about what might happen otherwise. I introduce case studies from Microsoft and Amazon to explain how the framing strategy of authorization works. Here, I follow the work of Theo van Leeuwen (2007), who notes the reference to an authority as a key strategy of legitimation in discourse. The examples illustrate how authorization is ambiguous: companies carefully choose when they foreground themselves as expert or rather divert this responsibility. As the analysis will show, the careful framing of authority informs the choice for different kinds of narratological structures.

Microsoft Planetary Computer and AI for Good

The Microsoft campaign titled "AI for Good" demonstrates how the company reorients its sustainability strategy in line with its core business, in this case AI and data collection, to harness its authority as tech company. As explained in the introduction of this chapter, Microsoft's "Planetary Computer" is an interactive tool that allows researchers to collect and analyze climate research data. The initiative was originally introduced as part of the company's "AI for Earth" campaign, but as of 2023, Microsoft no longer uses the term "AI for Earth". Still, the Planetary Computer remains visible on the company's sustainability webpage, with a link to a separate website where people can access the tool. After a redevelopment of the campaign, the company now uses the term "AI for Good lab" to refer to its efforts around climate resilience and to celebrate how the Planetary Computer will deliver "a new level of planetary insights to corporations and governments around the world" (report 2023, 5). Website visitors can view the Planetary Computer's data catalog, hosted on Microsoft's cloud service Azure (fig. 12).

With the tool, Microsoft stays close to its core business of data production, collection and sharing, now presented as a form of climate action. One remarkable element of the initiative is the previously mentioned promotional "Explainer" video (2020). The video explains how large data collections will allow for a more systematic understanding of the Earth, and eventually, help "humanity" adapt to the climate crisis. The video is a black-and-white animation in which simple drawings represent urbanization, pollution, and its effects on nature, while a voice-over explains the threats of the climate crisis and the need to "save" the Earth. The video discusses the climate crisis as a "wicked problem", acknowledging life on Earth as a "web of life". Quickly, though, the video moves to a more concrete understanding of the climate crisis: as a problem of a lack of information that

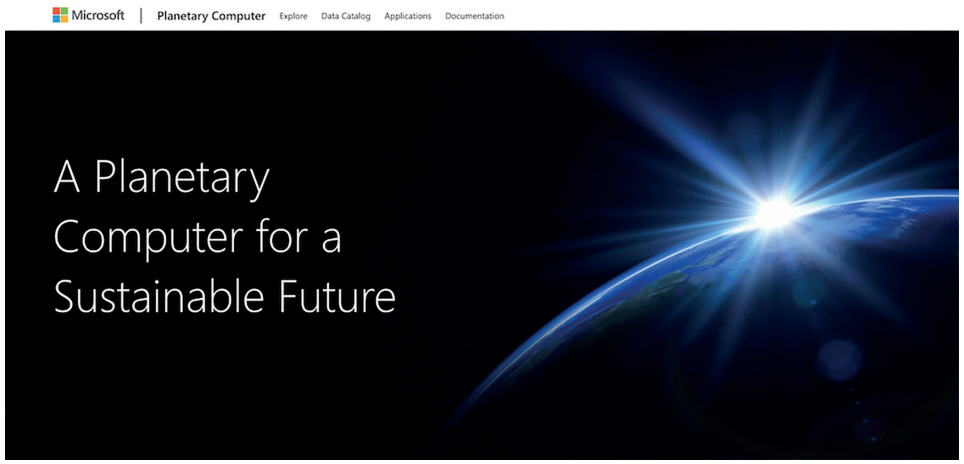


Figure 12: The homepage of the Planetary Computer website mentions a sustainable future as its goal and shows a picture of the Earth from space. Screenshot by the author (September 2024).

can be solved with a shared cloud for researchers. The solution, according to Microsoft, is to gather more information, a data gathering process visualized in the video by trees, rabbits and birds that transform from their organic shape into binary code, flowing into the Planetary Computer system and thus becoming part of the information ecosystem (figs. 2+3).

The video offers a clear example of a popular narratological structure in tech discourse that narrows down problems and solutions. By positioning Microsoft as an authority and problem solver, the problem at hand is carefully reframed: it is not a complex ecological crisis, but rather, a crisis of information shortage. In this narrative, Microsoft turns the wicked problem of the climate crisis into an approachable issue the company is willing to tackle. It then positions itself as the authority that can take on this problem, deriving its authority from its year-long experience with cloud technologies. In this sense, the Planetary Computer is an example of technological "solutionism" (Morozov 2013), presenting the company as a producer of solutions catered to the climate crisis. The narrative that addresses the climate crisis as an information crisis can consequentially present a solution very fitting for tech companies: a tool for data collection and analysis.

In the example of Microsoft, the problem of climate change is not a growth economy that threatens livelihoods and biodiversity, but simply a lack of data. Just as the video simplifies what "nature" is, Microsoft's discourse at large simplifies the climate crisis as an information crisis that can be easily fixed by gathering more data. The solution also promotes Microsoft's cloud infrastructure Azure. This narrative is supported by the false notion that the Earth as a planetary object "can be fully computationally observed", which disavows that planetary visions are always incomplete (Richardson and Munster 2023, 5). This narrative presents data as something that is "out there" and can be harvested, not something that is produced. Through the naturalization of data, the company itself is also naturalized. In other words: Microsoft decouples itself from an extractivist past and couples its operations to the well-being of the planet.

We find the same strategy at Google, as the company offers "Google's Environmental Insights Explorer" (fig. 13). This tool uses Google data models and visualizes these through Google Maps, asking users to log in with a Google account to access the tool. On the website, the tool is announced as "Empowering thousands of cities and regions with actionable data and insights to reduce global emissions". Again, Google emphasizes its services can empower others to do better. The phrase "actionable data and insights" is also a popular form of techspeak, presenting the company as an authority with valuable data sets that can lead to concrete (environmental) actions.

Microsoft's "Planetary Computer" has drawn attention of several scholars. Richardson and Munster have theorized the data practices of the Planetary Computer as an example of the wish of tech companies "to transform Earth into actionable and intelligible computational artifacts and operations" (2023, 1). In addition, Przemyslaw Matt Lukacz has researched how Microsoft uses the frame of "democratization" to sell the Planetary Computer's data production as a form of environmental knowledge and action, signaling that "environmental data comes to be valued as an AI training dataset, and not a source of environmental action" (2024, 11). Lukacz argues that democratization follows from authorization: Microsoft presents itself as an essential partner and intermediary in this process, which can offer the necessary infrastructure, large-scale datasets, and new insights. Microsoft is not only a knowledgeable authority, but also a benevolent actor that shares its tools for "free". This strategy, positioning companies as noble actors, hides how they benefit from drawing users to their services.[22]

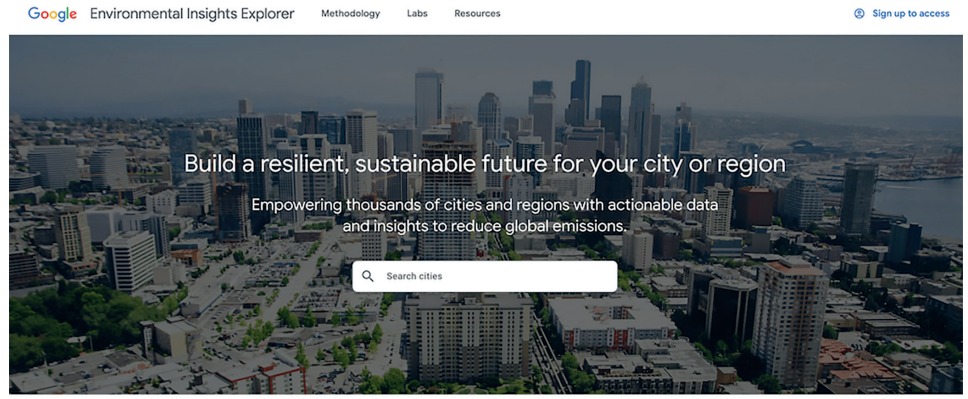


Figure 13: Google's environmental insights explorer offers cities and users "actionable insights", such as mapping data through Google Maps. Screenshot by the author (September 2024).

22 The framing of "free" services is a common critique on platforms, for example in the case of social media platform Facebook, which was promoted as a free website designed to empower users and build a global community (Hoffmann et al. 2018). For a critique on Big Tech's AI tools and democratization discourse, see Luchs (2023).

I want to stress the redesign of the Microsoft campaign around AI that occurred during the research period. Since its launch, the Planetary Computer has been repositioned as a small part of Microsoft's larger "AI for Good" lab. With their laboratory, Microsoft positions itself as an authority that is continuously tinkering with new climate solutions. The launch of this lab is announced on a web page dedicated to the lab and a video titled "AI for Good: Microsoft's Vision for a Brighter Future" (April 2024). This was accompanied by the launch of an edited volume by Microsoft employees titled "AI for Good: Applications in Sustainability, Humanitarian Action, and Health" (2024) that is for sale, as well as a free report titled "Accelerating Sustainability with AI: A Playbook" (2023). Although AI for Good was a term already used by Microsoft (in combination with AI for Earth), it has been revived and more prominently featured since early 2024, a move that coincides with the increasing prominence of AI as the core business of the company (mainly through its partnership with Open AI). Both Microsoft and Google have published a report in 2023 that explains how AI can "accelerate", as they both write, sustainability and climate action (fig. 14a+b).

Figure 14a+b: The covers of the reports on sustainability and AI by Microsoft and Google state how the companies want to "accelerate" progress. Screenshots by the author (September 2024).

There are two observations to be made about the promotion of AI for Good. First, it reconfirms that the companies present a wide range of initiatives and materials designed to showcase the myriad ways in which the companies are willing to take action. Second, the initiative highlights that promotions of techno-fixes are more and more linked to AI applications. In a video (2024) by Microsoft about the program, employee Juan M. Lavista Ferres (also co-editor of the book) is filmed saying: "Sometimes, AI is not just a solution, it's the only solution". This is an example of the company's hubris, demonstrating its confidence to present AI, their AI, as *the* climate solution and dismiss others. Similarly, the playbook emphasizes how AI accelerates sustainability, as "AI is a vital tool to help accelerate the deployment of existing sustainability solutions and the development of new ones—faster, cheaper, and better" (Microsoft 2023, 4). In my view, Microsoft's campaign is designed to demonstrate the credibility of the company as an accelerator of environmental solutions, but it does not offer a detailed strategy, nor comments on the environmental impact of AI tools themselves. This clearly shows how the companies align their sustainability plans with their economic interests and their platform infrastructures.

Climate Pledge: Amazon as Corporate Authority

A second form of authorization as a strategy refers to how companies sometimes function as "knowledge brokers", and other times shift the focus to the expertise of others. This strategy of authorization can be found on the website promoting Amazon's Climate Pledge. With this pledge, Amazon creates the message that it does not take climate action on its own behalf, but on behalf of its communities and the planet as a whole. The company thus appears as a generous partner that sets much higher goals than it would normally be expected to meet and thereby positions itself as a leader. Elsewhere on the page, the company explains why this fits the company's DNA, as it uses its "scale and culture of innovation" ("Approach"). In her letter that opens the 2023 report, sustainability vice-president Kara Hurst writes that the company is "tackling some of the world's biggest sustainability challenges" on behalf of its customers. She also writes Amazon is "willing to make the big bets necessary" and to scale solutions fast to put "our planet back on the right track" (3).

Amazon thus positions itself as an authority within the business community. With the pledge, they position themselves as leaders of a sustainability challenge, a project that aligns with their "DNA". The use of playful terms appears across the discourse. They are part of the "playbook" that symbolizes the innovative and creative abilities of the company. The strategy of positioning their businesses as central agents for positive change is a common strategy used in platform discourses (Natale et al. 2019). In the case of the environmental crisis, the scale and innovativeness of tech companies are used to reason that they can solve issues that other companies or institutions could not.

Why Ambiguous Authorization Is Strategic

Authorization is an important framing strategy because it draws attention to how the companies take bold positions in their discourse, sharing confident narratives about their role as authorities, pioneers and inventors, that only reveal cracks upon closer study. The

companies strongly connect themselves to environmental solutions, even though the environmental crisis is not part of their core business. By reframing the climate crisis in technical terms, the companies present themselves as natural and obvious partners or leaders. The most recent example is the promotion of AI as a groundbreaking technology to solve environmental issues, for which Microsoft has developed a new website, playbook and edited volume.

I refer to this strategy as "authorization", which addresses how companies frame themselves as a relevant and credible authority. Theo van Leeuwen (2007) explains how authorization can involve referencing an external authority or tradition to validate a certain practice, but tech companies often position themselves as authority. For Van Leeuwen, authorization is an answer to a question about *why* something must happen a certain way, which is also a way of saying *how* things should or should not be done. The narratological structures of the case studies are designed to present their solution in such a way that it seamlessly matches the problem they have sketched. This strategy also contains a form of morality, as the authority knows what the "right" thing to do is. Van Leeuwen terms this "moral evaluation", as a way of referencing value systems to explain why a certain proposition is the best, the smartest, or most natural thing to do. Smith (1998) describes green marketing as a discourse of "productivism", through which companies claim they know what is right and true. The emphasis on truth speaks to how tech companies design their discourses as infomercials, using tropes from documentary making and scientific practice to make their messages seem more credible.

Underlying all of these narratives is a fear of what might happen if we do not execute the plans suggested by these authorities. In his analysis of techno-fixes, Sean Johnston (2020) writes that these solutions not only aim to activate a longing for unexplored ambitions but also feelings of fear about "looming problems that compel reassuring solutions" (204). Such an allusion to what might happen otherwise can be especially powerful in relation to the climate crisis, which causes many uncertainties about what the future might look like. This results in a narratological structure in which companies conjure up an unpleasant reality if they are not taken seriously as authority.

Authorization also relates to the "efficiency dream" (Rahm et al. 2020), sketching efficiency as an ideal that the company is best at achieving. In tech discourse, the right thing to do is almost always technological and always brings more efficiency. In relation to environmental issues, the companies see themselves as the party best equipped to make the internet's material operations as efficient and thus sustainable as possible. Yet, if needed, companies are also quick to decouple themselves from environmental issues and point to shared responsibility. The next strategy further explores this paradox.

3.4 Ambiguous Accountability

As a fourth rhetorical strategy, I observe the erratic willingness of companies to face and act upon the climate crisis. Whereas the previous strategy addressed how companies make claims on behalf of the authority they ascribe (and associate) themselves with, I use the concept of ambiguous accountability to map how responsibility is alternately accepted

and averted by companies, using moral reasonings to address who should account for the problems at hand. I use examples from Apple and Google to explain both sides of this strategy.

Apple Befriends "Mother Nature"

In October 2023, Apple launched a commercial as part of its new campaign "Apple Carbon Neutral". In the 5-minute video, titled *"2030 Status | Mother Nature | Apple"*, the company's CEO Tim Cook and his employees (some played by actors) are welcoming "Mother Nature" (played by Octavia Spencer) for a meeting, during which they give an update on Apple's annual sustainability progress. A wind picks up, clouds open above the Apple headquarters in Cupertino, California, and Mother Nature arrives. In the beginning of the meeting, Cook and his employees are nervous, but as they report about their efforts to make Apple products "carbon neutral", reduce energy and water use, and invest in reforestation projects, the group gains confidence. Meanwhile, Mother Nature drops her skepticism and gradually becomes more impressed. The staff proudly presents to her the new Apple Watch as the company's first carbon-neutral product (fig. 15). She looks interested, as does her assistant (who uses an iPhone), but she also quickly states "she can't be bribed". After an intense stare down with Cook, she leaves in a good mood but ensures the staff that there is still a lot of work to be done: "don't disappoint your mother!" (fig. 16a+b). The wind swells again, leaves ruffle, and when Mother Nature disappears a near-dead plant on a shelf suddenly looks lush again. The commercial ends with Cook and his employees celebrating their positive yearly sustainability review.

Figure 15: Apple employees proudly present the new carbon-neutral smart watch to Mother Nature during their yearly sustainability update in the "2030 Status | Mother Nature | Apple" video (2023). Screenshot by the author.

Figure 16a+b: After the stare down between Mother Nature and CEO Tim Cook in the Apple video (2023), Mother Nature and her assistant leave the Apple headquarters in a good mood. Screenshot by the author.

The video makes the bold statement that Mother Nature is pleased with the existence of Apple as a company and its progress in terms of sustainability. The video shows actors, but also CEO Tim Cook and vice-president Lisa Jackson (former administrator of the US Environmental Protection Agency) explaining Apple's agenda as a list of successful projects. Presented as a dramatized story, the short film is in fact a commercial that summarizes the sustainability report and advertises the latest Apple Watch.

The commercial is an example of how a company, in this case Apple, designs promotional materials to stress their willingness to take responsibility. In the video, Apple creates the narrative that they must justify their corporate practices to nature directly, personified by Mother Nature. Here, I argue, we see the green spirit at work: the video plays with the relation between Apple and its critics, demonstrating that the company is aware it needs to defend its environmental impact. The video goes even further by making the bold claim that a personified, anthropomorphized Mother Nature would be happy with Apple; or any business for that matter. The defensive approach of the company has evolved into a practice of advocacy and praise for its own operations. Mother Nature, for example, points out she cannot be bribed with "Apple swag", but at the same time, this is precisely what the company is doing with its stakeholders and users.

As in the case of Microsoft's AI for Good campaign, the video (2023) is part of a larger climate campaign by Apple, including the launch of the new Apple device, the publication of Apple's 2023 sustainability report and a redesign of its sustainability website that centralizes Apple's plan to have net-zero emissions in 2030 – a claim all four companies make, albeit in different forms. The Apple environment homepage highlights the 2030 goal, the new Apple watch and the video. It contains sweeping headers in Silicon Valley green-speak, such as "A plan as innovative as our products" and "The proof is in our products" (fig. 17). Because of its form as a short video, the "Mother Nature" commercial allows Apple to create a story around its sustainability efforts, while giving the company a human(e) face and marketing its latest product.

Compared to other objects from tech-on-climate discourse, the Mother Nature video is unique in its personified representation of nature. It therefore presents a unique opportunity to reflect on its vision of tech-nature relations. Apple made a clear narratological choice by asking Octavia Spencer, an award-winning black female Hollywood actress, to

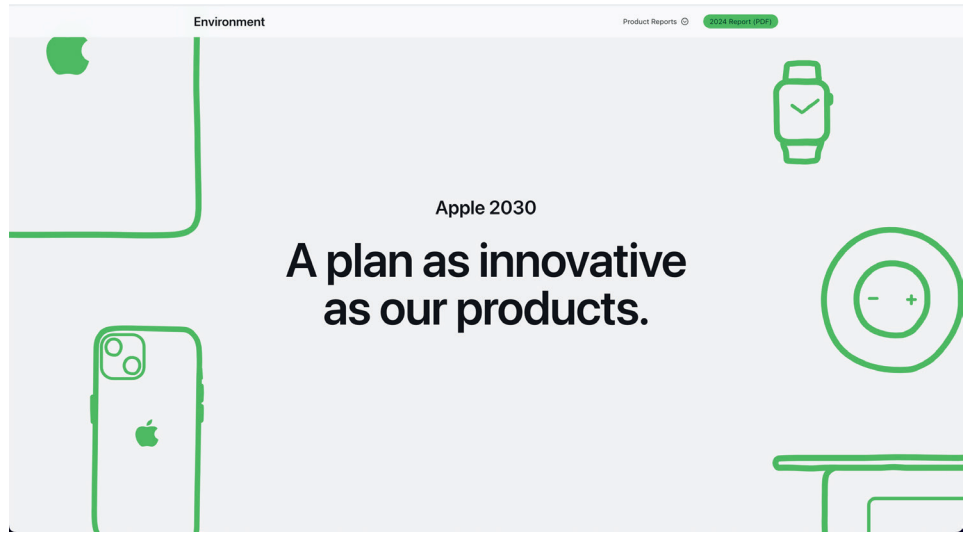


Figure 17: The Apple sustainability website is redesigned after the launch of the Apple "2030" campaign and includes green drawings and cheerful slogans. Screenshot by the author (September 2024).

play the role of Mother Nature. On the one hand, there is Apple, led by a white male CEO; on the other hand, there is nature, personified as a black woman. The video thus recalls two common stereotypes at the same time: both the beneficent and caring "female nature" that cares but also needs to be taken care of, as well as the wild and violent female nature that dictates the weather; the latter presenting a strong racialized stereotype (Merchant 1980, 2; hooks 2015; Mawere et al. 2020). While the makers present a diverse cast, the culture-white vs. nature-black dichotomy problematically resonates with old-fashioned colonial and masculine tropes about white saviorism and patriarchal protection of an untamed and helpless wilderness. In this relationship, Apple is there to protect nature and CEO Cook represents what Scott Prudham (2009) calls the "environmental crusader": a type of celebrity entrepreneur acting as an environmentalist. Apple thus creates the illusion of companionship, of a bonding moment between nature and culture, which helps to position Apple and technology in general as a part of nature. The Apple campaign iterates a longer tradition within Apple to present itself as a partner of nature, and to naturalize its technologies. From the publication of Jobs' letter (2007), Apple has presented itself as a pioneer, as a leader in the sector. The strategically chosen brand name further reflects its "naturalness". As a partner of nature, Apple is introduced as a benevolent company, that takes the lead in bringing about a greener form of capitalism. As the company states on the sustainability website: their projects are "designed with the earth in mind". Apple is a company that is aware of contemporary political discussions, but it also sells a lifestyle that fits the environmentally aware customer.

Google, Apple and the Diversion of Responsibility

While some initiatives are designed to illustrate how companies account for the climate-re-

lated issues they might cause, or can help to solve, other texts centralize how companies provide the means for others to become more sustainable. We have seen that Apple's video (2023) shows how "Mother Nature" is happy with the company because they are taking such serious steps, but on the website, it is also suggested that individuals can do good if they buy a "carbon free" Apple product. This is what "they" can do to help nature. Apple even writes that customers can "help make Mother Nature proud" by handing in old devices, repairing them and using clean energy grids to charge one's device (fig. 18). Although in practice, as I addressed in my Introduction, repairing products is not so straightforward with Apple.

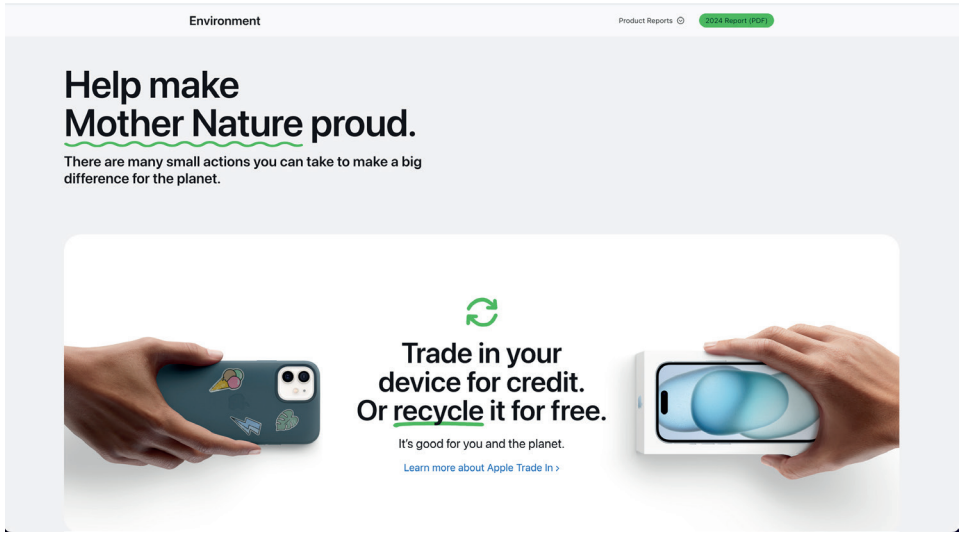


Figure 18: The Apple sustainability website is redesigned after the launch of the Apple "2030" campaign and addresses Apple customers to "help make Mother Nature proud". Screenshot by the author (September 2024).

Initiatives such as Microsoft's Planetary Computer, and Amazon's "Future of Energy" video are directed at other companies and consumers. These initiatives suppose that the company does not necessarily need to improve, but that *others* have to make a difference. Google is most actively promoting this idea towards consumers. The aforementioned "Your Plan, Your Planet" tool shows people how to reduce food, water and energy waste, and participate in the circular economy. The description on the web page reads: "We all want a healthy planet for today and tomorrow. The small choices we make each day can help us get there". The tool is thus designed for individual users, but the description emphasizes a shared community through the term "we". Such a statement evokes a shared wish to save the planet but then points to the individual responsibility of people.

The tool promotes individual responsibility and individualistic environmental action and does not reflect on the role of Google in the climate crisis. The initiative thus deflects attention from other, larger, underlying issues and solutions Google could tackle.

Additionally, the "Your Plan, Your Planet" tool offers users the option to save their progress on their Google account, which makes the tool of economic value for Google as a digital platform.

My analysis shows that Google prefers an individual approach across its campaign, further demonstrated by the interactive webpage "Searching for sustainability with Google", where a user can click through information on what people search for through Google Search, related to sustainability. The company frames Google Search as a tool that helps customers become greener. The tool does not only present information, but it also allows users to click through to Google Search and look up ways to save energy or look at a YouTube video on the topic (fig 19). Likewise, the sustainability report by Google (2023) has a section dedicated to "empowering others" which is a core mantra in its discourse. Google claims to offer a solution to every problem, but others must do the solving and preferably stay on the Google platform while looking for solutions.

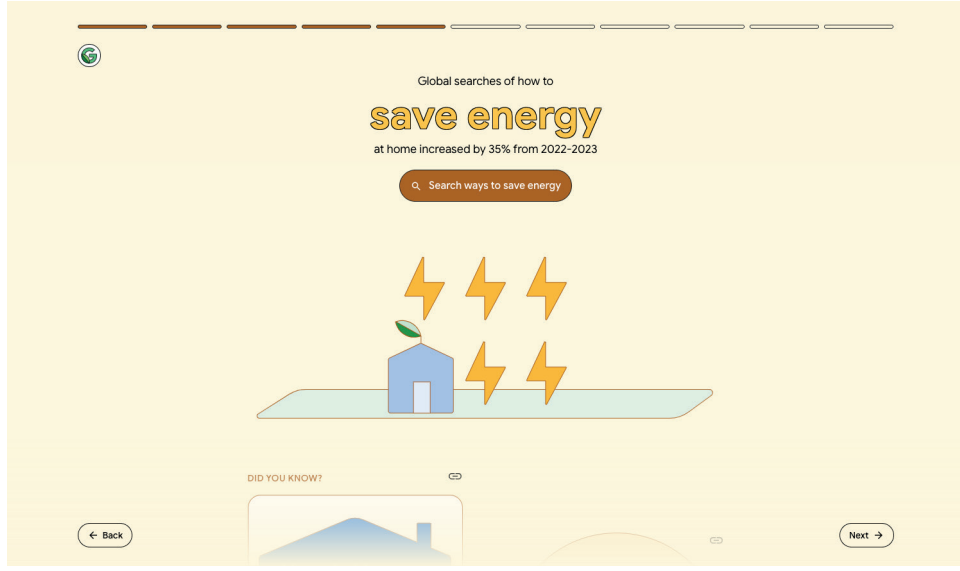


Figure 19: The Google "Searching for Sustainability" initiative urges users to use Google Search to find ways to save energy. Screenshot by the author (September 2024).

Why Ambiguous Accountability Is Strategic

The framing strategy of accountability points to how companies take a step forward in climate debates by acknowledging their corporate responsibility and discussing their environmental footprint. However, in their promotional materials, tech companies can discuss this responsibility however they want. The analysis of Apple most clearly demonstrates how companies foreground the message that they are partners of nature and want to account for their environmental impact. But across tech-on-climate discourse, I observe how companies repeatedly state they care about the planet and do what they can to save Earth. The companies thus strongly "couple" themselves with an environmental agenda.

The key point of the strategy of ambiguous accountability is that these companies accept accountability on their own terms. It is difficult to hold companies accountable if they keep going back and forth about what they can achieve and what others should do. Ester C. Vanvik (2023, 173) analyzes how energy companies use their environmental reports to highlight one narrative about accountability, while also hinting at alternative narratives that legitimize why certain goals are *not* reached. This defense mechanism, often referring to external causes and thus placing responsibility elsewhere, makes it hard to pinpoint the actions companies are making and to hold them accountable based on their promises. Whether they take responsibility or avoid it, the companies justify the choice by making moral statements. Smith (1998) explains how companies always keep the moral high ground, both when they act or when they choose not to; by alternately making claims of leadership or answering to the "collective will of its customers" (157). As self-acclaimed leaders, tech companies grant themselves power over the choice of how "nature" is valued, and what use of finite materials and energy sources is valid or not. While companies have to balance the interests of different stakeholders with environmental critiques, they find ways to rationalize and morally justify the choices they make, whatever that choice might be.

My analysis demonstrates companies use a moral reasoning by framing what customers should do as a form of climate action. Tech companies try to persuade their customers (businesses or individuals) that it is good for them and for the planet to associate themselves with the tech company. The promotion of consumer responsibility presents a form of what Mikkel Thorup (2013) calls "consumer philanthropy": the idea that a customer can do good and obtain "moral surplus values" through certain purchases or customer behavior. Based on my analysis, I argue tech companies promote their services as the most sustainable and ethical option, thus not only aligning themselves with "nature", but also with "green" consumerism. By doing so, they strengthen the position of their platform infrastructures in the everyday lives of their users and in relation to green capitalism. To better understand how companies design their green branding efforts, I now turn to the visual strategies that companies employ.

4. VISUAL IDENTITIES: THREE VISUAL FRAMING STRATEGIES

The case studies discussed in the previous section partially derive their value from the attractive and deliberately chosen visuals and design choices that accompany the texts. As I have argued in the discussion of textual framing strategies, the power of tech-on-climate discourse lies in its ability to draw attention to certain forms of climate issues, elements of production processes and the materiality of tech companies, while obfuscating other forms. This strategy is echoed in the deliberate choice to use images that depict "nature" in particular ways. Based on the visuals in the case studies analyzed above, I recognize how "nature" is represented in three different forms: as upgraded, isolated or untouched nature. After I discuss the three strategies, the last subsection discusses why these depictions are strategic.

4.1 Upgraded Nature: Romanticizing Technolandscapes

While the four companies often emphasize their large investments in wind and solar energy, their reports disclose that the companies in fact still rely on the use of fossil fuels and gas. Yet, both in text and image, all attention is drawn to platforms as users and generators of renewable energy. Across the case studies, there are many depictions of such green energy sites. In their promotional materials, the companies idealize these sites as "romantic" landscapes that symbolize progress and the union of technology and nature. The first visual framing strategy refers to what I call "upgraded nature".

These images of upgraded nature emphasize the natural qualities of green energy sources. Companies seem to give the impression that using green energy brings them and their customers closer to nature. In the Apple "Better" video, images of the sun, the sky, clouds and the rain reveal solar farms, with solar panels reflecting the rain and sun. During the final shot of the commercial, the camera zooms out from the solar field and reveals the landscapes that form its surroundings, as if to show that these renewable energy sites blend with nature (fig. 20). Similarly, Amazon's "The Future of Energy" video praises its plans for "smart sustainability" by alternating images of workers at an oil field with images of the sun and of solar energy (fig. 21). By associating themselves with the sun and the infrastructures of solar energy, Apple and Amazon frame themselves as enablers of a bright and sustainable future (even though Amazon directly advertises its services to fossil fuel companies). The four sustainability reports are also full of such depictions, showing wind turbines in a field of sunflowers (Amazon 2023, 24), an artistic impression of a solar field (Microsoft 2023, 77), drone footage of wind turbines in a Swedish forest during sunset (Apple 2023, 19), or an aerial shot from a data center and an adjacent solar field in Belgium (Google 2023, 32).

Figure 20: The Apple "Better" video (2014) ends with a shot of a solar field with the sun shining on the panels, and the Apple logo in the foreground. Screenshot by the author.

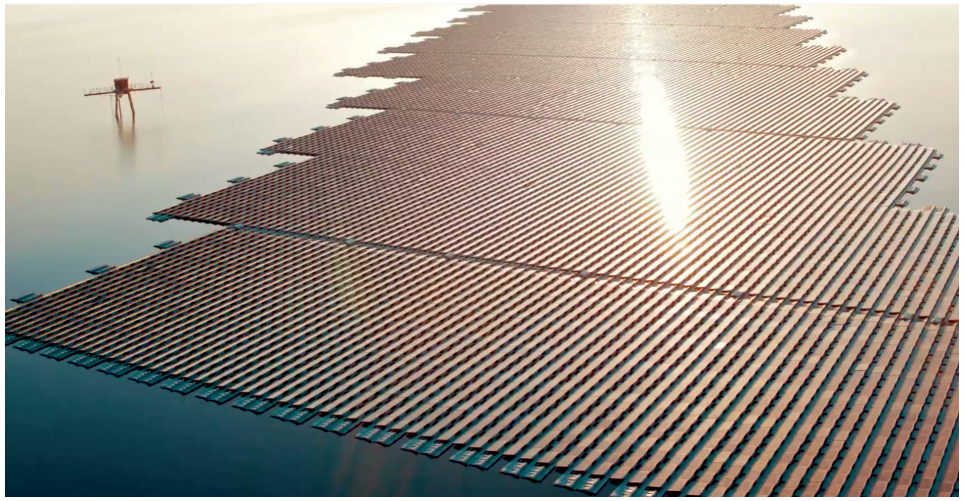


Figure 21: The Amazon AWS "Future of Energy" video (2020) combines footage of workers at an oil facility with shots of solar panels that reflect the sun. Screenshot by the author.

This visual depiction of nature is what I refer to as "technolandscapes": a seemingly harmonious, visual amalgamation of technology and nature, in which nature comes to matter as an energy source or as a background for an energy infrastructure. These locations, presented as the core of the green infrastructure of companies, show where and how the company is present, either "capturing" the power of the sun and wind or "merging" with its surroundings. However, tech-on-climate discourse does not share the limitations and environmental footprint of renewable energy. Instead, the material reality of tech companies' infrastructure and the potentials of renewable energy become entangled with an idealized version of a tech- and solar-powered future. This "energy imaginary" disregards that the generation of solar energy through solar panels and batteries also depends on finite materials that need to be mined and cannot be infinitely expanded to feed Big Tech's hungry machine.

These visualizations have been discussed by other authors. A.R.E. Taylor (2019) discusses the depictions of datacenters in relation to landscape photography and uses the term "technological landscapes" to describe this visual rhetorical strategy. Taylor writes: "the rhetorical technique of bringing nature and technology into poetic and political relation has thus become banalized not only at the level of everyday language but also as part of these corporate marketing and imaging strategies" (11). The ways in which these landscapes of computation are pictured by tech companies are quite romantic and idealized. Technolandscapes are therefore modern examples of the technological sublime, defined by David E. Nye (1994) as events and locations that leave an unforgettable impression on people who admire the wonder of it. More specifically, they present examples of what Nye refers to as the "electrical sublime". Although electricity is no longer the spectacle it was in the beginning of its invention, the visualizations of platform infrastructures can perhaps be seen as the "electrical landscapes" of the 21st century (Nye 1994, 143). By showing such images, either as site of renewable energy or as data center location, tech companies create

a narrative about the wonders of technology that their facilities house, and thus present a hopeful story in the light of ecological crisis.

Tech companies also pair footage of technolandscapes with the surroundings. By including footage of natural sites or elements such as the sun, the companies draw positive connections between their corporate operations and "nature". Several authors have addressed how the sun is a powerful symbol of a bright, light future, representing endless renewable energy (Szeman and Barney 2021; Williams 2021; After Oil Collective et al. 2022). In *Energy Humanities: An Anthology* (2017), Imre Szeman and Dominic Boyer argue that the sun is seen as a solution to the present as a whole; as a promise of stability. These qualities of solarity are harnessed in tech-on-climate discourse: as a source of hope in times of crisis. By drawing on the positive qualities of the sun as a provider of infinite warmth and light, a new green future vision arises that is both hopeful and abundant. Visually, it also allows the company infrastructures to bask in sunlight and create attractive footage.[23]

Of course, the presence of the platform infrastructure is a threat to the landscape that surrounds it, or that once held its place. However, as Nye argues, the technological sublime creates a shared admiration, pushing such divisive elements aside. Similarly, Jennifer Holt and Patrick Vonderau (2015) write that romanticized depictions of data centers seem to gesture at transparency but leave as much hidden. As they argue: "The structures where this all takes place have also been hyperstylized to showcase the natural environment and seemingly make the visual argument that the landscape is even more beautiful because of the giant data center in the picture" (75). While these sites might not be directly beautiful, they can signify a beautiful future.

There is a clear division between how locations of clean energy sites are made visible and precisely localized (by sharing location details or maps) and how the "dirtier" aspects of the business remain invisible, or scarcely discussed and localized. The strategic showing and hiding of company locations allows tech companies to create a public image which emphasizes their green energy efforts while ignoring the impact of the use of fossil fuels, conflict materials and pollution. However, by managing when their corporate practices are coupled with or decoupled from their environment, these images do not provide a full look at the extractivist "landscapes of computation" that form the foundation of today's platform society (Crawford 2021, 28).

4.2 Isolated Nature: Sanitizing the Production Process

The second strategic representation of nature is what I call "isolated nature", which addresses the visual "sanitization" of the companies' production processes. To sustain their operations and produce devices, tech companies rely on large amounts of materials. These finite materials often need to be mined, a highly pollutive process that comes with dangerous work conditions and often takes place in politically unstable areas. The European

23 See my published chapter "Harnessing the Sun in Tech-on-Climate Discourse" (Riemens 2023) for a more extensive discussion of the ways in which tech companies harness the positive qualities of the sun for their greenwashing practices.

Commission (2024) has made a list of 34 critical raw materials, including cobalt, lithium and copper. Although tech companies are trying to decrease their reliance on these materials, they are still essential to produce digital technologies (as well as green energy technologies). When companies discuss processes of mining and recycling, they use particular images that present a sanitized version of their production process.

In sustainability reports, there is little discussion and no imagery explaining the origin or location of these materials nor the sites where they are mined, processed, recycled or discarded. Instead, the materials are pictured in rather sterile, abstract ways. Both Apple and Google, for example, picture the recycling process and the materials they use (or have used) in a very sanitized, unrealistic setting (figs. 22+23). The pictures emphasize the cleanliness of mining and recycling processes, leaving the intensive work of mining out of sight, as well as the waste that is created by whatever is not recycled (yet). The details of the production process, highly relevant in relation to the climate crisis, remain undiscussed. The clean close-ups of materials disconnect them from their natural or manufacturing context, let alone the often precarious living and working conditions in and around mining sites.

The clean aesthetic fits tech companies' green branding and is also visible in the returning aesthetical choice, for example by Apple, to place its products as well as materials the company uses or has used against a white background. This allows Apple to present itself, as Mél Hogan (2018) argues, as a self-contained entity that can exist without further damaging the planet.

Figure 22: A page from Google's sustainability report (2023, 62) pictures materials next to devices to visualize a clean recycling process. Screenshot by the author.

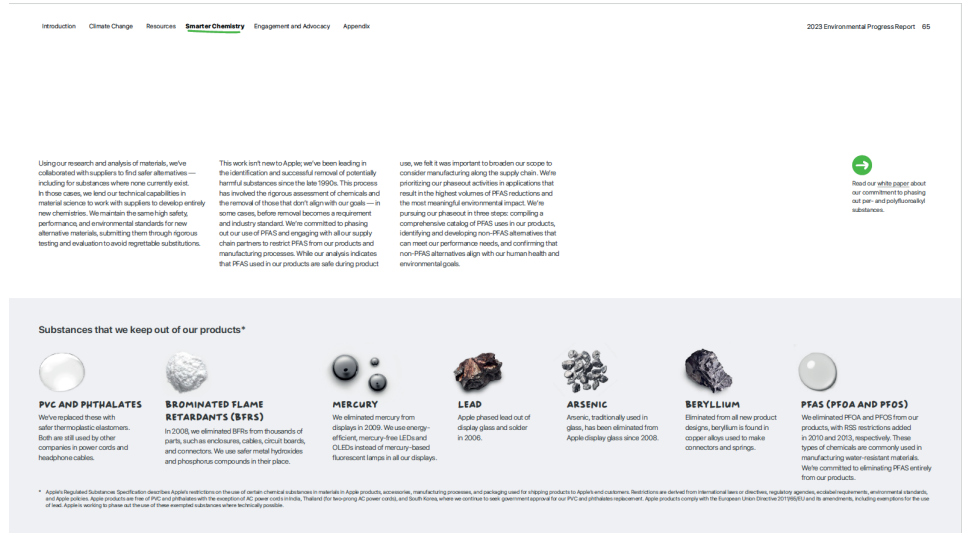


Figure 23: A page from Apple's sustainability report (2023, 65) pictures the raw materials the company has phased out against a clean, white background. Screenshot by the author.

Another strategy that allows companies to create a specific impression of nature is the use of animations and graphics. All companies have released at least one completely animated video, such as Microsoft's Planetary Computer Explainer, Apple's "Every product carbon neutral by 2030" video (2021), Google's "A carbon-free future" video (2021) and Amazon's video for its "Amazon Sustainability Data Initiative" (2022). Each video contains simplified drawings of planet Earth and its biodiversity that signify the company's wish to create a better, carbon-free future (figs. 24+25+26). In the animation for Microsoft's Planetary Computer video, reality is flattened in quite an extreme form (figs. 2+3). Doing research is represented as a looking glass; nature is reduced to a few trees and animals, research data and information are equated with binary code, and a breakthrough is visualized as a burning lightbulb next to a researcher. All this amounts to the image of a very simple research process, treating nature, data and code as equal elements. It suggests, moreover, that uploading more data about natural processes helps humanity, however understood, to know more about the state of the planet, thus helping "us" solve climate change.

Beyond animations, all companies use a specific "organic" layout that presents a simple version of nature, by using sustainable symbols or the color green. My analysis shows how all four tech companies use small green elements as an easy way to brand their message. Google uses a pictogram of a green leaf as part of its logo, for example in the "Third Decade" video (2020) (fig. 27). The Apple website reveals a particular "sustainable" redesign, with keywords marked in green, "handwritten" phrases, the use of green symbols, arrows and tiles and images against a white, empty background, together creating an image of the company as both high-tech (cutting-edge technology) and low-tech (analogue, approachable). The visual style and green design of the website are carried through in the design of Apple's sustainability report (2023).

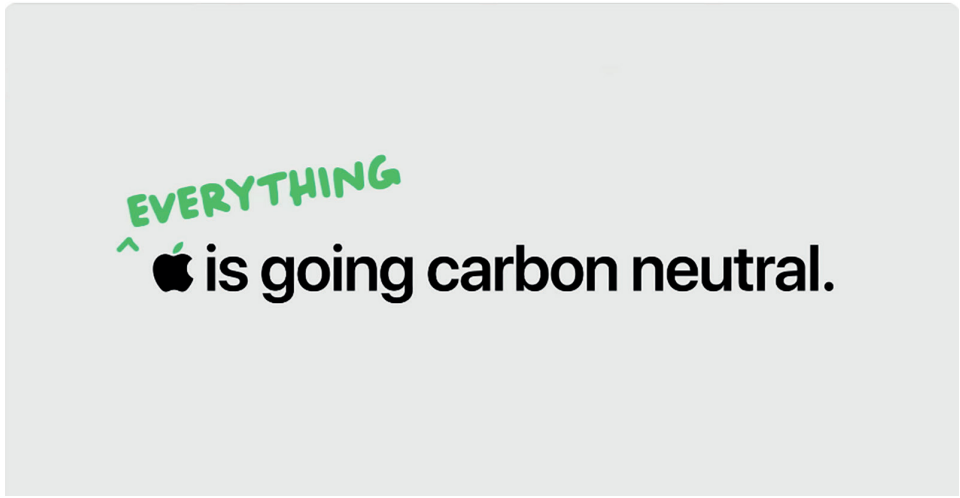


Figure 24: An animated video (2021) about carbon neutral products by Apple contains simple slogans and drawings in green and grey colors. Screenshot by the author.

Figure 25: An animated video (2021) about Google's vision of a carbon free future features a green globe, with trees, windmills, electric vehicles, solar panels and a Google office. Screenshot by the author.

Figure 26: An animated video (2022) about the "Amazon Sustainability Data Initiative" visualizes sustainability and connectivity through circles and trees. Screenshot by the author.

Figure 27: Google uses a green version of its logo, including a leaf, in its sustainability materials such as the "Third decade" video (2020). Screenshot by the author.

Whereas the previous strategy addresses how nature and technology are visually merged into an upgraded version of nature, the strategy of isolated nature tries to "decouple" the companies' operations from the environment. This strategy allows the companies to create a sanitized identity, distancing themselves from the complexity of natural ecosystems and the detrimental effects of their production cycles and their polluting industries across the globe. Following Smith (1998, 126), I understand this as an example of how companies invoke a myth of purity in their discourse to portray their products as environmentally benign. The isolation of a companies' operation is made possible by strategies of withdrawal and erasure (Pasek 2019) and infrastructural obfuscation (Hu 2015), leading to strategic spatial and geographic representations of the materiality of their operations.

Figure 28a+b: The covers of Google's and Microsoft's sustainability report (2023) picture "pristine" nature. Screenshot by the author.

4.3 Unspoiled Nature: Leaving Nature Alone

The third visual strategy represents the widespread use of images of pristine or unspoiled nature. The case studies show that tech companies often picture such natural sites as landscapes that are seemingly not affected by today's economies and industrial practices. Whereas the former two categories address representations of the companies' operations or use of materials in some form, this third category deals with the visual absence of their operations.

The covers of Google's and Microsoft's report from 2023 (covering 2022) each offer an example (fig. 28a+b). While tech-on-climate discourse contains a lot of images of technolandscapes, employees, products, as well as graphs and illustrations, depicting pristine nature is also a common part of the companies' visual identity. Such imagery creates a visual parallel between the companies and the "nature" they want to save.

The images of nature contain the same poetic and spectacular qualities as the images of technolandscapes with the important difference that technology is absent. Such images are therefore examples of the literary trope of the "pastoral". Leo Marx (1964) has described pastoralism as "the felicity represented by an image of a natural landscape, a terrain either unspoiled or, if cultivated, rural" (9). The pastoral represents a "movement away from an 'artificial' world" and "a symbolic motion away from centers of civilization toward their opposite, nature, away from sophistication toward simplicity" (9). Tech companies' use of pictures of unspoiled nature suggest they have a nostalgic view towards this type of nature that is in decline. This is a form of longing for a form of nature, of wilderness, that has never existed (Cronon 1996). Toby Smith also comments on the use of images of thriving natural ecosystems and argues companies use this footage to allude to the symbolism of nature as harmonious. In his analysis of an IBM ad, Smith (1998) notes a spiritual connection to the sun, the purity and transparency of water and the sturdiness of trees as three examples of how nature represents certain mythical qualities companies want to be associated with (127-130).

Whereas in the case of upgraded nature, technology and nature are strongly connected, the framing of unspoiled nature presents the opposite. The companies are "decoupled" from nature in order to save nature. Here, we return to a core element of ecomodernism that dreams of sparing nature and leaving nature alone, a contradiction I will discuss throughout the dissertation. Yet, as I have stated earlier, this decoupling is fictional: if a company is not present in a certain landscape, it does not mean that its production processes and carbon emissions do not have a negative effect on natural ecosystems. Tech-on-climate discourse thus contains contradictory visions about the relation between technology and nature. How to understand this paradox?

Why These Three Visual Framings Are Strategic

The three strategies of visualizing isolated, upgraded and pristine nature allow companies to speak of "nature" in a variety of ways, but the three forms also present a threat to each other. Do the companies want to be seen as a part or partners of nature, as companies that use resources effectively for their "clean" operations, or do they want to be seen as entities separate from nature? As I have argued above, tech-on-climate discourse constructs these myths at the same time and avoids addressing that these different conceptualizations of nature cannot exist simultaneously. By "decoupling" these forms of nature, companies aim to celebrate both the "natural sublime", that represents serenity and nostalgia, and the "technological sublime", that represents futurity and progress (Nye 1994).

These visual strategies unveil how companies work to make such paradoxes productive. If extraction nature and upgraded nature can exist next to unspoiled nature, the

physical implications of platform capitalism seem small. Heather Sullivan's (2020) concept of the "dark pastoral" helps to better understand these paradoxes. In her discussion of literary works that deal with climate change (climate fiction), she demonstrates how the attention to ecological challenges goes hand in hand with a celebration of nature and human-nature relations. The dark pastoral is characterized by a constant paradox, for example reflected in how it "portrays the desire for a pure landscape as if this space both were and were not a site of resources merely awaiting extraction" (27). The paradox of the dark pastoral is softened through rhetorical separations which allow platforms to speak of multiple "natures". Additionally, the reality of extraction is softened by sharing dreams of decoupling that would bring about a new, better future in which nature is left alone. Sullivan writes:

> the dark pastoral is able to encompass the convoluted and double-vectored approach to climate problems, pollution, and the ongoing massive species extinction that range from, on the one hand, the technophilic celebration of what we have created and a belief in unlimited human capacity, and, on the other, the delirious delight in declensionist narratives that glorify mass destruction as a new beginning. (2020, 29)

The mass destruction Sullivan finds in her study of climate fiction is not glorified in tech-on-climate discourse, although the desire to isolate, sanitize or start anew is. I recognize the dark pastoral in corporate discourse, as there is a similar belief in human-technological capacity, and a delight in narratives of new beginnings. Tech-on-climate discourse does not necessarily celebrate the destruction of the world as we know it, but it does glorify the improvement of the planet, leading us to a future in which the ecomodernist dream materializes.

The combination of the celebration, extraction and improvement of nature summarizes the decoupled visual worlds in tech-on-climate discourse. Like the ecomodernist notion of decoupling, Sullivan's dark pastoral highlights how a connection between extractive nature and unspoiled nature can be erased. As Sullivan argues, the two are connected by a notion of temporality: what is at first a site of unspoiled nature, can later become a site of extraction. But this temporal connection is obfuscated through the way nature is represented by tech companies. This latter point also demonstrates how the textual and visual strategies I have identified operate in tandem to create positive narratives about benevolent, green tech companies. Now that I have introduced the seven textual and visual strategies that characterize tech-on-climate discourse and explained why they help tech companies to construct the myth that they are considerate climate actors, I turn to the worldview that is expressed through these narratives.

5. TECH-NATURE RELATIONS AND THE ECOMODERNIST WORLDVIEW

Based on the analysis of case studies and the discussion of the four textual and three visual strategies, this section addresses the visions and worldview underlying tech-on-climate discourse. As I have shown, there is not one understanding of the relationship between technology and nature emerging from my analysis of case studies. Instead, the analysis reveals contrasting narratives about a form of partnership, a coupling, and a form of separation, a decoupling. With this separation, tech companies show how they do their best to leave nature "alone" while also improving the environment and merging with it. It is precisely this paradox that characterizes the ideology of ecomodernism and its dreams of decoupling. With the companies' future vision in which the climate crisis is solved, nature is saved, and their corporations continue to thrive, we are asked to believe that these companies can (and want to) accomplish this and that these developments reinforce one another. This hopeful narrative is underpinned by a techno-optimistic worldview, which centers on inexhaustible possibilities for technological innovation and presupposes the benevolence of these companies.

Several authors have expressed critiques that help to identify the assumptions underlying the ecomodernist worldview. In her research on representations of nature in literature, Jennifer Wenzel (2020) discusses how using nature and caring for nature *can* function in harmony in an (eco)modernist discourse. For Wenzel, modern capitalism has illustrated how caring can be commodified, and how loving nature does not rule out using nature. She argues:

> Indeed, capitalism works partly by loosening the relationship between "caring" in the realms of affect and the imaginary and "mattering" in the material sense. The founding myth of capitalist modernity—human liberation from nature—is underwritten by ever more intensive and geographically expansive modes of capturing nature in the form of "natural resources," to keep the engine of this freedom running. (17)

Wenzel reminds us that the liberation of the human from nature is a longstanding modernist dream. This dream reemerges in tech-on-climate discourse through decoupling, where loosening the human ties with nature is imagined as a way to "set nature free" and intensifying this relation is seen as a way to "ensure human freedom". In both cases, the proposed narrative proclaims that the interests of nature and humans always align. Technology, then, serves as a mediating layer, offering the means to create the desired coupling or decoupling.

Central in these narratives is a belief in the human ability to design and control such relations. Frédéric Neyrat (2019) therefore summarizes the ecomodernist dream as a fantasy of planet Earth as an entity that can be entirely reconstructed and remade. He argues that this dream reveals a core paradox of ecomodernism, "torn between, on the one hand, the idea that everything is interconnected and, on the other, the desire for terraforming the planet from the outside" (89). The reconstruction but also the reconceptualization

of the Earth as an object that can be terraformed is visible in the strong expressions of techno-optimism in tech-on-climate discourse.

In this narrative, it is up to companies to decide when and for what they "need" nature, want to "steer" or "upgrade" it. Such a vision is not unique to tech companies but taps into a wider felt belief in technological solutions. In his study of New Food companies and the "RethinkX" think tank, Rhys Williams (2021) analyzes how the revolution in food production of the New Food movement proposes "uncoupling from the Earth and its ecosystems in order to save both it and ourselves" (152). Instead of seeing food as part of its earthly origin, the New Food movement conceptualizes food "as a composition of elements" and dismisses a cow as "poorly designed machine" (153). "Natural food" is replaced by artificial food, because it is more efficient than what nature offers us. If all earthly elements and beings can function separately from one another, this would create complete freedom and endless possibilities (160-161). In this narrative, we find what Sullivan calls the "technophilic celebration" of creation and the delight of destruction and starting over. I argue that a similar dream of terraforming, by redesigning and recreating tech-nature relations, is a central element of tech-on-climate discourse. Together, these dreams create the impression that there is an ideal "formula" of pledging, monitoring, redesigning, investing, and informing that together create a feasible and sufficient answer to the issues the climate crisis represents. As part of this formula – which I will refer to as Silicon Valley's "playbook of solutions" – both the problem and the solutions it can bring about need to be reframed.

Importantly, the ecomodernist formula presented across the promotional materials of tech companies fundamentally disregards those humans and nonhumans who pay the price for the continuing expansion of platform capitalism. Indeed, the decoupling of different kinds of natures can only be a vision maintained at a distance, to the viewer of a commercial or the reader of a sustainability report. For those involved, the story is different. I agree with Goldstein (2018) when he writes that "planetary improvement, and with it the promise of a future made clean by clean tech, can only ever offer a Faustian bargain: destroy the world in order to save it" (158). This contradiction is resolved, at least at first glance, through strategic forms of coupling and decoupling that hinder the ability to make such critical observations.

6. CONCLUSION: THE SHORTCOMINGS OF SILICON VALLEY'S PRAGMATISM

In this chapter, I have answered the question: *How do Microsoft, Apple, Amazon, and Google in their tech-on-climate discourse frame themselves as green and benevolent actors?* Through a close analysis of 34 sources, I studied what visual and textual framing strategies are used to promote the project of "Platform Earth" and construct the myth that Silicon Valley is good for the planet. In this final section, I offer an overview of my findings and reflect on forms of mythmaking I have observed in the promotional materials of the four companies. I summarize the common narratives that I have found and critically address the false assurance

tech-on-climate discourse and its pragmatic approach create.

The materials demonstrate how all four companies acknowledge the severity of the climate crisis in some way or form and present a plethora of updates, numbers, tools and initiatives designed to communicate their intentions. The companies emphasize their investments in renewable energy, their efforts to reduce waste and use resources efficiently, and their sustainability and carbon compensation programs. But the companies also present their value as sustainability leaders: they can help others, businesses and customers, to become more sustainable.

Beyond the similarities, there are also notable differences between the companies. Apple makes sustainability part of its lifestyle branding and actively plays with the critiques it has received. Microsoft promotes AI as an accelerator of sustainability (Google as well, but to a lesser extent), in line with its business interests. Amazon positions itself as a corporate leader that urges other companies to rally behind their Pledge and stimulates customers to buy "climate pledge friendly" products. Google's campaign centers on "empowerment" and foregrounds how its tools can help individual users to become more sustainable.

My analysis has revealed seven strategies that help to understand how tech-on-climate discourse aims to construct the myth that they are green actors and will (help) solve the climate crisis. I have highlighted four textual and three visual strategies that serve as the pillars of the narratives created in tech-on-climate discourse. The textual strategies describe how the narratives of tech companies are designed according to the principles of temporal and spatial differentiation and alternatingly accept and avoid authorization and accountability. Together, these strategies carefully manage the expectations of the climate actions the companies can and will take. The three visual strategies explain how the companies visually construct an image of "nature" as either upgraded, isolated or unspoiled. I argue that mechanisms of decoupling separate different representations and narrations of tech-nature relations, which by themselves seem persuasive, but together are not. Nevertheless, they are elements within the successful "formula" or "playbook" that embodies the green spirit of platform capitalism and that has consequences for how we view the role of digital platforms in the climate crisis.

An overarching strategy that helps to promote this playbook is the use of vague statements. Throughout tech-on-climate discourse, a few things are strategically kept vague: 1) how small solutions taken by platforms contribute to dealing with the complex problem the climate crisis presents, 2) what platforms mean with saving the planet and what parts of ecological systems are not saved and 3) how their approach relates to climate actions taken by governments, organizations and citizen initiatives worldwide. I argue that it is harmful that companies do not disclose information about these important questions, because it isolates their proposed climate actions from other sustainable developments and climate debates.

In their meticulously designed promotional materials, the companies can decide how they contextualize and narrate their green efforts. This is problematic, I claim, because their positioning as climate fighters can create false assurance and dismiss environmental actions that bypass tech companies or challenges their current operations. My analysis

shows how the companies' stakeholders are reassured in different ways. Customers are reassured that they can continue to consume tech goods, governmental bodies are reassured that the companies are willing to play their part in the crisis, and investors are reassured that the companies balance their environmental actions and business interests. To all parties, the companies forward their pragmatic approach as the only way forward. Following Goldstein (2018, 74), I understand the companies as actors who believe in pragmatic solutions, propagating "that market opportunities are the only opportunities, and then acting accordingly". With their pragmatic approach, companies can "decouple" solutions they find reasonable and desirable from those that are understood as unattainable or too idealistic. In the case of tech companies, techno-fixes are introduced as pragmatic solutions for the unsustainable user or the researcher who lacks information. Through this strategy, the extraction of data from nonhumans and the natural environment is presented as a natural process, thereby obfuscating the infrastructures which make data collection, processing, storage and sharing possible and profitable.

This pragmatic approach neatly aligns with the green growth agenda of platform capitalism, turning the climate crisis into a business opportunity. What the companies present as pragmatic is subjective and driven by political visions and economic interests, even though the discourse presents the solutions as rational, apolitical and charitable. The pragmatic approach is a central feature within the worldview of "Platform Earth", as it offers the companies the discursive means to address the climate crisis through a depoliticized narrative about finding adequate solutions for manageable problems. This is, I argue, a core element of the mythmaking this dissertation tries to unpack.

Research on the environmental impact of tech companies underlines the need to be critical of their promises. Their claims often rely on several, highly contested forms of climate reporting and a strong belief in carbon compensation programs. With carbon compensations, the actual impact of the companies does not change, thus prolonging their impact. A study by the *Financial Times* revealed the accountancy techniques tech companies use to present a market-based carbon footprint that is much lower than their actual, location-based impact (Bryan et al. 2024). These conflicting numbers illustrate how companies compensate for their use of fossil fuels through clean energy investments and do not report the actual energy mix used to fuel their operations. The fact that the gap between these numbers is growing, signals that companies more and more rely on carbon offset programs, for example investing in buying renewable energy certificates or investing in reforestation programs. As the authors write about Amazon's – which has the largest footprint of the four companies – misleading numbers: "The company can be presented as either hero or villain because of the rules on how greenhouse gas emissions are calculated, whereby companies can use investments in clean power schemes to offset their real-world, energy-related emissions" (Bryan et al. 2024). In addition, Google and Amazon have financed climate deniers in the past, and several companies have actively opposed climate policy initiatives (Friedman and Tabuchi 2019; Kirchgaessner 2019). Amazon has let go of its Climate Pledge goals, according to research (Barr 2023; Boylan and Dufour 2023). These updates indicate the importance of work that studies whether companies uphold their promises and targets,

how they make their calculations and what the consequences are of these decisions.

Tech companies have developed eloquent responses to environmental critiques by foregrounding a narrative in which they are the central actors in the "fight" against the climate crisis. Although I discussed only a selection of the plans the companies propose, it is noteworthy how all of them create the impression they have a good overview of the problems associated with the climate crisis, as well as of possible, adequate solutions. They maintain that their operations should not be questioned in any way or form and could even be seen as having a positive effect on the environment. All the different materials I have analyzed present a variation of this myth. Altogether, the companies are presented as natural forces that cannot and should not be stopped, while the more structural problems of Silicon Valley's environmental impact remain unresolved. Their plans heavily overstate the positive influence of their marginal activities and understate the risks and negative effects of their ongoing, continuously expanding operations. Simply put: their sustainability efforts do not make up for their ongoing, detrimental environmental impact. Throughout the materials, I argue, the myth about Silicon Valley's green potential serves as a" coordinating agent" (Smith 1998), intended to persuade the public of the benefits of the "Platform Earth" project and its dreams of (de)coupling. The Silicon Valley playbook of solutions, as I have called it, will be further analyzed in the upcoming chapters, where I further dissect the environmental modus operandi of tech actors.

Moving forward, a continuation of the analysis presented here could illuminate the ongoing dialectic between platform capitalist practices and environmental critiques. This is a task I take up in the following chapters, but it also extends beyond this dissertation. As I have stated, it is not easy to reconstruct the development of tech-on-climate discourse, but the lack of transparency by companies does affirm the need for such an analysis. I hope the framing strategies I have foregrounded in this chapter can inform new forms of analysis attentive to the mechanisms of greenwashing and to how corporate discourse shapes broader climate crisis debates in directions favorable to platform capitalism. As I will demonstrate in the following chapters, green platform capitalism is a broader movement that extends beyond Big Tech companies and includes a network of actors who use their cultural and economic power to direct attention, investments, and policy-making efforts toward solutions in line with their genre of ecomodernism, without ever accounting for what way of life they deem worthy or unworthy of saving.

Although companies boast about their corporate legacies and suggest that they have always "been green", their discourse generally seems to erase histories, instead stressing the arrival of a "new" platform economy. To counter these future-focused narratives and to better understand their origins, the next chapter turns to the history of tech-on-climate discourse. A historical perspective on the rise of Silicon Valley sheds light on the underpinnings of its environmental narrative, such as its longstanding, techno-optimistic belief and its conceptualization of "nature" and the climate crisis. In the next chapter I will continue to unpack the elements of "Platform Earth", including its desire for freedom, its pragmatic view on environmental issues and its dreams of (de)coupling.

Fixing the "Whole Earth": The Ideological Origins of Tech-on-Climate Discourse

I like to think
(it has to be!)
of a cybernetic ecology
where we are free of our labors
and joined back to nature,
returned to our mammal
brothers and sisters,
and all watched over
by machines of loving grace.

- Richard Brautigan, "All Watched over by Machines of Loving Grace", 1967

I am here to bring the good news. We can advance to a far superior way of living, and of being. We have the tools, the systems, the ideas. We have the will. It is time, once again, to raise the technology flag. It is time to be Techno-Optimists.

- Marc Andreessen, "The Techno-Optimist Manifesto", 2023

1. INTRODUCTION: "WE HAVE THE TOOLS, THE SYSTEMS, THE IDEAS"

In "The Techno-Optimist Manifesto" (2023), venture capitalist Marc Andreessen provides a radically positive vision on the future of humanity. As technology offers humanity limitless opportunities, Andreessen (2023) writes, "we can advance to a far superior way of living, and of being". Andreessen presents his text as a manifesto for the 21st century, advocating that unlimited technological progress is the right and only way forward. The climate crisis does not restrain his optimism, because he believes "there is no inherent conflict between the techno-capital machine and the natural environment"(Andreessen 2023). His climate solution: if we generate unlimited clean energy we can improve the natural environment, whereas a "technologically stagnant society ruins it". In the narrative of Andreessen, a strong trust in pragmatic market solutions leads to a utopian partnership between technology and nature.

Climate optimism, the focus on techno-fixes, and the strong conviction of what future path is the right way forward: these are elements of tech-on-climate discourse I also discussed in the previous chapter. However, the manifesto offers a more outspoken vision of the "good life" and how technology can help realize this. Another difference is that Andreessen's ideas did not originate within the corporate quarters of Apple, Microsoft,

Amazon or Microsoft. His manifesto is published on the website of his company Andreessen Horowitz (or "a16z"): a venture capital firm with 42 billion dollars in assets used to back "bold entrepreneurs building the future through technology" (Andreessen Horowitz 2024). The firm was founded in 2009 and designed to turn young start-up founders into corporate leaders (O'Mara 2019, 393). The investments of the company include tech companies such as Facebook, Instagram (now both part of Meta), Airbnb and Lyft. The company's headquarters are in Menlo Park, California, in the heart of the Silicon Valley region. With his manifesto, Andreessen broadens his role: he is not only an investor in technology, but also a visionary sharing what kind of future is desirable and attainable through technological innovation.

I start this chapter with Andreessen's manifesto for two reasons. First, his text exemplifies that tech-on-climate discourse is a field of cultural production extending beyond the four tech companies analyzed in the previous chapter. Texts and events that are not directly connected to Big Tech companies help to further understand the visions circulating in US tech culture about the role of technology in society. When Andreessen writes "we have the tools, the systems, the ideas", he expresses the pragmatic approach to societal issues I identified in the previous chapter, but also indicates that there is a specific community of tool-builders and problem solvers; the "we" in his quote. Recent texts such as the manifesto often address the purpose of technology in relation to the ongoing climate crisis. An analysis of such narratives allows me to further study how today's tech-on-climate discourse has its origins in a specific time-space conjunction in California. As I approach "Silicon Valley" as a cultural movement that exceeds the boundaries of the Silicon Valley region, I aim to theorize its broader, entrepreneurial mindset and environmental ideology as a quintessential North American phenomenon.[24]

Second, the manifesto exemplifies the contradictory role that history plays in the green narratives promoting the myth of "Platform Earth": historical events are celebrated but also reconstructed. When Andreessen (2023) writes that "It is time, once again, to raise the technology flag", he connects himself to the "patron saints of techno-optimism", including Buckminster Fuller, Stewart Brand, Douglas Engelbart and Kevin Kelly, who he cites as sources of inspiration for his manifesto. By creating a historical lineage of visionaries and designers, he positions his manifesto as the newest iteration of Silicon Valley's techno-optimism, presenting current-day (AI) technologies as a logical next generation of innovative technologies that can help us combat the crises of our time. But Marc Andreessen is not new to techno-optimism: he acquired his wealth during the formative years of Silicon Valley's rise to power and the popularization of the internet in the 1990s, as co-founder of the popular web browsers Mosaic and Netscape that made the internet more widely accessible (Friend 2015). Andreessen does not address the complicity of internet technologies or growth-oriented venture capitalism in creating the climate crisis, he solely

24 I am here also inspired by the work of Margaret O'Mara (2019), who writes that Silicon Valley is not just a place but a "set of tools, a network of people, a bootstrapping sensibility" (411). Her historical analysis of Silicon Valley also discusses Andreessen, Bezos and Gates as key figures.

positions these elements as part of the solution. He thus uses the framing strategies of material and temporal differentiation to create an incomplete yet optimistic story about how Silicon Valley can help humanity "innovate" its way out of the climate crisis.[25] With the reinterpretation of history, present, and future, we return to a core element of mythmaking I observed in the previous chapter. In this chapter, I zoom in on historical events to understand how these have shaped and still shape contemporary forms of mythmaking by Silicon Valley actors, in order to further unpack their environmental worldview.[26]

In the Introduction, I have explained how my study of green myths builds on Barthes' understanding of myths as depoliticized speech. In his work, Roland Barthes (1957) addresses the role of history in myths:

> Myth deprives the object of which it speaks of all History. In it, history evaporates. It is a kind of ideal servant: it prepares all things, brings them, lays them out, the master arrives, it silently disappears: all that is left for one to do is to enjoy this beautiful object without wondering where it comes from. (152)

Myths do not completely erase history, but they "serve" it in a particular form. Barthes describes this process as a passing from history to nature, a process of naturalization that thrives on simplicity: "it organizes a world which is without contradictions because it is without depth, a world wide open and wallowing in the evident, it establishes a blissful clarity: things appear to mean something by themselves" (143). In the narratives of tech-on-climate discourse, history is simplified to present a convincing story about Silicon Valley's development. In his work on cyberspace, Vincent Mosco (2004) also describes myths as forms of depoliticized speech that deny history, which allows myths to stay decoupled from discussions on "active human agency, the constraints of social structure, and the real world of politics" (35). But while myths deny history, they also construct "a new history, a new time" (Mosco 2004, 35; see also Bory 2020). Mosco notes how the promises of cyberspace gave way to several myths, signifying the end of history, politics, and geography. These myths contain a cultural belief that the internet heralded a completely new time, separated from older industries and ways of living and working. The cyclical nature of such beliefs meant that "whatever was said about earlier technologies, the latest one will fulfill a radical and revolutionary promise" (Mosco 2004, 8). Mosco's theorization clarifies how new myths become attached to new technologies and express ever-new forms of techno-optimism. History thus plays a double role in the construction of myths: it is both erased and rewritten with the goal of upholding a new myth.

To answer the overarching research question of this dissertation – *How do tech companies and figures position themselves in climate crisis debates and what are the historical and ideological underpinnings of their environmental worldview?* – I study how historic

25 Andreessen's manifesto has been critiqued by a range of writers and journalists, see for example Marx (2023).

26 A shorter version of the analysis I present in this chapter is published in *Internet Histories* (Riemens 2024).

events play a role in contemporary forms of mythmaking in tech-on-climate discourse. I will demonstrate that the myth of "Platform Earth", as the ecomodernist project of Silicon Valley, reflects long-standing desires for connectivity, freedom, and progress, for example expressed by the wish to "upgrade" nature. Discussions at the intersection of platformization and the climate crisis are emblematic of contemporary tech-on-climate discourse, but expressions of ecomodernism and techno-optimism have existed for much longer in American (especially Californian) cultural history. Richard Brautigan (1967), for example, already shared his dream for a "cybernetic ecology" through a poem that he handed out to people on the streets of San Francisco in the late 1960s, imagining a world in which "deer stroll peacefully past computers". Revisiting this rich history, I study how complex developments in computer culture, the study of ecology and the environmental movement reappear in simplified forms in the myth that Silicon Valley is good for the planet.

The question that I answer in this chapter is: *How has North American tech culture, specifically the entrepreneurial community of the San Francisco Bay area (later called Silicon Valley), from the 1940s till the 1990s conceptualized the relation between ecology and technology?* By critically assessing how contemporary tech-on-climate discourse is rooted in the historical context of Silicon Valley and environmental debates between the 1940s and the late 1990s, I further unpack the phenomenon of Silicon Valley to understand how ecomodernism has become an important element of its identifying ideology. I especially zoom in on the role of "techno-optimism" and "whole-systems thinking" as two traditions of thinking that play a pivotal role in today's ecomodernist ideology. As I will demonstrate, the development of Silicon Valley's technological and environmental worldview is intertwined and connected, both geographically and discursively.

In reconsidering Silicon Valley's history, I am inspired by Tung-Hui Hu's *A Prehistory of the Cloud*, in which he scrutinizes the cloud as metaphor for digital space and argues that "the digital cloud actively erases its own historicity", which helps to create "a sense of computing power as a virtually unlimited resource" (2015, 146). Building on Hu, my goal is to view the internet as a cultural and material entity, in connection with older infrastructures, institutions, and communities, while at the same time, resisting oversimplifications of its complex history.[27] Such an approach helps me to complicate the "seductive now" actively created through tech discourses (Hu 2015, xxv).

The approach of this chapter is different from that of the other three chapters in my dissertation. In this chapter, I present a selective history of ideas and events related to Silicon Valley, as to offer a media genealogy. This analytical approach is inspired by a Foucauldian understanding of genealogy, recently developed by authors such as Clemens Apprich and Carolyn Pedwell. Apprich (2017), in his work on the history of networks, conceptualizes his method as a media genealogy that focuses on the establishment of and transformations within discourses on media and technology. Such an approach pays attention to diverse developments and contradictions in media practices, thereby understanding

27 For a discussion on different conceptualizations of "the internet" in relation to internet history as a scholarly field, see Abbate (2017).

technology in a multilinear way (Apprich 2017). Following Apprich, this chapter highlights transformative moments in the development of tech and environmental discourse, that help me to understand the contemporary discourses and worldview of Silicon Valley.

The media genealogy I present in this chapter is the result of a literature review of existing scholarly, historical work and a textual analysis of primary sources. In my analysis, I zoom in on a selection of defining moments and events across five eras. These events are: cybernetics and the information age (1940-1960s), Stewart Brand and the *Whole Earth Catalog* (1960s), environmentalism and the *Limits to Growth* report (1970s), the emergence of ecological modernization (1980s) and the popularization of the internet (1990s).

In the analysis of these eras, I centralize the term "ecosystem". This concept helps to trace how the central myth that this dissertation unravels relies on historically formed dreams and fantasies about the control and freedom offered by technologies. Much like my concept "Platform Earth", the term "ecosystem" draws attention to tech-nature relations.[28] The term is coined by ecologist Arthur Tansley in 1935, describing a holistic approach to study humans and other organisms as part of natural systems (Kingsland 2005). Throughout my analysis, I study how the metaphor of the ecosystem adapted new meanings in relation to scientific and cultural developments around ecology and technology. Ecosystem is thus a historical concept connecting the different periods and discourses that I study in this chapter, and in *Platform Earth* at large.

By analyzing how ecosystems and ecosystemic thinking became a popular way of addressing environmental issues, I aim to provide what Carolyn Pedwell in her analysis of "intuition" calls a "post-war genealogy" (2022). As she focuses on different periods and "reads" these events through the lens of "intuition", Pedwell is able to note new human-machine relations. Building on Raymond Williams' notion of structures of feeling, Pedwell studies "how we encounter 'pre-emergent' social and material forces and relations" and "how we might sense change as it is happening" (5). She also refers to the concept of "infra-structures of feeling" by Rebecca Coleman (2018, 11), who extends the analysis of literary texts to "examine how a structure of feeling is generated through and operates across an architecture of different texts". Coleman's approach is helpful for understanding what constitutes this "feeling" in relation to digital media. This is why my study brings together a range of events, texts, institutional developments and technological innovations to understand how the meaning of the term "ecosystem" shifts across time.

Through this approach, I develop a new, historically informed position that allows me to better understand and critically assess contemporary tech-on-climate discourse and the environmental ideology of Silicon Valley. I further develop my ideological critique on "Platform Earth" by explaining how the ideology of Silicon Valley has a history that dates further back than the start of tech-on-climate discourse in the late 2000s and early 2010s. A concept that informs my critique is the "Californian Ideology", coined by Richard Barbrook and Andy Cameron (1996). While sharp and to the point in their analysis of

28 Ecosystem is short for "ecological system". The term is a combination of the Greek words *oikos* (home) and *systema* (system).

1990s "cyberlibertarianism", Barbrook and Cameron's conceptualization of the Californian Ideology remains rather vague. I argue that a more detailed account of this techno-optimistic ideology needs to take the shifting visions on ecology and ecosystems into careful consideration. I therefore connect the development of Silicon Valley and its Californian Ideology to the rise of ecological modernization and later ecomodernism, an ideology that arose in climate debates from the 1980s onwards and became part of Californian culture at the start of the 21st century (Hajer 1995; Symons 2019).

Again, I turn to the concept of decoupling, which I have previously introduced as a discursive device and an ideological signifier that decouples human progress from environmental decline. By addressing historical forms of decoupling, I aim to show how discursive contradictions have always been a part of tech culture and its environmentalism. Throughout the chapter, I will thus point to different strategic decouplings that have helped to promote the narrative that technology is a part of nature as well as a force that can control natural ecosystems from the "outside".

This chapter does not offer a full history of North American environmentalism and Silicon Valley, as this falls outside the scope of this chapter and dissertation. Without providing a full overview, I study a selection of defining texts that help to understand the origins and evolutions of Silicon Valley's genre of ecomodernism across five eras. My corpus exists of the following primary documents: editions of the *Whole Earth Catalog and CoEvolution Quarterly*,[29] the *Limits to Growth* report (Meadows et al. 1972), John Perry Barlow's *Declaration of the Independence of Cyberspace* (1996), texts by Kevin Kelly (1995, 1998), the Breakthrough Institute (Shellenberger and Nordhaus 2004), Stewart Brand (2009), *An Ecomodernist Manifesto* (Asafu-Adjaye et al. 2015) and the "Techno-Optimist Manifesto" (Andreessen 2023). I analyze these texts as vision documents that, despite their different political orientations, each express "dreams of (de)coupling". Many of these texts are technology-related business manifestos providing a rich source to better understand how their authors aim to persuade readers of the benefits of new technologies for society.[30]

As my goal is to debunk myths related to green platform capitalism, I am wary of repeating some of the "foundational myths" that persist in popular accounts of internet histories (Bory 2020). While identifying returning motifs of "systems-thinking" that reveal the basic conditions of a technocratic, environmental perspective, I also pay attention to the potential conflicting ideas that have occurred in different communities and different times. As I have explained in the Introduction and will further illustrate in this chapter, those contradictions – between pragmatism and idealism, between controlling nature or being a part of it, between dreams of virtuality and grounding efforts – are examples of the coupling and decoupling strategies that characterize tech-on-climate discourse and Silicon Valley's ideology. As such, the chapter presents a short history of dreams and ideas that have emerged around technology and the concept of the "ecosystem" and have shaped

29 Most editions of the *Whole Earth Catalog* and *CoEvolution Quarterly*, as well as other *Whole Earth* publications are archived by the Internet Archive and can be accessed through https://wholeearth.info.

30 The manifesto is a vision document that plays a particular role in tech culture, see for example Van Dijck & Nieborg (2009).

perspectives on Earth and nature.

The chapter is structured as follows. I first introduce the two main ideologies that I study: the Californian Ideology and ecomodernism. In the next sections I discuss the five periods as mentioned above. I end by briefly discussing the Biosphere 2 experiment, a laboratory inspired by "spaceship Earth", as an illustrative case of whole-systems thinking. In the concluding section, I bring the historical findings together and connect these to contemporary tech-on-climate discourse and its ideology. Here, I return to the double role of history in the creation of myths. The promotion of a newer generation of technologies as green and climate-friendly requires, I argue, a narrative in which these innovations are separated from older technologies but are also positioned as the result of the successful legacy of the US tech industry.

2. THE CALIFORNIAN IDEOLOGY AND ECOMODERNISM

Before I present my analysis of five transformative periods in 20th century tech history, I will introduce the two central ideologies that underpin todays' tech-on-climate discourse: the Californian Ideology and ecomodernism.

2.1 Silicon Valley and the Californian Ideology

The region south of San Francisco was first described as Silicon Valley in 1971, a term chosen to describe the concentration of tech manufacturers in the area (O'Mara 2019). In the 1960s, the San Francisco Bay area became both the center of the American counterculture, drawing hippies from all over the US to the region, as well as the center of computer research, taking place at local research labs and universities. Although it was not the only hub for either of these movements, this area was unique in the way that, since the 1950s, potentially oppositional communities such as the counterculture and research schools interacted and shaped one another, leading to a new movement of tech-savvy, community-oriented individuals called "New Communalists" (Turner 2006). From the 1960s onwards, Silicon Valley grew into a technology hub that housed many tech companies, made possible by governmental investments and favorable tax regulations (O'Mara 2019). In the 1970s, it was the place where Apple (1976) was founded, just a year after the foundation of Microsoft in New Mexico.

In the 1990s, the San Francisco Bay area grew into a hub for digital tech companies and entrepreneurs. In this decade, the internet became available to a wide public (for example through the browsers Andreessen helped to develop). In this decade, new companies such as Amazon (1994) and Google (1998) were founded.[31] The unique atmosphere of the shaping years of Silicon Valley (1960-1990s) has been documented in detail.

31 Amazon was, from the start, located in Seattle. O'Mara (2019) writes that Bezos chose the location for its more favorable sales and income tax regulations (313). But, O'Mara continues, the company's "ties into the Valley were so tight that it might have well been in Sunnyvale" (314).

Many authors have written about the political and societal visions that emerged in the area to conceptualize the zeitgeist of the region as it is reflected in ads, keynotes, products and initiatives. These scholars theorize this zeitgeist as digital sublime (Mosco 2004), the counterculture-cyberculture link (Turner 2006), the internet imaginaire (Flichy 2007), a new form of romanticism (Streeter 2011), technotopia (Apprich 2017) and a technocratic and populist ideology (Ferrari 2020). A prominent concept that is referenced in almost all of the previous texts is "The Californian Ideology" by Richard Barbrook and David Cameron, through which the authors try to reconcile the ideological contradictions of the region. Written in 1996, Barbrook and Cameron describe a worldview they saw emerging around them in California; a worldview that combines seemingly conflicting ideas into a utopian perspective on the future:

> Promoted in magazines, books, TV programmes, Web sites, newsgroups, and Net conferences, the Californian Ideology promiscuously combines the freewheeling spirit of the hippies and the entrepreneurial zeal of the yuppies. This amalgamation of opposites has been achieved through a profound faith in the emancipatory potential of the new information technologies. In the digital Utopia, everybody will be both hip and rich. (45)

Although Barbrook and Cameron acknowledge the contradictory beliefs and practices within the movement – its hippie spirit as well as its entrepreneurial qualities – they do speak of a unified ideology. The authors critique the movements' libertarian politics and techno-optimism as a winner-takes-all narrative that ignores the downsides of the Californian economy, including its problems with racism, poverty and environmental decline. When they historicize the movement, the authors frame the ideology as a product of the new leftist political movement that emerged in postwar America. Barbrook and Cameron write:

> During [in] the '60s, radicals from the Bay Area pioneered the political outlook and cultural style of New Left movements across the world. Breaking with the narrow politics of the post-war era, they launched campaigns against militarism, racism, sexual discrimination, homophobia, mindless consumerism, and pollution. In place of the traditional left's rigid hierarchies, they created collective and democratic structures which supposedly prefigured the libertarian society of the future. (47)

For Barbrook and Cameron this new political wind (which they describe as the New Right and cyberlibertarianism) was critical yet liberating, producing a positive outlook on the postwar years in the United States. The hopeful perspective on the future is often deemed as a core element of the Californian ideology: an optimistic future vision that is grounded in a strong belief in the possibilities offered by technological innovations. At the same time, Barbrook and Cameron (1996) look ahead at the future and muse whose utopian vision would be realized: the anti-corporatism of the New Left or the entrepreneurialism of the New Right? However, they argue, core to the Californian Ideology was "believing in both visions at the same time—and by not criticising either of them" (52). In dreams of

the internet as a "virtual community", these progressive and conservative visions do not necessarily oppose each other: the Californian ideology incorporates both.[32]

I discuss the conflicting political visions around "virtuality" in the 1990s in section 7 of this chapter, but I first dive into the – equally conflicting – ideas that emerged in the preceding decades. Although Barbrook and Cameron (1996) point to the political streams of the 1960s, the historical work of Fred Turner and Thomas Streeter is vital for a closer understanding of the historical events that preceded the techno-optimistic 1990s and the political and economic differences between both eras. Turner's *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (2006) provides a more nuanced and in-depth analysis of the political ideas in US tech culture. If the 1990s were marked by a search for freedom found in the other-worldly internet that allowed for disembodied, creative experiences, in previous decades, the countercultural crowd had searched for freedom in other forms and in other places. It is in this particular convergence that the language of systems-thinking emerged in popular writing about technology, cultural, and ecology.

Because the works by Barbrook and Cameron, Turner, and Streeter pay little attention to the relation between tech culture and the rise of environmentalism in the US, beyond mentioning the role of nature-loving hippies in California in the 1960s, I propose to expand the focus from the Californian Ideology to ecomodernism or ecological modernization in order to understand the environmentalism of Silicon Valley.

2.2 Silicon Valley's Environmentalism: Ecological Modernization

The Silicon Valley region in Northern California is not only the birthplace of the Californian Ideology. Years later, it also became a meeting place for ecomodernists. The geographical link is one, but not the only, reason why these two ideological strands should be understood in tandem. In 2003, Ted Nordhaus and Michael Shellenberger founded the Breakthrough Institute in Oakland, California (The Breakthrough Institute 2023). In 2004, the duo published the text *The Death of Environmentalism: Global Warming Politics in a Post-Environmental World*, in which they claim that the environmental movement and politics in the US had lost steam and should embark on a new route of "post-environmentalism". In the manifesto, the authors are critical of tech solutions they deem too small:

> In the face of perhaps the greatest calamity in modern history, environmental leaders are sanguine that selling technical solutions like florescent light bulbs, more efficient appliances, and hybrid cars will be sufficient to muster the necessary political strength to overcome the alliance of neoconservative ideologues and industry interests in Washington, D.C. (Shellenberger and Nordhaus 2004, 10)

32 A prominent publication from this time on virtuality is Howard Rheingold's book *The Virtual Community* (1993), republished in 2000 as *The Virtual Community: Homesteading on the Electronic Frontier*. In the book, Rheingold writes about his experiences with the WELL, the computer network co-founded by Stewart Brand (see also Bødker 2004).

Shellenberger and Nordhaus critique the environmental movement for lacking an inspiring vision on the future, for focusing on short-term and technological solutions, and for narrowing the problem as being "environmental" instead of social. They advocate an environmentalism that offers a compelling future path and embodies the American dream: "that we are a can-do people capable of achieving great things when we put our minds to it" (26). They propose a politics that discursively reframes environmentalism not as a problem, but as an opportunity, also in terms of economic growth. Shellenberger and Nordhaus (2004) write:

> Environmentalists need to tap into the creative worlds of myth-making, even religion, not to better sell narrow and technical policy proposals but rather to figure out who we are and who we need to be. Above all else, we need to take a hard look at the institutions the movement has built over the last 30 years. Are existing environmental institutions up to the task of imagining the post-global warming world? Or do we now need a set of new institutions founded around a more expansive vision and set of values? (34)

As the quote demonstrates, the Breakthrough Institute understands the climate crisis as a crisis of imagination and is skeptical that existing environmental organizations, or political organizations, can offer a hopeful perspective. Interestingly, the authors refer to the power of myths and narratives in developing new stories about prosperous futures, which aligns with the objectives of this dissertation. In several publications, the institute has questioned the importance of experts, imagining a minimal role for the state as a funder of technological innovation (Hällmark 2023). Both the Californian Ideology and the post-environmentalists thus express libertarian ideals of individualist freedom. Over time, the Breakthrough Institute has changed its tone: the skepticism of a narrow focus on technological solutions has been replaced by an optimistic belief that technology is inherently neutral and natural: a transition that informed the movement's depoliticization of the climate crisis (Hällmark 2023, 59).[33] Currently, the mission page states that by "embracing technology and accelerating modernization for all people, we believe humanity and nature can both thrive for centuries to come" (The Breakthrough Institute 2023). I claim that the positive approach to environmentalism and modernization are a crucial element of ecomodernist discourse.

The movement of post-environmentalists can be seen as a precursor of ecomodernism, a term that only emerged in 2013 (Symons 2019). Nevertheless, *The Death of Environmentalism: Global Warming Politics in a Post-environmental World by Nordhaus and Shellenberger* (2004) and Steward Brand's *Whole Earth Discipline* (2009) are retrospectively seen as two foundational texts of the new movement of ecomodernism (Symons 2019). More recently, in 2015, the Manifesto, signed by Shellenberger, Nordhaus and Brand among others, became a new core document outlining the vision of the ecomodernists.

33 Kristin Hällmark (2023) differentiates early ecomodernism from late ecomodernism, arguing that the reflexive and political potential of the movement has faded over time. Most important for my analysis is the movement of late ecomodernists, as symbolized by the manifesto. These late "ecomodernists present technology as a neutral and necessary mean for combating environmental degradation, in an active attempt to depoliticize it" (Hällmark 2023, 61).

Ecomodernists believe that human progress can be "decoupled" from environmental decline, because, they argue, if we use "proper management" (Asafu-Adjaye et al. 2015, 10), humanity can "achieve peak human impact without intruding much further on relatively untouched areas. Nature unused is nature spared" (19). Several authors have pointed out that this discursive separation of culture from nature – a separation contradicting the earlier understandings of humans as part of nature – is dangerously reductive and overlooks the detrimental consequences our current economies have on natural ecosystems (Crist 2015; Fletcher and Rammelt 2017; Hogan 2018; Kallis and Bliss 2019). In this chapter, I will demonstrate that the strategies of coupling and decoupling already played a role in the historical forms of "systems thinking" that I identify across my five areas of focus.

Like the Californian Ideology, ecomodernism has a longer history that requires a broader historical focus. According to Jonathan Symons (2019), ecomodernist ideology can be seen as a new version of "ecological modernization". In *The Politics of Environmental Discourse*, Maarten Hajer (1995) traces the ideology of ecological modernization back to the late 1970s, when it slowly "began to transform perceptions of environmental problems" (260). Hajer (1995, 3) defines ecological modernization as a discourse that acknowledges ecological crises but believes "that environmental problems can be solved in accordance with the workings of the main institutional arrangements of society". Although ecological modernization, understood as an economic and political transformation led by governmental institutions, is not the same as ecomodernism as I employ it, my chapter will show how the two are nevertheless connected.[34] Most importantly, the Californian Ideology and ecomodernism both center on techno-optimism, expressing hopes and dreams about the potential of technology in the face of crisis. The ideological movements may have different focus points, but they overlap in terms of their political views. Operating at the intersection of these movements, tech-on-climate discourse expresses the ecomodernist myth that "we" as humanity can "solve" the climate crisis, and can do so without, as Hajer writes, making systemic changes to the arrangements of society.

To understand the "infra-structures of feeling" (Coleman 2018) that predated and shaped these worldviews, the following sections zoom in on events that are key to understand this development. I will demonstrate how the historical development of the Californian Ideology and ecomodernism overlap. Throughout the five sections, I focus on ecosystems and systems-thinking as central concepts that help to understand Silicon Valley's genre of ecomodernism.

34 Following John Dryzek's (2013) typology of environmental discourses, ecomodernism is more closely related to what he calls the "Promethean response" than to "ecological modernization". Dryzek mentions the ideas of the Breakthrough Institute as a form of Promethean environmentalism, which centers on "people, markets, prices, energy, technologies" and expresses a mechanistic worldview (58-63). I recognize these elements in the contemporary movement of ecomodernists and their manifesto, which is why I prefer to use the term "ecomodernism" throughout this dissertation, in line with the work of Symons (2019) and other authors.

3. 1940s-1960s: THE BEGINNINGS OF THE INFORMATION AGE

The first period that I want to discuss runs from the middle of the 1940s up to the 1960s. This era is often understood as the start of the "information age" and the birth ground of computer culture in the United States. The period is a good starting point for an examination of the dreams and desires that emerged around technological developments in the second half of the 20th century. It is also an important period for understanding the origin of the "systems" metaphor and the language of systems-thinking in science and tech communities. I pay particular attention to the discursive significance of these concepts, in relation to the emerging worldview in which the universe was seen as a "closed-world" system. This closed-world worldview is tied to two related movements that I will discuss in this section: the military-industrial complex and the field of cybernetics.

3.1 The Military-Industrial Complex and the Rise of Systems-Thinking

The late 1940s and the 1950s form a significant historical period of transformation, encompassing the end of World War II and the beginning of the Cold War era. In this time of geopolitical tensions, the military apparatus of the US had a significant cultural position and financial budget. Historian Paul Edwards (1996) describes how the military potential of new technologies shaped and accelerated the interest and development of technologies such as the digital computer, and how these technologies in turn shaped the "patterns of thought in both military and civilian life" (ix). Within the context of the military-industrial complex, new values and visions became attached to technologies, reframing them "as symbols of power, prowess, and prestige" (Edwards 1996, ix). This discursive transition was instigated by the memories and risk of war, but came into being through the institutionalization of computer research at the time. In the 1940s, a knowledge network of universities, governmental institutions, and the military formed an ecosystem that was influential far beyond the context of war. A national research office divided large funds to prominent universities in the US to finance such research, leading to the foundation and growth of research labs on both the East and West Coast, including MIT's Radiation Laboratory (also known as Rad Lab, located in Cambridge) and the Bell Telephone Laboratories (first in New York, then in New Jersey from 1967 onwards). These labs have become known for the many technological inventions that they helped realize.

Take the work of Vannevar Bush and Norbert Wiener. Bush was an engineer at MIT who played an important role in the distribution of finances as head of the U.S. Office of Scientific Research and Development. Bush worked closely together with Norbert Wiener, who was a professor of mathematics at MIT and who coined the term cybernetics (Turner 2006, 20). In their work in the early 1940s, Bush and Wiener stipulated how computers should optimally function. They formulated requirements such as that "there should be no human intervention from the time the data were entered until the final results should be taken off, and that all logical decisions necessary for this should be built into the machine itself" (Wiener 1948, 7-8). These ideas were developed for specific military purposes – as the research labs for example studied how planes could optimize the firing of missiles – but

later turned out to be of much larger influence. The early developments of computational machines led to great excitement about the possibilities of science and technology.

The availability of government funding and the public interest in technological solutions advanced the development of communication and computer technologies, but the military context also shaped how the public thought about the potential of technology and its possible applications. Edwards (1996) argues that the military-industrial background helps to explain the rise of a new worldview in which two types of discourse came together: a "closed-world" and a "cyborg" discourse. Whereas the first speaks of military strategies in terms of "centralized command and control", the latter articulates "metaphors of minds as computers" (xiii). The closed-world discourse represents the dream of systemic control through technology, whereas the cyborg discourse represents the dream that minds and computers are alike, as processors of information.

Both discourses, I claim, are crucial to understand the ideas and visions that later emerged in the Californian tech community. Edwards explains how developments in computer technology paved the way for thinking about the potential for technocratic management, both within and beyond the military context. He writes:

> First, they allowed the practical construction of central real-time military control systems on a gigantic scale. Second, they facilitated the metaphorical understanding of world politics as a sort of system subject to technological management. Closed-world discourse, through metaphors, techniques, and fictions as well as equipment and salient experiences, linked the globalist, hegemonic aims of post-World War II American foreign policy with a high-technology military strategy, an ideology of apocalyptic struggle, and a language of integrated systems" (Edwards 1996, 7-8)

Edwards points to the discursive transformation of systems-thinking, which created new dreams for computational management and control as a means to strengthen the geopolitical power of the US. Both in a practical and discursive sense, computer technologies were central in the formation of a new vision on the potential of systems.[35]

I argue that Edwards' closed-world discourse has a broader relevance: what emerges is not only a vision of world politics as a system, but also of the world *itself* as an (eco)system. This vision of the world as a system, in turn, encompasses what Edwards describes as the "cyborg discourse"; the language of describing minds as computers. With the rise of "systems-thinking", systems became a metaphor for any entity that could be technologically managed. Through systems-thinking and the ongoing development of technology – both as practical tool and as metaphor for knowing the world – tech culture has produced, and still produces, a technocratic and managerial perspective on the relations between nature, technology, and humanity.

35 Don Ihde (1990) describes these utopian yet deterministic visions on systems (such as computers or artificial intelligence) as "single system utopianism".

3.2 Cybernetics: Systemic Approaches to Man-Machine Relations

One cannot understand the rise of systems-thinking without considering the field of cybernetics. Parallel to and in overlap with computer research in the military-industrial complex, cyberneticians aimed to develop universal theories of information about man-machine relations (Bowker 1991).[36] The research field that emerged in the 1940s and specialized in systems thinking is often seen as the birth ground of the information age (Hayles 1999; Kline 2015). In *How We Became Posthuman*, N. Katherine Hayles (1999) explains how the cybernetic movement contributed to the cultural view that, across several decades, hailed the disembodiment of the subject. In her analysis, Hayles traces the epistemological revolution of cybernetics in the United States. She labels the 1940s and 1950s as a crucial phase in the early developments of the movement and identifies "homeostasis", the tendency towards stability, as the central concept of this era.

Between 1943 and 1954, a vibrant research community formed around the Macy Conferences on Cybernetics. Scientists like Norbert Wiener, John von Neumann and Margaret Mead, who had backgrounds in fields such as biology, anthropology and communication science, developed a "theory of information and control applying equally to animals, humans, and machines" (Hayles 1999, 7). Their efforts led to a new perspective on human beings "as information-processing entities who are *essentially* similar to intelligent machines" (7, italics in original). Hayles' critique of the disembodied subject thus relates to what Edwards calls the cyborg discourse. Homeostasis, which traditionally addressed the ability of beings to maintain a steady state, became understood as a concept that could help build and understand machines, with the feedback loop theorized as a flow of information feeding back into a system (Hayles 1999, 8).

Cybernetic insights, especially the idea of substituting human control by technologies, led to many reconsiderations of how systems worked and could be managed (Johnston 2020, 54). The impact of cybernetics on 20th century ideas about subjectivity, machines, humans and nonhumans was immense. Thomas Streeter describes it as such:

> The idea that thinking was like information processing laid the foundation for both the idea that computers could become minds, the cornerstone of the field of artificial intelligence, but also, reciprocally, that people could be understood and organized into centrally controlled communication systems, the cornerstone of the field of systems science. (Streeter 2011, 31)

The understanding of cybernetics as a way of thinking about computers as minds and humans as part of systems – in other words, to think in terms of patterns of informa-

36 Geof Bowker (1991) discusses the religious dimensions of cybernetics: "Cyberneticians directly appropriated both religious and political discourse, arguing that their science spoke best to the concerns of the new age. In the religious dimension of cybernetic writing, it was often stressed that we are living in a particularly dangerous age, one where we have powers equal to what were once thought to be God's. These powers came in two varieties: the ability to create new life and the ability to destroy the world. Each could be best managed by the science of cybernetics" (112).

tion – was revolutionary. In a sense, cybernetic thinking formed the inspiration for a discursive form of "coupling" between minds and worlds that created endless possibilities. Some saw this coupling as an opportunity for a more efficient and intelligent work sphere made possible by technology, while others saw the potential for a harmonious, ecological society (Turner 2006). The latter is often described as a core idea within the countercultural movement, which I describe in the next section. In both cases, the cybernetic vision of the world offered a sense of control, safety, and optimism about the future.

While rapid technological developments induced optimism from the early 20th century onwards, in the second half of this century seductive and accessible tales of technological progressivism became widely disseminated among the American population (Johnston 2020). Although the post-war period was also characterized by fear and uncertainty about modern technologies, for example fear for an atomic bomb, or for pollution by the petrochemical industry, the social value of technological innovation became widely accepted (Johnston 2020, 50). Such tales were constructed along specific rhetorical lines, equating technology and innovation with progress and imagining engineers and technicians as the managers of a soon-to-be transformed society (Johnston 2020, 13-14). Under the influence of the military complex and the field of cybernetics, forms of systems-thinking and techno-optimism became part of mainstream discourse, thereby simplifying the system theories invented and employed by cyberneticians.

However, not everyone was as optimistic. Norbert Wiener, for example, was aware of the potential risks of his and his colleagues' work within the research labs. The funding for such research was often related to the military potentials of technology, but a lot of people including Wiener, felt uncomfortable with this connection. In the introduction to his book *Cybernetics, or Control and Communication in the Animal and the Machine*, Wiener (1948) writes that the developments he and his colleagues worked on had "unbounded possibilities for good and evil," giving him ambiguous feelings about the theories he co-developed (39). He worried about the devaluation of the human brain and whether the new potentials would "be assessed in the terms of the market, of the money they save" (40). His views on the valuation of humans versus machines, and the instrumental, economic valuation of these inventions, form an early example of the wider debates on the commercialization of technology.[37] Wiener's concerns are similar to those expressed by critical thinkers such as Herbert Marcuse and Jacques Ellul, who wrote about a dystopian future in which technology would become autonomous. These authors saw technology as a totalizing force that would replace nature and the natural with artificiality (Ihde 1990). These fears about uncontrolled technological innovation and the simplification of minds and machines as equal entities have, like techno-optimism, been part of debates on technology ever since. Their fears express what Leo Marx refers to as the entrance of the machine in the garden, replicating a similar nature-technology binary.

The debate sketched above explicates how different people connected their hopes and fears to the development of new technologies. Such events form examples

37 See for example the work of Lewis Mumford, *The Myth of the Machine* (1967).

of the "infra-structures of feeling" I analyze in this chapter. Another example is the way in which Wiener is mentioned in *The Whole Earth Catalog*, twenty years after his seminal publication. The referral is a testament to his importance, and that of the field of cybernetics, far beyond military contexts: "Society, from organism to community to civilization to universe, is the domain of cybernetics. Norbert Wiener has the story, and to some extent, is the story" (Brand 1969, 34). The following section further highlights the cultural dimension of this history. Building on Fred Turner's work, I study how the military context and its closed-world discourse became intertwined with a countercultural search for individual expression and liberation and thus with a seemingly more open-ended vision on the role of technology in society.

4. 1960s: CREATIVITY, SPIRITUALITY AND DIY TECH IN THE *WHOLE EARTH* COMMUNITY

The second event I want to highlight takes place in the Californian counterculture of the 1960s. As of the 1950s, the developments in the field of cybernetics and the military-industrial context started circulating in the Californian cultural and entrepreneurial community. To understand how these ideas became part of the developing tech culture in the Bay area, it is crucial to zoom in on the role of Stewart Brand and his *Whole Earth* community. Because of his long-standing presence in Silicon Valley, Brand aptly embodies the cultural developments of Silicon Valley over time and the contradictions and similarities between what I will call an "open-world" and "closed-world" vision, that come together in his community's "whole-systems thinking".

4.1 Stewart Brand and the Whole Earth Catalog

The new ideas about the relation between computers and individuals reached the cultural scene of California, which formed a central location for the anti-establishment counterculture of the 1960s. Fred Turner (2006) convincingly argues that there was a lot of interaction between the counterculture and military-industrial complex, despite their seemingly conflicting values and interests. For the group of creative individuals that were based in this region in the 1960s, who Turner calls the "New Communalists", the non-military application of technologies and the language of system-thinking provided stability and hope against the backdrop of WWII and the Cold War. Seemingly opposing communities such as Stewart Brand's *Whole Earth Catalog* community, Douglas Engelbart's research group at Stanford University, and the computer hobbyists of the Homebrew Computer Club all met frequently and exchanged ideas (Turner 2006, 106). Bridging the gap between back-to-the-landers and tech researchers, Stewart Brand was crucial in the creation of a community, in which an influential story emerged about the potential of technology for human freedom and harmony, as well as control over life, planet Earth, and even outer space (Turner 2006; Kirk 2007).

Like many others in the 1960s, Brand was drawn to the cultural buzz in the San Francisco area and found comfort in the hippie lifestyle of the communalists. Together with his wife and friends, he started a magazine titled the *Whole Earth Catalog* (WEC). The WEC can be read as a celebration of creativity: it covered a range of political ideas, thinkers and topics through book reviews, interviews, poems, drawings and other media forms. Published from 1968 to 1972, the magazine contained everything from DIY sewing patterns to a design for geodesic domes, updates about devices such as calculators, as well as scientific texts and reports from communes. With the WEC, as well as his later projects, Brand managed to bring different groups of people such as academics, hippie homesteaders, and entrepreneurs together in "network forums" (Turner 2006, 5). The network structure of the WEC community later inspired Brand to create an electronic network, that could be seen as an early "inter-network" (the WELL). But it was in the WEC community that the alternative purposes of technology were first explored, opening the door to new roles for technology in everyday life in the US, and beyond.

The magazine contributed to the "structure of feeling" (Williams 1977) that with technology, anything would be possible. Despite ongoing tensions related to the Cold War, the late 1960s were also an optimistic time in the US: increased welfare for many Americans, and spectacular events such as the first Moon Landing and Woodstock festival (both 1969) took place, which still form part of the cultural imagination in the West today. Brautigan's poems, handed out on the streets of San Francisco in the 1967 "summer of love", but also the WEC editions, are documents that represent the free-spirited culture of the time. Such ideas and structures of feeling are very different from the military-industrial context in which technologies were discussed as means of control.

Yet, the conceptualization of the free-spirited ideology as the opposite of the closed-world discourse of the military requires some nuances. Fred Turner has argued against the simplification of an institutional, military culture as the opposite of a communal, hippie counterculture. He explains the ambiguity of the two movements in detail:

> The research laboratories of World War II, and the military-industrial academic bureaucracies that grew out of them, were far more flexible, entrepreneurial, and individualistic places than many remember today. By the same token, certain elements of the counterculture embraced the ideas, the social practices, and the machines that emerged inside the world of military research even as they vocally attacked cold war bureaucracies. Even as they sought to find new ways to live psychologically and socially integrated lives, some members of the counterculture turned toward the heart of the technocracy itself in search of tools and models for their work. (Turner 2006, 16)

Indeed, the countercultural and military-industrial communities had more similarities and shared interests than one might think. The research institutions of the time were thus not as rigid and separated from the counterculture as often imagined, and the counterculture in turn was inspired by their research and theories.

These nuances change the understanding of this historical movement and com-

plicate Barbrook and Cameron's "Californian Ideology". Turner has critiqued their understanding of a political "New Left" in the 1960s and 1970s. He instead separates the countercultural followers into the New Left and the New Communalists: whereas the former group looked at the potential of political formations and became politically active, the latter group turned away from governments and institutions and focused on homesteading and life in communes. New Communalists, including Brand and the WEC community, turned "toward technology and the transformation of consciousness as the primary sources of social change" (Turner 2006, 4).

But while Brand and his *Whole Earth Catalog* are important representatives of the New Communalists, they, in later years, embody a shift towards a more pro-capitalistic movement, which nevertheless kept some of its emancipatory and liberating values. This seeming contradiction is key for my understanding of Silicon Valley's ideology: while tech culture gradually turned into a more commercial milieu, the focus on the liberation of the individual has always been part of the community. The liberatory and individualistic spirit of the 1960s counterculture still lives on in the environmental ideology of Silicon Valley.

The seed for the commercialization of the sector partially lies in the location of Menlo Park and the entrepreneurialism of the area, which, together with neighboring cities such as Palo Alto, Mountain View and Cupertino, is still the home of many tech companies today. In 1967, Brand stayed in Menlo Park and visited the main computing research groups, including the Stanford Artificial Intelligence Laboratory (SAIL) and the Augmentation Research Center (led by Douglas Engelbart) at Stanford University. Brand also visited the Portola Institute founded by Dick Raymond, who had left the university to start a more creative work community. The Portola Institute was a central point for the development of the American tech culture. Turner (2006, 70) argued that the institute "served as a meeting ground for counterculturalists, academics, and technologists in large part because of its location". John Markoff (2022, 147) even refers to the institute as the first "incubator" of Silicon Valley. During his time at the Portola Institute, Brand founded the *Whole Earth Catalog*. Later, the institute was the home of the hobbyist Homebrew Computer Club, where in 1976 Steve Jobs, Steve Wozniak, and Ronald Wayne created Apple (Markoff 2022). The Portola Institute thus helped "pioneer the entrepreneurial culture that is still at the heart of Silicon Valley—where failure due to having taken risks is a badge of honor rather than shame" (Markoff 2022, 147). One could imagine the vibrant community that was created here, outside of the main government-funded institutions, with many creatives and experts together in a concentrated area. Here, computer companies were able to develop very different identities and target different audiences, perhaps best represented by the opposition between the corporate and "stiff" identity of IBM versus the creative and explorative identity of Apple (O'Mara 2019).[38]

38 A defining moment in the rivalry between corporate IBM and consumer-oriented Apple was the launch of the Macintosh computer by Apple in 1984. The famous advertisement – launched during the Super Bowl and directed by Ridley Scott – introduced the computer as a cultural revolution in computing. As O'Mara (2019) describes Apple's message of self-exploration: "We are not IBM. We are not the establishment. Our computers will set you free" (243).

Returning to the 1960s, it is important to remember that the development of computer technology was still at an early stage at this time. Computers were developed for industrial purposes and not yet widely available. The early mainframe computers took up an entire room. Only trained employees could access these computers, and the process was slow, delicate, and expensive. The practice of batch processing illustrates the type of interactions with computers in the 1950s and 1960s, for which "a user would prepare a stack of punch cards, each containing a separate instruction or field of data, give those to a computer operator, and hours or days later pick up a printout with the results" (Streeter 2011, 28). During the 1960s, companies discovered the possibilities of processing information through computers and started ordering expensive mainframe computers from corporations such as IBM. It was only in the mid 1970s that computers became small and accessible enough to be sold and branded as "personal" computers. The arrival of the personal computer was thus preceded by a period in which people started imagining the creative and individual potentials of computer technologies as interactive tools that offered individual control (Markoff 2005). In these cultural debates on how individuals could use technologies to fulfill their own personal interests, the notion of the "user" slowly came into being (Streeter 2011; Hu 2015). The emergence of the user is a crucial element in the history of technology, as the individualistic question of what computers could do for the individual marked a new stage in the interaction between humans and technology.

The ideological commonalities between the counterculture and the corporate tech culture arose in discussions about the potential of computer technologies at the time. Within the context of both the academic, military-industrial institutions and the counterculture (the New Communalists), a social debate emerged about what the purpose of computers could be, uncovering a tension between "corporate" rationality and the playfulness of interactive computing (Streeter 2011, 19). Both groups looked at the same developments and events through a different discursive lens: to either seek potential for control or potential for self-exploration. This tension is illustrated by the different visions on the use of technology put forward by Joseph Licklider and Douglas Engelbart. On the one hand, Licklider, the director of ARPA (US Department of Defense's Advanced Research Projects Agency) believed that computers could offer more efficiency and rational decision-making. However, the development of ARPANET, the precursor of the internet, attracted the attention of many different groups who were interested in exploring different potentials of such a decentralized network. Around pioneers such as Douglas Engelbart, on the other hand, ideas began to form about the computer as a personal device. Engelbart invented the computer mouse in the early 1960s and contributed to the development of keyboards and user-friendly interfaces. Engelbart had a "vision of how computers could be distributed communication tools [...] instead of the 1960s notion of computers as centralized and centralizing calculation and management devices" (Streeter 2011, 5). Engelbart's vision differs from Licklider's in that it presupposes a more creative use of technology, distributed instead of centrally controlled.

The visions about computers as creative tools for individual exploration shaped much of the role computers played and still play in everyday life. Thomas Streeter explains

the dreams and desires attached to computers in terms of "technological romanticism". In the ideas of technological romanticists, passion and creativity were celebrated over the rationality of corporate capitalism (Streeter 2011, 3). Although they engaged with different topics than Romanticist writers of the 18th century such as Thoreau, the new romanticists too, had an idealistic and utopian vision of the world around them. An example of such a writer is Ted Nelson, who wrote the influential work *Computer Lib/Dream Machines* in 1974, a countercultural celebration of the liberating potential of computers (Streeter 2011, 54-63). Writers such as Nelson helped to introduce the idea of the "personal" computer in public discourse, allowing the mathematical machines to be associated with "individual uniqueness, distinctiveness, unpredictability, and expression" (Streeter 63). Although Streeter does not link these new romanticists to romantic views of nature (e.g. nature as "the sublime"), these writers, he argues, developed a new cultural language to understand relations between humans and objects, as well as between technology and nature.

A few years earlier, in 1965, Alvin Weinberg, Director of Oak Ridge National Laboratory, coined the term "the technological fix" (Johnston 2018). He argued that "solutions founded on technological innovation may be innately superior for addressing issues traditionally defined as social, political, or cultural" (621). In his history of techno-fixes, Sean F. Johnston (2018, 622) describes how Weinberg "reconfigured the overt politics and social aims of interwar scientists into a strategy of science policy". These two elements, the new understandings of the relation between technology and nature and the terminology of the techno-fix, are crucial elements of the history that I trace in this chapter. Particularly, they allow me to theorize the rise of whole-systems thinking.

4.2 The Formation of Whole-Systems Thinking and Ecosystems Ecology

While the *Whole Earth Catalog* rejected the policies and bureaucracy of the closed-system thinkers, it nevertheless demonstrated an interest in systems to present the open-ended possibilities of technology to a wider audience. The term that best captured this discourse and worldview is "whole-systems thinking", coined by Andrew Kirk (2007). The New Communalists found in the discourse of cybernetics a way to describe the world no longer in terms of hierarchies, but in terms of circuits or flows of energy and information (Turner 2006, 38). While Turner nor Streeter addresses the environmentalist visions within tech culture, the New Communalists did feel a close, at least spiritual, connection to nature; hence their nickname "back-to-the-landers". In his biography *Whole Earth: The Many Lives of Stewart Brand* (2022), John Markoff characterizes Brand as a lover of nature, who, born in 1938 and raised in Illinois, had a large interest in the environment and animal well-being from an early age.

The focus on whole-systems thus correlated with the community's interest in environmental themes, reflected in the promotion of renewable energy, energy conservation and energy-efficient houses and products (Kirk 2007, 214). However, the movement displayed a particular kind of environmentalism. Emphasizing the influence of cybernetics on the environmental philosophy of the *Whole Earth Catalog*, Kirk (2007, 63) argues that the *Whole Earth* community distanced itself over time from the hippie "wilderness-based

movement" and instead propagated an optimistic, pragmatic environmental philosophy linking "science, technology, ecology, design, and postscarcity". In this worldview, the world was understood as "a system of invisible forces" that could achieve and maintain a state of stability if humanity acted accordingly (Turner 2006, 83). Such a worldview is clearly inspired by cybernetic discourse.

The new pragmatic form of environmentalism was emblematic for the changes and debates in the field of ecology, a field that also reconfigured itself in relation to cybernetics. In the 1960s, ecologists started using the term "ecosystem ecology" to replace the romanticized image of ecologists as "glorified bird watchers" (Kingsland 2005, 179). Ecosystem ecology "welcomed applications of new techniques in applied mathematics, looked to physics to provide basic principles for ecology, and pushed ecology into the emerging computer age with enthusiasm" (179). The abstract concept of the ecosystem made it applicable not only to natural environments, but also to human communities (Kingsland 2005, 191-192). The reorientation helped to describe the relevance of ecology as a research field in relation to the changing cultural discourses of the time.

This form of ecosystem ecology resonated with the *Whole Earth* community. Stewart Brand and other communalists were optimistic about the potential of "appropriate" technological applications.[39] By developing a whole-systems language inspired by the computer industry, cybernetics and ecology, *Whole Earth* discourse supplied a specific vernacular to speak of technology and nature in similar terms. Every Catalog had a "Whole Systems" section, inspired by the ideas of designer Buckminster Fuller and others (Kirk 2007, 56-57) (fig. 29).

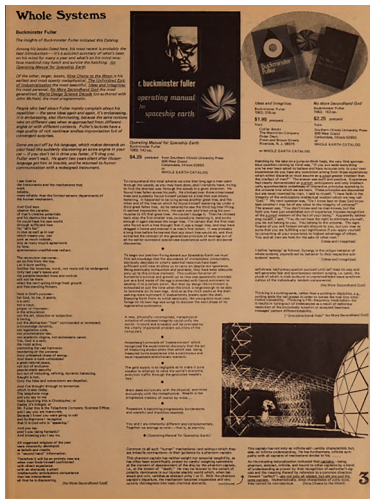


Figure 29: The "Whole Systems" section in the Whole Earth Catalog, spring 1969. Accessed via wholeearth.info (September 2024).

39 This attitude was quite different from that of writers such as Lewis Mumford, Theodor Roszak and Jacques Ellul, who were critical of the ongoing processes of rationalization and centralization and the technocratic worldview of the social world as an automated machine (Turner 2006, 28-29).

While Kirk rightfully credits the *Whole Earth* community for creating a new environmentalism with "appropriate" technological solutions, I want to push the argument further. In my view, the movement also paved the way for later techno-optimistic, tech-on-climate discourse. Like the contemporary examples of discourse I studied in Chapter 1, *Whole Earth* discourse naturalized technology. Not only human-tech relations came to be celebrated, but a positive connection was drawn between the domains of technology and nature, emphasizing the ecological potential and even the "naturalness" of technological solutions. In other words: the quite different fields of technology and nature came to be discursively "coupled". Or, as Hayles (1999, 10-11) describes: there was no longer a separation between the system and the environment, or a world "out there".

Brand's ideas about the large-scale impact of technology were inspired by the theories of cybernetics, which informed both the *Whole Earth* community's vision on the human subject, as well as on Earth itself. Brand, for example, was inspired by the work of Gregory Bateson who had attended the Macy Conferences on cybernetics. Bateson's writings offered "a set of holistic ideas about systems theory, ecology, and the human mind" but did so in a highly accessible and spiritual way (Turner 2006, 53). Bateson became somewhat of a guru for the Catalog and Brand's later projects. Fred Turner argues that Brand, influenced by Bateson, saw the WEC as a whole system, building on the "organizational and rhetorical principles of systems theory" (2006, 82). Brand gave systems theory a cultural and spiritual spin, mobilizing it as a critique on societal hierarchies and the establishment, which he saw as destructive.

I discuss Brand and the WEC in detail, because they help to understand the changing meaning of the "ecosystem" metaphor. In the Californian anti-establishment community, against the background of cultural developments in the US, arose a new understanding of the Earth and human-nature relations.[40] In the 1960s and 1970s, a new "global consciousness" emerged, partially thanks to the space missions that captivated people with visions of planet Earth (Höhler 2015). The metaphor of Spaceship Earth, popularized by designer Buckminster Fuller, played an important role. Historian Sabine Höhler (2015) explains its popularity: "In the high times of the Space Age the spaceship seemed appropriate to combine the notion of life's fragility on the one hand and of the triumph of science and technology on the other" (17). Spaceship Earth captured a feeling of environmental concern but turned it into something positive: it was not only a "metaphor of vulnerability and community" but rather described "an innovative technological model of a natural environment yet to come" (17). Such a design challenge aligned with the interests of Brand and the *Whole Earth* community. Their excitement about the possibilities of technologies (including space exploration) combined with the ecosystem ecology of Spaceship Earth created new visions on the relation between humanity, Earth, and technology. Turner

40 Although I mostly refer to the counterculture and the *Whole Earth* Community, there were other important movements that I cannot discuss in detail, such as the women's movement, the civil rights movement and the black power movement, which were also active in California in the 1960s and 1970s. For more on the link between these movements and Silicon Valley, see for example Janet Abbate's *Recoding Gender: Women's Changing Participation in Computing* (2012).

(2006) helps to understand this transformative moment, as he argues why the works of Norbert Wiener, Buckminster Fuller and Marshall McLuhan, among others, was appealing to this generation:

> Through their writings, young Americans encountered a cybernetic vision of the world, one in which material reality could be imagined as an information system. To a generation that had grown up in a world beset by massive armies and by the threat of nuclear holocaust, the cybernetic notion of the globe as a single, interlinked pattern of information was deeply comforting: in the invisible play of information, many thought they could see the possibility of global harmony. (5)

While some explained the cybernetic notion of the globe as inspiration for a more efficient and intelligent work sphere made possible by technology, others saw in it the potential for a peaceful, ecological society. In both cases, I would argue, the cybernetic vision of the world informed a kind of "design thinking" that created a sense of control and safety common to closed-world thinking.

The term design thinking captures the importance of creativity within the counter-cultural movement. Brand was not looking for control on an organizational or political level, but rather wanted to celebrate the creative individual (Turner 2006, 83). Nevertheless, his ideas still express what Donna Haraway (2016) refers to as the "god trick", revealing a perspective on Earth from "outside". The clearest example is the subtitle of the WEC that started with the famous phrase "we are as gods". Like the photographs of the Earth from space that the magazine often printed on its cover, the WEC offered readers a new perspective on Earth allowing them to take the role of visionary (fig. 30a+b). A vision, Turner reminds us, thoroughly computational, as it "had been made possible by the cameras of NASA and, more generally, by the fact that he was a member of the most technologically advanced generation on Earth" (83). Brand's phrase "as gods" expresses a double meaning: both as a vision on Earth as single system and a subject position in control of daily life, exerting power as individual and as humanity, enabled by technology. The famous picture from space and the motto of the *Whole Earth Catalog* perhaps best represent whole-systems thinking, a discursive logic that, as I will show in the rest of this chapter, still prevails.

The developments described above created new confidence in the power of humans, strengthened by technology, but it also caused something else: the discursive "naturalization" of technology. In this period, new ideas emerged about how technology and nature were two sides of the same coin. Inspired by cybernetic theories, as well as authors like Theodor Roszak and Charles Reich, New Communalists began to focus on consciousness and individual development as sources of social change:

> If the mind was the first site of social change, then information would have to become a key part of a countercultural politics. And if those politics rejected hierarchy, then the circles-within-circles of information and systems theory might somehow make sense not only as ideas about information, but also as evidence from the natural world for the rightness of

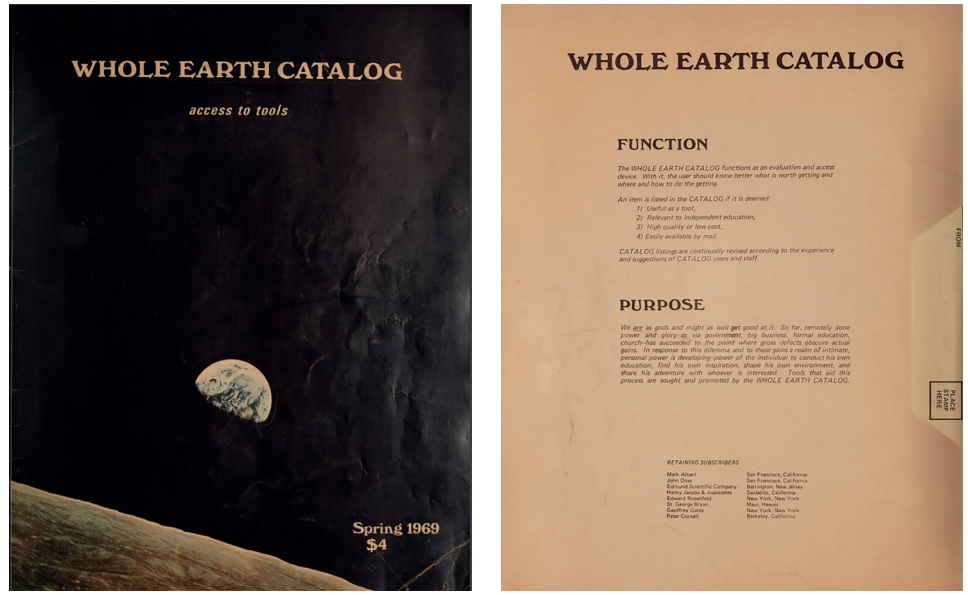


Figure 30a+b: The cover and opening statement by Stewart Brand of the Whole Earth Catalog, spring 1969. Accessed via wholeearth.info (September 2024). Screenshot by the author.

> collective polity. Finally, if the self was the ultimate driver of social change, and if class was no more, then individual lifestyle choices became political acts, and both consumption and lifestyle technologies—including information technologies— would have to take on a newly political valence. (Turner 2006, 38)

Turner's analysis describes how theories of information stimulated the individualistic mindset of the countercultural community. From flows of energy to flows of information, and from organisms to collective polities: the New Communalists' ideas did away with the binary understanding of technology and nature. This transition in focus is significant: it is an early example of how people within the prominent Californian tech culture came to understand technology as a force of nature, rather than the opposite of nature. By naturalizing technology, the New Communalists could celebrate human-tech relations and draw a positive connection between the domains of technology and nature. In my view, this shift captures an essential part of how Silicon Valley's techno-optimism informed its environmentalism, an ideological characterization that is not present in Barbrook and Cameron's Californian Ideology (1996).

Nevertheless, the conceptualization of human-nature relations in this movement is not without paradoxes. Turner argues that the WEC presented a vision not of humans ruling over nature, but of humans being part of nature. In Turner's understanding of the *Whole Earth* worldview, the world could *not* be controlled. Instead, he argues, the world was seen as "a system of invisible forces" with which humans must try to live in harmony, so that not only human lives, but the Earth as system, could function in sync with one another, and thus,

in a state of homeostasis (Turner 2006, 83). Balancing the dreams of control and freedom within the movement, Turner' describes humans as having control over their own lives, while being part of their surroundings. In this view, humans do not have the power to act as masters, or gods, of nature, or improve it or create it anew. But, at the same time, I argue that we *can* see traces of a mastery view in *Whole Earth* discourse. Underneath the dreams of harmony and creativity, I observe a conceptualization of tech-nature relations that is modernist and anthropocentric. I will return to this observation in the following sections.

In this section I have traced a complex historical trajectory, full of contradictions, ambivalences and paradoxes. Whole-systems thinking combines a closed-world language and dreams of control with open-world language and dreams of open-ended possibilities. My discussion raises several new questions: was technology seen as a part of nature, or as a force of nature; were humans seen as in control of the environment, as a part of it, or were these two entities in balance? Such contradictions cannot be solved as they were inherently part of this discourse and, as I showed in Chapter 1, are still part of contemporary tech-on-climate discourse. The discursive mechanism of decoupling soothes these contradictions by separating the idea that technology is natural from the idea that technology can master nature. Such changing understandings of the environment and the best approaches to "save" the planet are reflected in wider environmental discourses, which I turn to in the next section.

5. 1970s: LIMITS TO AND OPPORTUNITIES OF GROWTH

The third period of transformation I want to highlight takes place in the 1970s. While the previous two sections focused on developments in tech culture in the United States, and mainly in California, this section zooms out to study developments in global environmental discourses. Through a discussion of the *Limits to Growth* report and other central texts on environmental policies, I demonstrate how whole-systems thinking and techno-optimism became part of environmental discourse.

5.1 The Rise of the Environmental Movement and the *Limits to Growth* Report

The late 1960s and early 1970s mark the rise of the environmental movement in the United States, with the first Earth Day in April 1970 as a defining moment, when twenty million Americans protested against environmental destruction (Yeo 2023).[41] Under the influence of scientific and popular publications during the 1960s and 1970s, such as Rachel Carson's *Silent Spring* (1962), and the first report of the Club of Rome (Meadows et al. 1972), the objects of concern were wide-ranging. Across the 1960s and 1970s, people worried about pollution caused by industrialization and the use of pesticides in agriculture, greenhouse effects and loss of biodiversity, but also a looming energy crisis, population growth, global

41 This was also the year in which president Nixon signed the National Environmental Policy Act, a milestone of environmentalism in the US (Robertson 2012).

warming and nuclear energy and weapons (Edwards 2010; Robertson 2012). Members of the counterculture and environmental organizations such as the Sierra Club in the US first drew attention to these issues, but environmental decline also became a point of debate among members of the American middle class and within political institutions (Hajer 1995). A new environmental discourse started to emerge as part of the public and political debates of the time. The *Limits to Growth* report (Meadows et al. 1972) by the Club of Rome, the *Blueprint for Survival* text (Goldsmith et al. 1972) published in *The Ecologist* magazine and signed by a group of scientists and the *Small Is Beautiful* book (1973) by E.F. Schumacher are defining, yet ideologically different, texts that were part of this environmental discourse (Hajer 1995, 79). The *Limits to Growth* report formed the basis for a new specific language and framing of environmental issues. The report was the least idealistic and most pragmatic document of the three texts. In the remainder of the section, I explain why the report signifies a transformative moment in environmental discourse.

In the early seventies, the policy-oriented, groundbreaking *Limits to Growth* report was important in creating a new language and framing of environmental issues (Hajer 1995; Edwards 2010).[42] The report put the risks of environmental decline and continuous economic growth on the global political agenda. It also introduced cybernetic discourse and systems-thinking in political and cultural discussions about environmental crises. And most noteworthy for the genealogy that I sketch in this chapter: the report institutionalized the technocratic notion of the Earth as an "ecosystem" and as a model that could be managed and improved.

The *Limits to Growth* report clearly communicated the damaging effects of human activities on Earth and proposed limitations on economic growth. It not only raised awareness for global challenges regarding the climate, but it also provided a specific language borrowing from cybernetics and its discussion of systems, complexity, and feedback loops. The overlap is not surprising, because Hajer (1995) points out that the writers of the *Limits to Growth* report were directly linked to MIT and partially worked in the field of cybernetics. Within scientific and political communities, cybernetics was "seen as a promising opportunity to extend the possibilities of a rational and scientifically based form of decision-making at a time when the response to the growing complexity of social relations became an increasing prevalent theme in governmental circles" (Hajer 1995, 81). Cybernetics provided a language that steered debates on environmentalism in a specific direction, not only in terms of framing the problem, but also in terms of highlighting certain environmental solutions and future perspectives.

42 As Hajer (1995) writes about the influence of the report: "To be sure, the apocalyptic message was not new. It was the ethos of the report and the general ideological climate of the early 1970s that gave the message political resonance and made the environment into a political priority" (80). He continues: "In all, *Limits to Growth* was an example of an extremely successful use of discourse as power. Despite its completely unofficial status, the aura of respectability and knowledge ability that accompanied the Club of Rome report became a key reference in the debate on state of the environment. But more important still, the resonance of *Limits to Growth* meant that others came to conceptualize the environmental problem according to a specific set of concepts and categories" (82).

To share its radical anti-growth message, the report used new computational technologies that allowed for large-scale modelling with the aim of predicting systems-change on a global scale (Edwards 2010). These models were inspired by the work of Jay Forrester, who worked with a team called the Systems Dynamics Group at MIT on a computer model that aimed to represent the entirety of reality (Hajer 1995, 81). With his team, Forrester developed iterations of his predictive model, called World 1, 2 and 3. The technique of climate modelling received critical scrutiny from scientists and activists, who critiqued the biases and limited variables within the models and their rudimentary state (Edwards 2010, 368-369). The *Limits to Growth* report was one of the first to use computer models, despite their major flaws, to share serious predictions and concerns about the exhaustion of finite resources, increasing pollution and world famine with a wider audience (Edwards 2010, 368). The concept of a world model offered a vehicle to communicate bold and abstract ideas to wider audiences and create a sense of overview.

The *Limits to Growth* report was written in a novel language that borrowed heavily from cybernetics and its discussion of systems, complexity, feedback loops and more. The researchers describe their mission as a search for "the state of global equilibrium" (Meadows et al. 1972, 156). The Earth is understood as a "finite system" with positive and negative feedback loops affecting its state. The writers use the language of whole-systems to grapple with the complex issues they are dealing with and to study how different actions (input) would change the condition of the planet (output). They ask for instance: "How will the world model behave if we include in it some policy to control growth deliberately? Will such a policy change generate a 'better' behavior mode?" (Meadows et al. 1972, 157). Such statements reveal the persisting dreams of control and interest in design thinking that I addressed in the previous section. They also create the impression that the problems could be managed with the right techniques.

In terms of terminology and focus, the *Limits to Growth* report also reflected the ongoing changes in the field of ecology. For example, the report's use of the "ecosystem" metaphor was inspired by the work of ecologists Tom and Eugene Odum, who formulated holistic statements about the optimization of ecosystems (Kingsland 2005, 189-192). Their techno-optimistic vocabulary included cybernetic concepts such as "equilibrium" to discuss "the 'essence' of ecosystem dynamics" and discuss what "interventions would improve their operation, as though the systems were machines whose efficiency could be improved with a bit of tinkering" (Kingsland 2005, 203). Thinking of the climate crisis and the planet in terms of equilibrium and stability discursively shaped environmental debates, by foregrounding the idea that nature could "bounce back" into a healthy state if humans would change their relation to and "use" of nature. The report thus introduced and helped institutionalize the language of systems thinking within environmental discourse. Additionally, the public debates on environmentalism asked companies to legitimize their operations. Melissa Aronczyk and Maria I. Espinoza (2022, 133) argue that the report also served as a "technology of legitimacy" that provided corporate PR actors with "information and influence methods" to frame sustainability as a theme. In this sense, the report is an early instigator of corporate green discourse: because of its strong critique of economic growth, it forced companies to demonstrate how their businesses could function and thrive in this new environmental reality (Aronczyk and Espinoza 2022, 134).

The report is fundamental for understanding the transformations in environmentalism, as it moved away from conservationist environmentalism associated with wilderness protection and anti-consumerism into the direction of ecological modernization. As Hajer argues, "Ecological modernization is the unlikely product of an argumentative interplay between several social forces that in the mid-1970s still showed radically converging ideas about the nature of the environmental problem" (1995, 100). In his book *Living Through the End of Nature* (2013), Paul Wapner conceptualizes those opposing views as "a dream of mastery" versus "a dream of naturalism" (22-23). Whereas the former narrative views nature as the backdrop and input for human life that should not limit human freedom, the latter pleas for the protection and emulation of the more-than-human world and sees the human as one element in a complex ecosystem (Wapner 2013, 22-23). In other words: in their "pure" forms, these two dreams "pit the godly character of nature against the godlike attributes of human beings" (Wapner 2013, 24). Romantic, idealized visions of nature as "wilderness" or "pastoral", became associated with anti-technological sentiments, whereas the "we are as gods" rhetoric intertwined with a strong pro-technological stance. With the rise of ecological modernization, the celebration of technological innovations became part of environmentalist discourse. The wider acceptance of the world as a model, as in the *Limits to Growth* report, unintentionally presented an opening for techno-fixes to be introduced as the tools to maintain an equilibrium or harmony between humanity and nature. Maarten Hajer argues that the style of the report had an inadvertent effect: its technocratic framing "led to the exact opposite of what it purported to do: instead of being efficient and rational, it was short-sighted and careless" (1995, 89). Despite its critical anti-growth message, the report formed a transformative document that partially explains the rise of pro-growth ecological modernization.[43]

Towards the late 1970s, ecological modernization became the "most legitimate way of conceptualizing and discussing the environment as a policy-making problem" because it allowed for an "efficiency-oriented approach to the environment" (Hajer 1995, 101). While this discursive framing led to the institutional acceptance of environmentalism, its focus on efficiency was quite converse to the values of the earlier environmental movements that critiqued such technocratic institutional arrangements.[44] The rise of ecological modernization therefore serves as an important transformative moment that sheds light on the discursive transformations in environmentalism.

43 Hajer (1995, 94-100) offers a more in-depth discussion of why what he calls "radical environmentalism" was gradually replaced by "ecological modernization" as the most prominent environmental movement of the 1980s.

44 The contradiction that emerged here also played out in the field of ecology, where research practices changed in tandem with technological developments. Kingsland (2005) writes: "It is ironic that the development of ecology, a science aiming at the understanding of nature, should seem to advance by depicting the "natural" as though it were artificial, forcing nature, with all its diversity, uncertainty, and historical contingency, into the mold of a manmade object" (215).

The discursive change is aptly represented by the changing US presidents in the 1980s: whereas democrat Jimmy Carter had operated from a "limits to growth" perspective, the republican Ronald Reagan took office with the exact opposite message: no limits to population growth nor to economic growth (Robertson 2012, 200, 218-219). Reagan pitted his pro-growth agenda against Carter's environmental agenda. During the 1984 elections he argued that voters could choose "between two different visions of the future, two fundamentally different ways of governing—their government of pessimism, fear, and limits, or ours of hope, confidence, and growth" (quoted in Robertson 2012, 219). The so-called optimistic versus pessimistic worldview, as well as the hope placed in the future developments of technology, reveals that Reagan's neoliberal narrative aligns with that of ecomodernists and is echoed in contemporary tech-on-climate discourse. Thomas Streeter describes neoliberalism as a new form of market individualism that arose in the late 1970s, and captured an "individualist framing of life, wherein the power of individuals to pursue profit in a marketplace is understood as the archetype of freedom" (2011, 72).[45] Streeter argues that technological developments played a key role in the cultivation of neoliberalism and a new form of capitalism in the US, as "information had the extraordinary advantage of being something you could imagine as thinglike and therefore as property, as something capable of being bought and sold" (76). The political-economic changes, technological developments, and changing environmental concerns of the 1970s and 1980s laid the groundwork for a movement of green consumption (Smith 1998), but also more abstractly, for the marketization and datafication of nature within ecomodernist thought.

Before I discuss neoliberalism in relation to environmentalism, I first want to zoom in on the developments within the Californian tech culture in this same period. A comparison reveals how the same transformation happened in the *Whole Earth* community: a move from conservation-oriented environmentalism to ecopragmatism.

5.2 The Counterculture in the 1970s: Dreams of Coevolution

My discussion of the *Whole Earth* community illustrates that oppositions such as anti- and pro-technology, or mastering and protecting nature, cannot always be maintained, and do not necessarily help to explain structures of feeling. Likewise, the opposition between pragmatists and wilderness advocates that Kirk (2007) and Wapner (2013) set up, does not help in understanding the complexities of the environmentalism of the tech movement. It is too simple to argue, for example, that tech culture fully took on the mastery narrative in the tradition of ecological modernization. In this section, I discuss the environmentalism of the *Whole Earth* movement.

While the *Whole Earth Catalog* was no longer published regularly after 1971, Stewart Brand and his community continued to engage with environmentalist theories and events. In 1969, Brand for example started project "Life Raft Earth" and organized

45 The books and ideas of the writer Ayn Rand are often mentioned as quintessential cultural examples that expressed the individualistic worldview of neoliberalism and were very popular among the entrepreneurs of the tech sector (Turner 2006; Streeter 2011). See also the documentary series directed by Adam Curtis, named after Brautigan's poem, *All Watched over by Machines of Loving Grace* (BBC 2011).

an event called "The Hunger Show" to raise awareness for the problem of overpopulation and hunger (Kirk 2007, 108). The *Whole Earth* community proceeded to express optimism about the potential of technological innovations, for example through renewable energies or information technologies. For them the problem of environmental decline could be overcome in the future, as long as everyone had access to the right tools and information (the motto of the WEC). Such a utopian perspective on technology as force of change is still very present in tech-on-climate discourse today and remains a core element of Silicon Valley's environmental ideology.

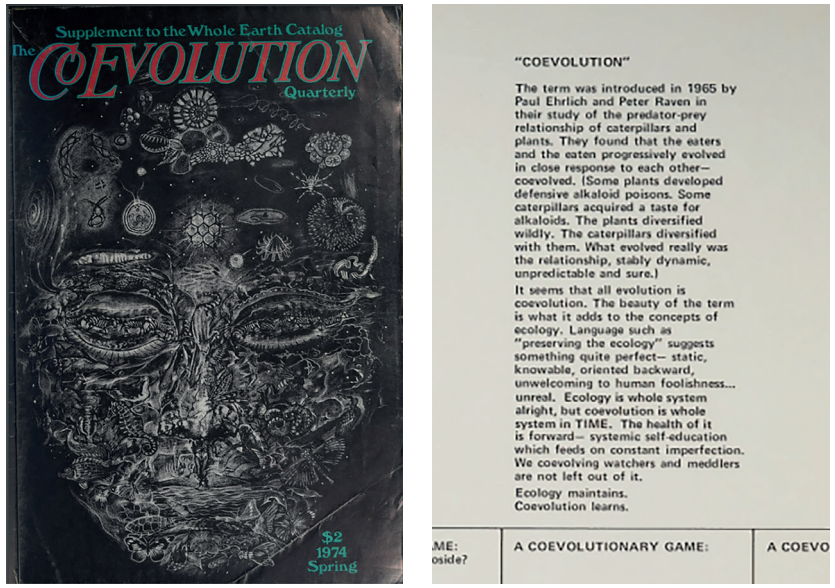
As with the environmental movement in general, the Californian tech culture of the 1970s underwent a change in discourse and ideas that proved to be important for the reigning techno-solutionist ideas of later decades. As I argued before, the whole-systems worldview of the *Whole Earth* community partially resonated with the New Communalist's vision, but it also managed to embrace the surging consumer culture. Most relevantly, the Whole Earth came to provide a model for green consumerism, that was democratic as well as pragmatic.

The Last Whole Catalog published in 1972 illustrates the transition. In the last magazine of the series, Brand commented on the intrinsic relation between capitalism and the counterculture, claiming that the Catalog had always been made of capital and had created new capital (Kirk 2007, 117). With that capital, Brand went on to start the Point Foundation, which provided funding to projects in line with his pragmatic environmental philosophy. These were projects about the research and development of what Kirk calls "appropriate technology": technologies that helped to solve environmental issues (Kirk 2007, 127). Like the Portola Institute in the 1960s, the Point Foundation served as an incubator for cutting-edge projects, but now with a more explicit environmental signature, including projects of reforestation, an ecotopian community, and solar energy (Kirk 2007, 128).[46] Many of the projects funded by the foundation eventually failed, leaving Brand unsatisfied. Still, Brand used the experience to further develop his ideals of ecological living and green consumerism in his next adventure: the *Co-Evolution Quarterly* (Kirk 2007, 155).

The *Co-Evolution Quarterly* (CQ) magazine first launched in 1974 (till 1984) as the successor of the WEC and fully embraced the concept of ecosystem ecology. Like the *Whole Earth Catalog*, the magazine published a range of tips, columns and book reviews that covered environmental topics such as vegetarianism, population growth and disaster prepping. Despite the attention for environmental decline, the tone of the magazine was hopeful and continued to express a whole-systems worldview. In the introduction to the first edition, Brand wrote: "Ecology is whole system alright, but coevolution is whole system in TIME. The health of it is forward—systemic self-education which feeds on constant imperfection. We coevolving watchers and meddlers are not left out of it. Ecology maintains.

46 The prominent environmentalist and conservation advocate Huey Johnson was for example part of the original Point board (Kirk 2007, 130-134). However, there were fierce discussions about whether the focus on appropriate technologies rhymed with the environmental signature of the foundation. Jerry Mander, for example, who thought of computers as anti-ecological and anti-democratic, expressed critiques that were dismissed by the rest of the board (Kirk 2007, 135-136).

Coevolution learns" (Brand 1974) (fig. 31a+b). Co-evolution became the new key term of the movement, presenting a particular "holistic" form of ecology that took environmental decline seriously, while still favoring progress and optimism, described in the language of whole-systems (Clarke 2011).



"COEVOLUTION"

The term was introduced in 1965 by Paul Ehrlich and Peter Raven in their study of the predator-prey relationship of caterpillars and plants. They found that the eaters and the eaten progressively evolved in close response to each other— coevolved. (Some plants developed defensive alkaloid poisons. Some caterpillars acquired a taste for alkaloids. The plants diversified wildly. The caterpillars diversified with them. What evolved really was the relationship, stably dynamic, unpredictable and sure.)

It seems that all evolution is coevolution. The beauty of the term is what it adds to the concepts of ecology. Language such as "preserving the ecology" suggests something quite perfect— static, knowable, oriented backward, unwelcoming to human foolishness... unreal. Ecology is whole system alright, but coevolution is whole system in TIME. The health of it is forward— systemic self-education which feeds on constant imperfection. We coevolving watchers and meddlers are not left out of it.

Ecology maintains.
Coevolution learns.

ME:
oside?

A COEVOLUTIONARY GAME:

A COEVO

Figure 31a+b: The cover and opening statement by Stewart Brand of the *Co-Evolution Quarterly*, spring 1974. Accessed via wholeearth.info (September 2024). Screenshots by the author.

This time around, Brand gave his new magazine a more explicitly political signature. Kirk argues that the *Co-Evolution Quarterly* magazine became the leading voice within a broader movement in the 1970s and 1980s that blended "green consumption into the intellectual tradition of western libertarian sensibility" (2007, 160). Contributions to the CQ focused on studying how nature and humanity could co-develop and mutually optimize (Kirk 2007, 165). Although the CQ never reached the status that the WEC had obtained, it was nonetheless influential: Kirk argues that the CQ launched many debates as it published about topics such as the Gaia hypothesis, bioregionalism and space colonization (169). The latter topic was covered in several issues and even resulted in a book titled *Space Colonies* (Brand 1977).

His interest in space as the final frontier opened Brand and the CQ up for critiques from environmentalists and readers alike, who saw spacefaring as an unnecessary and environmentally damaging project. The space debate therefore reveals where the pro-technology perspective of Brand and the Whole Earth community fundamentally clashed with the convictions of "wilderness advocates and back-to-the-landers" (Kirk 2007, 175). The debate on space colonization forms a clear link to the spacefaring projects initiated over forty years later by Elon Musk and Jeff Bezos, which I discuss in Chapter 3. Already in

the case of Brand, these ideas reveal his belief in the unlimited potential of humanity. Kirk writes: "By advocating moving off the Earth and building something new and perhaps better, Brand was simply following his own advice to be "as gods" to its logical extreme" (176). Although explained as a form of co-evolution between humans and nature, these projects express the dream of mastery popular within the *Whole Earth* movement. To its critics, space colonization presented the opposite of what they thought co-evolution should be about.

The wider adaptation of whole-systems thinking and its explicit connection to the climate crisis through Brand's promotion of pragmatic, appropriate technologies, mark a crucial step in the introduction and acceptance of technological solutions. Such solutions are still seen as more ecologically-aware forms of technology enabling "responsible innovation", yet the problem is that they also tend to look at environmental impact through a limited set of quantifiable aspects (Johnston 2020). The *Whole Earth* community's activities in the 1970s heralded a new era of techno-optimistic discourse that centered on techno-fixes for a planet in peril, for example steering debates on environmentalism to a discussion of "mutual optimization" for both humans and the environment (Kirk 2007, 165). By speaking of the mutual optimization of humans and the environment, the future of both became strongly "coupled" together. The intensification of this "coupling" is crucial, I argue, because technology came to be seen as an essential, mediating layer between the two. Not only did this logic make technology and techno-fixes appear harmless and natural, whole-systems thinking now also created the idea that systems, both environmental and social, would co-evolve naturally. In addition, the political idea emerged that entrepreneurs and engineers – that is to say those with pragmatic visions – would best be suited to produce these solutions.

In order to demonstrate how the coupling of technology and nature informed specific debates, I want to briefly zoom in on how the term "resilience" captures these changes in discourse. The term "resilience" is used both in relation to technological infrastructures and the environment. Luke Munn (2020) describes how infrastructures developed in the Cold War era were designed with stability as the most important feature, to be protected from any possible outside danger. But, Munn writes, in the 1970s, developments in the study of ecology showed that danger could never be fully excluded: in order to survive, organisms (but also systems) needed to become adaptive. These ideas changed the expectations of digital infrastructures, and resilience came to be understood as adaptability (more than stability) and even as a symbol of evolution. Resilience is yet another term that reflects how changes in both nature and technology were thought to align or were considered in similar terms: both as resilient systems. Munn traces the meaning of resilience, both as a metaphor of control and adaptation, to the design logic of contemporary data centers. Infrastructures such as data centers form an example of how the ideas about resilience become materialized and operationalized over time. In response to potential crises (e.g. environmental) it made sense to promote technologies as resilient, as adaptive, thus evolving in tandem with nature. Through such discursive changes, the idea that technology and nature were equal partners in co-evolution gained popularity, especially in the face of (climate) crisis.

This section has analyzed how the dream of co-evolution became a popular way to think about the relations between nature, technology and humanity. While the appropriate technologies that were proposed in the name of co-evolution (e.g. solar power) have helped to create a transition to renewable energy, I agree with Johnston (2020) that it is vital to be critical of (some forms of) techno-fixes and their environmental rationale. Not only do techno-fixes often direct attention to a limited set of climate solutions, but they also bring about discursive changes in the discussion of the climate crisis as a problem that needs a particular solution. The problem here is that while technology is framed as a partner, it is also imagined as a powerful actor that functions independently, "decoupled" from ecosystems, potentially as a mediating layer. The introduction of techno-fixes instigated the narrative, Johnston argues, that ecosystemic issues (natural or cultural) could be solved by solutions that operate *outside* of that system (Johnston 2020, 200). The process of "decoupling" technology from nature reflects the ideology of ecomodernism, as it externalizes technologies from natural ecosystems, even though the use of "ecosystemic" language might suggest otherwise. Once again, the "ecosystem" metaphor serves as an effective form of discursive mythmaking. The externalization of technology becomes most clearly established in the 1990s. First however, I trace the changes in environmentalism in the 1980s.

6. 1980s AND 1990s: THE RISE OF NEOLIBERAL ENVIRONMENTALISM

The fourth period of my historical analysis covers a transformative moment in environmentalist discourse. In the period between the publication of the Club of Rome report in the 1970s and the commercialization of the internet in the 1990s, environmental debates in the US drastically changed in terms of tone and focus. Whereas the 1970s held on to the critical message of degrowth, the following decades witnessed a transition towards a more neoliberal approach to ecological issues. In this section I demonstrate how this political transformation went hand in hand with a discursive transformation: from sustainability to sustainable development.

6.1 Changing Politics: The Brundtland Report (1987)

Ecological modernization and its pragmatic and managerial view on nature-human relations emerged in the 1970s but became increasingly influential from the mid-1980s onwards. While the *Limits to Growth* report is often seen as the starting point of sustainability discourse, in the 1980s the term of focus was "sustainable development" (Seefried 2015, 378). Whereas in the 1970s, social movements morally opposed the focus on quantification and calculations, in the 1980s it became harder to escape "the modernist mythology of progress" (Hajer 1995, 103). The report *Our Common Future* from 1987 (also known as the Brundtland report) exemplifies this fundamental shift in the 1980s. The report (1987) was written by the World Commission on Environment and Development (WCED), a sub-

organization of the UN (also called the Brundtland commission) led by the prime minster of Norway, Gro Harlem Brundtland. Gómez-Baggethun and Naredo (2015) describe how the environmental debates changed: in the 1970s people looked for ways to cap the economy to safeguard the environment, in the 1980s sustainability had to be designed in ways to safeguard economic growth (393). They write:

> The Brundtland report reframes environmental problems and solutions in a way that turns upside-down the understanding of the relation between growth and the environment that had guided sustainability reports over the 1970s. Growth is no longer presented as the culprit of ecological decline but as the solution to social and environmental problems. (Gómez-Baggethun and Naredo 2015, 389)

Across the report, the message is conveyed that more economic growth decreases poverty. Moreover, the report shifts focus: the priorities change from concerns for future generations to present-day needs (Seefried 2015, 389).

The changing economic and political climate in the US in the 1980s, embodied by President Ronald Reagan's pro-growth neoliberal agenda, led to new conceptualizations of the climate crisis and new understandings of "nature". The Reagan administration represents a time in which technological fixes were discussed with great optimism (Johnston 2020, 142-143). Central to this development is an understanding of nature as an external entity, thereby valuating its instrumental worth for humans and the economy, rather than its intrinsic qualities (Dempsey 2016, 33-34). Such ideas surfaced in political texts, but also, importantly, in corporate texts and PR communication, which purposely diffused the boundaries between greenspeak and business speak by promoting corporations as key agents in the climate crisis, setting their own standards for environmental responsibility. The externalization of nature shifted the attention from environmental issues to a discussion of how to define, manage and evaluate these issues (Aronczyk and Espinoza 2022, 180-181).

The change in tone and language marked the rise of a technocratic, environmental discourse. Jessica Dempsey (2016) describes how a problem such as biodiversity loss came to be understood as "a technical problem that can be fixed by finding a self-sustaining equilibrium between the demands of consumers, national development interests, and the supply of global benefits stemming from biodiversity" (66). In an unrealistic fashion, the biosphere is asked to heal while still serving everyone's interests, including those of economic growth – a project that Dempsey criticizes as unrealistically immaterial and placeless (49). Nevertheless, the vision reflects a broader North American narrative about growth and hegemonic power, displaying deeply patriarchal and colonial ideas about who "owns" nature. Scholars, including ecofeminists and indigenous scholars, have critiqued this rationale of the mastery of nature (Merchant 1980; Plumwood 1993; Shiva 1997; Haraway 2016).

Such "pro-growth" environmentalism is described by Hajer (1995) as ecological modernization, while Jessica Dempsey (2016) speaks of "enterprising nature", and Kathleen McAfee (1999) of "green developmentalism". This optimistic worldview, deeply steeped

in neoliberalist politics, prioritizes economic growth, values nature for its instrumental and economic use, and believes in technological innovations that will save humanity. As McAfee (1999, 133) argues, this narrative presupposes that human's interests all align, and that environmental issues can be solved without confronting current economic models – thus propagating the exact opposite of *Limits to Growth* environmentalism. According to this narrative, it makes sense to forward new technologies as "god tricks", thereby creating an objective and distanced perspective on environmental issues. I therefore argue that this particular narrative overlaps with whole-systems thinking and the externalization of technology. With ecological modernization as a form of pro-growth environmentalism, techno-fixes came to be seen as tricks that function separately from the (eco)system they aim to improve.

6.2 1990s: Nature as Market

Since the Brundtland report in 1987, new publications from environmental policymakers further helped "restore the faith in economic growth" (Gómez-Baggethun and Naredo 2015, 390). The most important example here is *Beyond the Limits* (Meadows et al. 1992) from the same authors as *Limits to Growth* (Meadows et al. 1972). The publications from the late 1980s onwards have in common that they soothe the contradiction between economic growth and environmental wellbeing through technological solutions, against the background of neoliberal politics and its free-market capitalism. Environmentalism thus became an interest of corporations and free-market advocates. As such, these texts present an early example of the green spirit of contemporary capitalism, approaching environmental issues as technocratic challenges and economic opportunities.

In the 1990s, the economic perspective on the climate crisis became more embedded in the global political discourses of the time. Kathleen McAfee (1999) writes about the emergence of supranational institutes in the decade, "designed to regulate international 'environmental investments' and the transboundary flows of natural resources, including genetic information and knowledge about nature" (133). Within these institutions, McAfee argues, a new global environmental discourse emerged, that voiced a "postneoliberal version of environmental economics" (133). McAfee notices the rise of new markets in relation to nature, quantifying the values of nature and the cost of protecting it and creating institutional structures to manage this "natural capital". She refers to this "mutually constituted complex of institutions, discourses, and practices" as "green developmentalism" (134). The economic perspective was designed to protect a singular humanity and its interests in the management of environmental issues, without harming economic growth (McAfee 1999, 133). McAfee stresses the damaging consequences of the commodification of nature that is part of this new ideology. She writes:

> The key to those market solutions, the story goes, is the privatization and commoditization of nearly every aspect of nature, from molecules to mountainscapes, from human tissues to the earth's atmosphere. This global environmental-economic paradigm reduces organisms and ecosystems to their allegedly fungible components, and assigns monetary prices, calculated with reference to actual or hypothetical markets, to those components. The result is a panplanetary metric for valuing and prioritizing natural resources and managing their international exchange. (McAfee 1999, 134)

McAfee's claim that nature came to be understood as fungible, exchangeable commodity resonates with the critiques on neoliberal environmentalism, highlighting its focus on commodification and quantification.

McAfee's notion of green developmentalism aligns with the concept of planetary improvement by Jesse Goldstein (2018), that I have introduced in the Introduction of this dissertation. Whereas green developmentalism describes the overall neoliberal perspective that nature should be saved as long as it benefits and does not harm the global economy, planetary improvement describes a specific form of corporate, clean-tech developmentalism that highlights technological solutions that could help achieve that goal. Both concepts critique the capitalistic understanding of growth as fundamental to the proposed solutions and plans. In her discussion of documents published by the World Bank, McAfee (1999, 136) claims that the institution cultivated the narrative that economic growth is not only desirable, but a necessity: "Only a pro-growth climate, they argue, will provide the profit incentives needed to spur technological advances that will enable the world economy to continue growing and getting greener at the same time: a neat circle of reasoning that begins and ends with growth". This logic exemplifies the use of the discursive strategy to imagine only one desirable and realistic path forward. McAfee's critique illustrates how institutional, discursive and economic forms of power intertwine, thereby disseminating and institutionalizing a specific form of climate action and funding.

It is important to recall that the narratives I analyze here fit a cultural perspective of North American hegemony, expressing its key values of individual freedom and progress. McAfee (1999), Dempsey (2016) and many others have emphasized how this environmental worldview has deep imperialist and colonial roots, imposing a Western perspective as the best solution for all of humanity. McAfee reflects on this perspective as follows:

> Green developmentalism attempts to maintain a separation between environmental problems and broader political-economic issues. It promotes a bias toward technological solutions and away from social-structural change. It provides justification for the continued conceptualization of environmental goals in isolation from development aims and without changes in existing political institutions, distributions of economic power, and patterns of resource flows. By providing a rationalization for the pursuit of green goals without reversal of the long-term net transfer of financial and material resources from the global 'South' to the 'North' and from rural to urban areas nearly everywhere, *green developmentalism reinforces environmental injustice on a world scale*. (1999, 135, italics in original)

McAfee's critical description of green developmentalism, especially its apolitical nature and focus on technological innovation, also serves as a critique on the ideology of ecomodernism, or what Hajer calls ecological modernization. Both scholars focus on the discursive-in-

stitutional contexts in which these ideas about dealing with the climate crisis come into fruition.[47]

With its dreams of control, the logic of whole-systems thinking has permeated the ecopragmatic environmental discourse of the 1990s. Whereas the critics of enterprising nature have been set aside as utopian, Jennifer Dempsey (2016) argues that the pragmatists are actually the ones with a utopian vision, as "it is a project that is, literally, no place: it is not of this earth, it is not of the socioecological systems that actually exist" (49). She writes:

> The so-called "pragmatists" hold onto an impossible dream wherein, once the conditions are right, all social, economic, and ecological values can be accounted for within a single analytical system – aligning global socioecological needs, national interests, and economic growth. The promise of biodiversity is the ultimate realization of an "acultural vision": the Enlightenment promise of liberation by calculation. (Dempsey 2016, 52)

The single-system worldview, which corresponds with a close-world vision, thus creates a discursive parallel between environmental policy and the techno-cultural context. Dempsey's critique also addresses the elitist, modernist notion that the Western perspective is the only sensible option. Dempsey refers to an important critic in the 1990s, Vandana Shiva, who disputed the neocolonial Global North framing of biodiversity and conservation, critiquing Western notions of progress and knowledge, and the commodification of nature (Dempsey 2016, 50).[48]

In this period, the political and cultural discourse about the environment – what it encompasses, what should be "saved" and how – changed dramatically. Erik Gómez-Baggethun and José Manuel Naredo (2015) have noted three main shifts in this discourse between 1972 and 2012: the claim that economic growth is not bad but good for the environment; the shift in proposals from governmental climate regulations to market-based instruments; and an overall shift in language from a political to a technocratic discourse. For my argument in this dissertation, the third aspect is most relevant as it is related to the prominence of Silicon Valley in the US in these decades. As Elke Seefried (2015) argues, especially from the 2000s onwards, revolutions in information technologies and increased globalization have led to an optimistic tone in environmental discourse. Here, the impact of contemporary ecomodernism and the project of green capitalism start to become apparent. Seefried writes: "Through efficient use of raw materials and fuels, environmentally-friendly technologies and recycling, it was assumed to preserve the environment and to gain a double usefulness from both ecological and economic aspects, which would ease the

47 In her paper, McAfee (1999) also addresses the differences between her and Hajer's approach: "However, Hajer ascribes to the realm of discursive-institutional processes more independence from imperatives of organized capital than do I, and is more sanguine about the prospects of creating adequately 'reflexive' new institutional arrangements by means of democratic deliberations and the deconstruction of scientific-technical authority" (136).

48 These ideas were for example expressed in Shiva's text *Biopiracy: The Plunder of Nature and Knowledge* (1997).

politics of the job market" (395). With each iteration of climate discourse, she argues, the meaning of progress became recodified and reconfigured (399).

What further strengthened the interest of the tech sector, was the ongoing reconfiguration of the meaning of progress, knowledge and intelligence. The availability of data and faster computers brought about a form of "futuring" which shaped visions within environmentalism but also the financial sector (with regards to trading and the stock market). Orit Halpern (2022) describes how new ideas about decision-making based on large amounts of data "reformulated economic, psychological, and computational practices and experimental methods" (356). She continues:

> In doing so, the ideal of networked intelligence became the dominant ideology that made machine learning and economic decision-making commensurate and part of the same system. Moreover, computation came to be seen as environmental: a milieux that should be extended into every mode of social and political life and a site for producing value. (Halpern 2022, 356)

Halpern's analysis aptly describes the new "infra-structures of feeling" around computation, which brought about a wider acceptance of the networked logics of computation as valuable form of intelligence. Such a perspective takes into account both the materiality of the industry as well as its cultural role in shaping what constitutes as knowledge, or as environment. These critical reflections help to, as Ensmenger writes, "re-situate the history of computing in the larger history of the American industrial development and ask new and important questions about labor, capital, politics, and power" (2018, 20). They thus set the stage for understanding the rise of Silicon Valley's environmentalism.

The neoliberal version of environmentalism I have analyzed in this section, expresses a dream of mastery over nature, of progress, human liberation and green growth. Like visions of planetary improvement as discussed by Goldstein, this ideology, a precursor of contemporary ecomodernism, promises that we can trustfully wait "for the right measure, the right facts, the right models, the right laws and policies to realize humanity's (already known) destination" (Dempsey 2016, 52). Importantly, such optimism about the future also relies on a particular notion of progress and human control. Part of this optimism developed in response to the belief that with the internet, progress would take an immaterial form, no longer bounded by spatial or political constraints. In the next and final section of my analysis, I turn to the developments around the internet in the 1990s, which created a new discourse of progress and techno-optimism.

7. 1990s: INTERNET UTOPIANISM AND DREAMS OF IMMATERIALITY

The 1990s, the fifth period of my analysis, are an important era in computer history, because it was the decade in which the internet – first invented in the late 1970s – became available to people worldwide. Whereas the previous section shows how environmentalism took a turn towards a neoliberal, ecomodern vision of a nature that could be managed, this section highlights how these early days of internet culture gave rise to a new vision on humanity's capabilities, on the relation between humans and machines, and on the notion of space and connectivity. The internet era created a new sentiment towards human freedom, which was less focused on physical space and more on virtuality. I return here to Barbrook and Cameron's text on the Californian Ideology (1996), as they capture the decade's sentiment as a mix of a hippie and entrepreneurial spirit. This spirit is embodied by figures such as Stewart Brand, *Wired* editor Kevin Kelly and writers such as Esther Dyson and John Perry Barlow.

7.1 The Internet as Cyberspace, or the Information Superhighway

Although ARPAnet was shut down in 1983, new inter-networks had been developed since the invention of internet protocols in the 1970s. The internets that developed from the 1980s onwards "implemented a logical and technical infrastructure which allowed *different computer networks* to smoothly connect to each other even over large distances" (Terranova 2022, 16, italics in original). In 1991, the US government changed the legislation to make the internet available for commercial use. In 1993, the World Wide Web, a "user-friendly visual interface" attracted more people and businesses to the internet, which, for Tiziana Terranova (2022, 18), heralded the end of the internet and the early beginning of what she calls the Platform Corporate Complex. The US government played a key role in the growth of Silicon Valley, by serving as an investor and ensuring favorable tax regulations (O'Mara 2019, 393-395).

Many authors have described these early years of the public and commercial internet, and the dreams that emerged around new technological possibilities and services. Paulo Bory (2020) discusses two key metaphors to explain the dreams and desires expressed in these early years: cyberspace and the information superhighway. For Bory (2020), the information superhighway – a term promoted by Clinton's vice-president Al Gore – was contradictory, as it promoted a top-down vision on the internet: "Whereas cyberspace was perceived as a virgin territory, a new frontier for cultural and social change, the imaginary presented by Al Gore promoted the information superhighway as a tool for governance, national empowerment and economic progress" (19). Barbrook and Cameron's (1996) concept of the Californian Ideology explains how such contradictory ideas played a role in the way the meaning and function of the internet shifted and was understood differently by different political groups.

In the 1990s, the countercultural ideals of the 1960s were transformed into a neoliberal ideology that had much in common with the military-industrial complex

whose politics and bureaucracy the movement had long opposed. Turner (2006) explains that despite clear political differences, Republicans in the 1990s were, like the New Communalists in the 1960s, highly interested in the possibilities technologies offered to individuals, businesses and for alternative forms of governance. When the internet became widely accessible and gained a more central role in popular culture in the 1990s, a new sentiment emerged towards the internet as a virtual place and tool for human freedom. Barbrook and Cameron's text (1996) on the Californian Ideology captured this sentiment as a mix of a hippie and entrepreneurial spirit. This spirit is embodied by figures such as Stewart Brand, but also Kevin Kelly, editor of *CoEvolution Quarterly* and later *Wired* magazine, and writers such as Esther Dyson and John Perry Barlow (Turner 2006). Their projects and writings illustrate the rise of digital utopianism, that intensified the use of whole-systems thinking and the ecomodernist dream of decoupling. These authors were critical in shaping the internet as a canvas for possibilities, as an "enactment of hope" that "served to inspire people to imagine that new things would happen" (Streeter 2011, 135).

Barlow, a popular cultural figure known for his writings and as lyricist for the band *The Grateful Dead*, perhaps best represents the techno-optimism of the 1990s. As author of the famous text "Declaration of the Independence of Cyberspace" (Barlow 1996), he presented cyberspace as an immaterial world operating completely separate from the "real" world. Barlow's text offers a political vision, as his cyberlibertarian and transhumanist ideals about a world without governmental interference are central to his cyber-utopian dream. His cyberlibertarian politics were a combination of free speech and free market enthusiasm, a strong belief in technological determinism and an anti-government, anti-authority and anti-conformity sentiment (Buozis 2022). Barlow and the journalists that reported about his work helped to create the idea that the internet represented the American ideals of freedom and individualism. And especially relevant for my analysis: Barlow's vision of cyberspace explicitly "decoupled" cyberspace from the constraints of the material world and created a condition of virtuality in which information and materiality are fiercely separated, as Hayles so critically discussed (Hayles 1999, 20). This narrative allowed Barlow to not deal with the physical manifestations and effects of the internet, erasing both its history and its materiality. This erasure is a key element in discussions of the history and materiality of the internet, illustrated by the myth of the internet as "cloud" (Hu 2015; Ensmenger 2018).

In my view, the cyberutopian ideology not only obscured the materiality of the internet, but it also produced a particular understanding of the environment in computational terms. I argue that this is a datafied vision on the planet; referred to by writer Kevin Kelly (1998) as the "computational metaphor". He describes the emergence of a "collective journey toward the belief that the universe is a computer" (n.p.). For him, seeing everything as a computer, signals a transformation in language that would help to describe all kinds of phenomena. Of course, he writes, he knows that the universe is not actually a computer, "only that it may act as if it is one. But once the metaphor of computation infiltrates physics and biology deeply, there is no difference between those two statements. It's the metaphor that wins" (Kelly 1998). The metaphor of a computational planet, which for Fred Turner (2006) is emblematic of the discursive connections between the 1960s and the 1990s, has

turned out to be a very powerful one, with real material consequences that Kelly perhaps did not consider.

Since then, a dominant discourse has developed in which computer technology forms the lens through which the world is understood. As Mosco (2004) discusses, the strong beliefs in the transformative potential of the internet understood as "cyberspace" can be summarized by the myths that the internet would mean the end of history, of politics and of geography. Temporality, power, and materiality would become anew. Mosco (2004) summarizes the ideals the internet represented in the 1990s: "It is a story about how ever smaller, faster, cheaper, and better computer and communication technologies help to realize, with little effort, those seemingly impossible dreams of democracy and community with practically no pressure on the natural environment" (30). Tung-Hui Hu (2015) calls this transformation "virtualization", referring to the individualization of the internet and the new subject position of the user, seemingly in control. These dreams of virtuality and immateriality point to core elements of internet ideology, but they have also informed the environmental ideology of Silicon Valley.

The internet dreams of the 1990s gave new strength to the idea that the tech industry could function independently form nature. Internet utopian discourse offers a simplistic appropriation of cybernetic ideas, as the "rich discourse of cybernetics and information theory was flattened in the utopian information narrative" (Kline 2015, 7). The techno-optimistic if not utopian discourse ignores that cybernetics, which had been fading as a research field since the 1970s, had in fact paid attention to the energy needs and environmental costs of sustaining complex (eco)systems. Already in the 1980s, some people were aware that the computer industry affected the environment and was not as clean as some had thought (Ensmenger 2018). But within Silicon Valley culture, these environmental considerations stayed out of sight until the early 2010s. The imagined immateriality of technology and the world-as-computer-idea that became dominant in the 1990s allowed Silicon Valley to ignore its own impact on the climate. I suggest that the decoupling of technology and materiality later helped tech companies to promote their industry as environmentally beneficial and as a key actor in the climate crisis. The language of whole-systems enabled companies to uphold this myth, by separating the physicality of natural ecosystems from the virtuality of the internet. These fantasies repeat the mistake that some ecologists had made decades ago, by portraying nature as something that is "out there" (Kingsland 2005, 229).

Despite the partial visions of materiality that contemporary tech-on-climate discourse offers, Silicon Valley has always been, and still is, a birth ground of dreams that do not always take the material effects of its operations into account. One example, related to the dreams of virtuality and cyberspace, is the emergence of the transhumanist movement that believes in extreme forms of life enhancement and artificial intelligence. Computer scientist Ray Kurzweil popularized the idea of intelligent machines through books such as *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* (1999). Such technological deterministic visions about the unstoppable innovation of machines and the fusion of humans and machines have been part of Silicon Valley's "transhumanist" ideology

ever since (Hayles 1999; Taillandier 2021; Braidotti 2022). These visions demonstrate how the internet sparked new debates about human subjectivity in relation to embodiment and virtuality, but also fueled the hubris among tech analysts, entrepreneurs and investors about the potential of technological solutions. In these narratives, the required input from laborers, users, and nonhumans to sustain these virtual communities and economies is often obscured and ignored.

In the early 2000s, after a decade of incredible growth and expansion, the internet sector was affected by the market crash known as the "Internet (dot-com) Bubble". For many start-ups, it became impossible to secure funding for their businesses. Nevertheless, these early years of the 21st century also marked the rise of Google and Facebook. The wave of pessimism that hit the Valley quickly turned back into optimism, sparked by the emergence of social media platforms and the smartphone (O'Mara 2019). Mark Zuckerberg (Facebook), Bill Gates (Microsoft), Sergey Brin and Larry Page (Google), Steve Jobs (Apple) came to be known as the public faces of this movement.

In this section I have demonstrated how the internet was an "infra-structure of feeling" around which many hopes and dreams about the future came to be developed. To further illustrate why the 1990s are a key period to understand the relevance of the "ecosystem" metaphor, I now turn to a radical experiment of controlling nature: Biosphere 2.

7.2 Biosphere 2: The Ultimate Experiment to Control Nature

On September 26, 1991, eight people started their mission in Biosphere 2: a laboratory in Arizona completely cut off from the outside world. As a modern-day version of Noah's Ark, the Earth's natural ecosystem – which was referred to as the original biosphere, Biosphere 1 – was recreated on a small scale, with 8,000 plant and animal species and different climatic zones in one lab. As Mark Nelson, one of the participants writes in his memoires *Pushing Our Limits: Insights from Biosphere 2* (2018), Biosphere 2 was designed to create "new perspectives on whether—and how—harmony can be forged between humans and the global biosphere" (viii). I discuss Biosphere 2 as an example of how Silicon Valley developed an environmental ideology in which systems-thinking gave rise to radical dreams about information and control.

The inventor of Biosphere 2 was Paul Allen, who had co-founded Microsoft with Bill Gates in 1975. Allen already thought of the idea of developing the enclosed community when he was part of a hippie commune on a ranch in New Mexico in the 1970s (Rose 2020). Allen was inspired by Buckminster Fuller's concept of Spaceship Earth: a way to look at the Earth as a spaceship, and humans as the astronauts. Worried about the state of the planet, Allen wanted Biosphere 2 to provide lessons for survival on Earth, in the tradition of Buckminster Fuller's manual for Earth, that also inspired my concept "Platform Earth". Nelson writes:

> We entered an untested facility in almost totally uncharted territory. Some of the world's top ecologists and most innovative engineers worked to make this possible; no one knew how these biomes would develop. Ours was cutting-edge science, the greatest experiment

> in ecological self-organization ever conducted. To maintain biodiversity, we biospherians would intervene when we could (viii).

As Nelson's memoirs exemplify, the project was seen as cutting-edge, not only entering new territory in spatial terms, but also in scientific terms. Biosphere 2 aimed to shed light on how smaller ecosystems as well as the entire planetary ecosystem could maintain stability and make both nonhumans and humans thrive within the system. The ideal of a stable ecosystem makes Biosphere 2 the perfect example of the merge between environmentalism and technology, with the ideal to control the environment, improve "nature" and create "co-evolution".

Although both Biosphere 2 missions faced serious issues and the project became known as a failure, its design and presentation give insight into ecomodernist ideas that were popular at the time. Biosphere 2 was an attempt to understand the well-being of the planet and the biosphere in all its complexity. At the same time, it presented a rather simplified version that actually had limited scientific impact. Despite the potential for scientific research, Biosphere 2 was mostly presented and perceived as a media event. The media reported on the projects as if the participants were astronauts on a mission to outer space, and the PR moments and outfits of the crew strengthened this perception (fig. 32). The project relied on commercial sponsors and was covered by media outlets that mostly paid attention to the sensationalist elements of the project (Rose 2020). In a setting reminiscent of Big Brother reality tv, the participants in the glass dome were visible to visitors all day. Disagreements between the participants added to the sensation, with a few participants welcoming extra food and oxygen because of health risks, and others believing strongly in maintaining "purity" (Rose 2020).The debates about purity indicate how Biosphere 2 became a testing ground for different visions of nature, as a place where "pure" nature was opposed to managed or engineered nature.

The expression of different worldviews on the relation between humanity, technology and nature makes the experiment of relevance for this research. In his reflection on his time in Biosphere 2, Nelson explains the cultural influence of the project: "Biosphere 2 was a world where life and technology met—and in a profound way, merged. This was a radical contrast to our planetary biosphere where our technologies are waging war against our biosphere" (2018, 35). For Nelson, Biosphere 2 provided a kind of utopia, that differed from reality in terms of the relation between technology and nature. Not technology against nature, but technology *for* nature. Like Nelson, influential figures of the time such as Kevin Kelly saw Biosphere 2 as an improved version of the outside world, and a precursor for what a marriage between technology and nature could look like. Two years before he started the influential tech magazine *Wired*, Kelly visited the Biosphere 2 facilities and wrote about it in his book *Out of Control: The New Biology of Machines, Social Systems, and the Economic World* (1995). Kelly describes the facility as "a test module for living in space", echoing a popular dream to not just understand the Earth as spaceship, but the ability to live in extraterrestrial spaceships (1). Serving as a test case for living in space, the project was also followed by NASA, that wanted to learn about the survival of astronauts in outer

Figure 32: Candidates for the Biosphere II experiment in front of a test facility. Screenshot by the author, made from the documentary *Spaceship Earth* (Matt Wolf, 2020).

space. But for Kelly, the interest was more cultural than practical. In Biosphere 2, Kelly saw a precursor of a world to come:

> This marriage between life and machines is one of convenience, because, in part, it has been forced by our current technical limitations. For the world of our own making has become so complicated that we must turn to the world of the born to understand how to manage it. That is, the more mechanical we make our fabricated environment, the more biological it will eventually have to be if it is to work at all. Our future is technological; but it will not be a world of gray steel. Rather our technological future is headed toward a neo-biological civilization. (1995, 2)

Biosphere 2 presented the ecomodernist (what he calls neo-biological) civilization that Kelly had in mind. For Kelly, this was an inevitable future path, one that we as humans had to prepare for. But this was also a future that, if managed correctly, could create the beautiful, cybernetic ecology that Richard Brautigan had described in his poem "All watched over by machines of loving grace" thirty years earlier. Despite its flaws, Biosphere 2 was influential because it presented an exciting, heroic narrative about the developing relation between nature and technology. It presented an effort to better understand the Earth's ecosystem, while creating a world in which climate change would be manageable.

As Sabine Höhler writes: the biosphere as "a life support system based on ecological and technological efficiency reshaped demands on the natural and social environments inside and outside of Biosphere 2's glass dome" (2015, 24). It was the ultimate attempt to "act as gods" and design a world after self-chosen principles of the ideal ecosystem.[49] In this sense, Biosphere 2 perfectly symbolizes the historically developed whole-systems worldview as well as the hubris I found in contemporary tech-on-climate discourse.

The experiment forms a prime example of the 1990s libertarian search for freedom and independence. Whether on Earth or beyond, the project envisioned how humans could design and control the world after their own interests. Although presented as an attempt to understand how humans and nonhumans can live together in peace on a thriving planet, the project also displays the limits of ecosystemic thinking. While ecosystemic thinking *could* foster a holistic approach to human-nature relationships, the entrepreneurs and writers related to Silicon Valley have, again and again, turned it into a vision of planetary control. Mél Hogan criticizes this type of ecosystemic thinking as a "cybernetic-ecosystemic dream" (2018, 643). This narrative of control is quite far removed from the vision that Richard Brautigan exposed in his poem, referring to the harmony of the cybernetic ecology, a dream of a computer-nature fusion that has become a symbol of the 1960s hippie ideology. In short, Biosphere 2 exemplifies how the ecosystemic dream is not new, but has existed as a shaping narrative for decades already. Despite the many figures and institutions that feature in this history, the community and its ideals are also partial and political: they have informed a masculine, neocolonial and deeply American vision on what technology could offer humanity, and who can and should be in control of a system, whether it is an inter-network, or the entirety of nature.

8. CONCLUSION: THE LEGACY OF WHOLE-SYSTEMS THINKING

In this chapter, I have researched how North American tech culture, specifically the entrepreneurial community of the San Francisco Bay area (later called Silicon Valley), has conceptualized the relation between ecology and technology between the 1940 and 1990s. To answer this question, I have analyzed cultural moments that help to reconstruct the development of techno-optimism and environmentalism in 20th century US history. To highlight the transformative moments that help to understand these developments, I have focused on 5 key periods: 1) cybernetics and the information age (1940-1960s), 2) Stewart Brand and the *Whole Earth Catalog* (1960s), 3) environmentalism and the *Limits to Growth* report (1970s), 4) the emergence of ecological modernization (1980s) and 5) the rise of the internet (1990s). For my historical analysis, I have employed Coleman's (2018) concept of "infra-structures of feeling" (in reference to Williams) to pinpoint to moments in which

49 Höhler (2015) continues: "Access to the biosphere, once defined as the sphere that contained all life on earth, was subject to strict processes of selection to determine the most useful, collaborative species and to recruit a species' best-designed representatives" (24).

the dreams of "Platform Earth" pre-emerged. As the urge to find solutions to the ongoing climate crisis has become central in global political debates, the idea that technologies could help save and manage nature and restore the relation between humanity and our environment provided a reassuring answer. Through my historical analysis, I have demonstrated that this narrative is not new, but in fact has a history that spans several decades. In this concluding section, I explain how my historical analysis helps to gain insight in the contemporary project of "Platform Earth".

To guide my analysis, I have focused on the emergence and developments of "systems thinking" and the "ecosystem" metaphor. By thinking of the world at large, but also natural ecosystems, societies, communities, and organizations in terms of systems, techno-optimistic discourses have generated the fantasy that technology can operate as a partner of nature (or a mediating layer between humans and nature) by emphasizing its naturalness and immateriality. At the same time the natural environment is imagined as a simplified system that would, metaphorically, work like a computer.

The media genealogy I have offered in this chapter has allowed me to point to continuities and changes that have occurred in tech and environmental discourse across different decades. Throughout the chapter, I have shown how a language of whole-systems thinking has emerged in popular tech discourse from the 1950s onwards and has since brought environmental and technological questions together. The *Whole Earth* community of the 1960s introduced this techno-optimism to a wider community, promoting libertarian environmentalism and DIY technologies through a language inspired by developments in the military-industrial context and the fields of cybernetics and ecology. With the groundbreaking *Limits to Growth* report, the language of systems-thinking entered environmental discourse, arguing that economic and social transformations were necessary to prevent environmental decline. In the following decades, the language of systems-thinking has stayed, even though the proposed solutions were no longer anti-growth, but rather, pro-growth. In the 1990s, unbridled techno-optimism further naturalized the idea that "immaterial" technologies could bring about a more democratic, creative, and environmentally friendly world. More and more, this techno-optimism has led to a depoliticized understanding of the climate crisis by foregrounding pragmatic environmental approaches.

There is not a straight line that can be drawn throughout the history that I have sketched here: it is fraught with contradictions, ambivalences, paradoxical ideas. Two examples can demonstrate this. First, I have shown that New Communalists in the 1960s were inspired by cybernetic thinking, because it provided them with a harmonious and reassuring perspective on the world. In small communities and with the right technologies, a peaceful world could be created. Technologies could be of help here, because they came to be understood as part of nature, and not in opposition to nature. While the *Whole Earth* community talked about small-scale technologies, large companies like Microsoft now use similar arguments to sell technical tools such as the Planetary Computer, which would allow users to collect and analyze the data necessary to "understand" our environment in decline. This narrative gives a false sense of security about how information can help us know and understand planetary conditions. This "honeymoon objectivity", as Sun-ha Hong (2020)

calls it, has gradually manifested itself within the "information age" and is still changing the understanding of how data is produced and what knowledge is (e.g. Halpern 2014). Datafication and the dream of objective knowledge are important elements within the "Platform Earth" worldview this dissertation studies.

Secondly, I critique the appropriation and simplistic use of terms such as "ecosystem". In the 1970s debates on degrowth, systems thinking became a tool to understand the world and the consequences of large-scale industrial activities. But despite the emergence of systems science and the (essential) use of computer models in climate policies, Silicon Valley's adaptation of whole-systems language reproduces neoliberal forms of environmentalism and uses a simplified understanding of biological processes, portraying climate change as a problem that is easily solvable. With their misleading focus on the restoration of balance within a growth economy, today's techno-optimistic discourse does not actually deliver a situated perspective on the interdependencies between humans and non-humans. Instead, it offers a "cybernetic-ecosystemic dream" that sees the world as input for the production and consumption that Silicon Valley sustains (Hogan 2018). By doing so, it maintains the disembodied perspective on the sector that arose in the 1990s as part of cyberutopianism. With it, the call from the 1970s to look for moderation has been replaced by a call for abundance and economic growth, a shift which is also reflected in the green agenda of "Platform Earth".

Within today's platform society, the cybernetic-ecosystemic dream materializes through platform infrastructures and the logic of extractivism that sustains its operations. The dominance of infrastructures designed by or modelled after the logics of Silicon Valley's platform capitalism has a global geographical, physical and political impact that is important to consider for the upcoming chapters. As Luke Munn (2020) writes, it is worth "considering which kinds of infrastructure are actively supported—drawing capital, land, labor, and so on—and which are pushed to the edge, surviving in the margins" (7). Promotional materials take part in promoting these infrastructures.

Returning to Marc Andreessen's "The Techno-Optimist Manifesto" (2023) with which I started this chapter, it is now evident how this text promotes the cybernetic-ecosystemic dream. Longstanding desires for immateriality, control, and innovation permeate through his future visions. His text demonstrates how the "ecosystem" metaphor and whole-systems thinking can work as effective discursive mechanisms: his vague statements about seeing the economy as a system and energy in terms of abundance, allow him to create a simple and positive myth about how innovation will "solve" the climate crisis while perpetuating US hegemony.

The question that remains, is how the historical perspective of this chapter helps to understand the environmental ideology of Silicon Valley. The ecological dimension of platform capitalism evokes a reconceptualization of the ideological underpinnings of Silicon Valley as a combination of the "Californian Ideology" (Barbrook and Cameron 1996) and ecomodernism (Symons 2019). As Barbrook and Cameron already concluded in relation to the Californian Ideology, Silicon Valley's genre of ecomodernism is full of contradictions. While the companies and individuals present themselves as environmentalists who want

to protect the natural ecosystems they say they are part of, they also propose pro-growth futures that further damage these same ecosystems by imagining their techno-fixes as external solutions. When Andreessen or the writers of "An Ecomodernist Manifesto" (Asafu-Adjaye et al. 2015) speak of separating the techno-capital machine or human impact from nature, they formulate smart rhetorical statements that only work on paper. These examples show how the discursive mechanisms of coupling and decoupling help to construct seemingly convincing narratives.

Based on the historical analysis of this chapter, I claim that decoupling and coupling, understood as discursive mechanisms and ideological signifiers, are not new. In each transformative period I have discussed, these concepts have served as strategies to narrate tech-nature relations. Dreams of (de)coupling played a role in the search for harmony in the 1960s, the dream of co-evolution in the 1970s and the managerial perspective on nature and internet utopianism in the 1990s. In other words: both the Californian Ideology and ecomodernism are a product of longstanding debates and dreams about the relation between technology and nature, as expressed within (albeit not exclusively) the tech and environmental debates this chapter discussed.

It may come as no surprise that *Whole Earth* editor Stewart Brand is co-signer of "An Ecomodernist Manifesto" and author of the book *Whole Earth Discipline: An Ecopragmatist Manifesto* (2009). Stewart Brand embodies the ecomodernist mindset. He has taken a role as a futurist, sharing his optimistic vision on tech-fixes for the climate, for example through geoengineering and terraforming the Earth, stubbornly overlooking its risks and shortcomings (Johnston 2020, 213-215). Kirk (2007) is right that Brand has been an important figure in American environmentalism, but Brand is also an important figure because he represents the changes that have occurred in American environmentalism over time, as well as the pragmatic and capitalistic underpinnings of Silicon Valley's environmentalism. While Silicon Valley's ecomodernism acknowledges climate change as an existential crisis, it turns it into an opportunity for green growth paired with increased well-being. Time and again this has proven to be an attractive narrative for political discourse as well, because it does not require systemic changes. In fact, it is not merely a narrative, but a myth.

The examples of Brand and Andreessen show why it is important to theorize tech-on-climate discourse as a broader, historically developed, cultural production by a group of actors. Although they are not all located in the Silicon Valley region, they are part of a network that forwards a genre of the ecomodernist ideology inherently tied to the entrepreneurial spirit of Silicon Valley. This spirit is strengthened by a whole-systems discourse that, despite a love for nature and "web-of-life" rhetoric, decouples humans from complex earth systems.[50] Under a veneer of ecosystem-marketing there is, I argue,

50 Flichy (2007, 211) writes how the story of the internet is deeply North American and universal at the same time: "New frontier, community, entrepreneurship: these three themes are at once totally American and completely universal. The theme of the pioneer who builds not only technical devices but also a new society is obviously not peculiar to the United States. […] This is probably where a major ambiguity in the development of the internet lies. The internet imaginaire, like the technology accompanying it, was born in the particular context of the United States but subsequently became universal".

an ideology of ecomodernism that imagines a unified, superior humanity reigning over the natural world. The legacy of whole-systems thinking in "Platform Earth" is a worldview that imagines Earth as a closed system that can be quantified and managed. This ideology is wrapped in a whole-systems language that promotes technological solutions as pragmatic and realistic, setting aside other perspectives as utopian or naïve. The problem is that Big Tech's teleological narrative renders alternative future paths or different climate solutions irrelevant or invisible. The concept of the global ecosystem can help to critically assess the environmental impact of Big Tech and human and non-human interdependencies, but the term is also co-opted to rationalize "the domination of machine logics over nature" and present Silicon Valley as a self-contained ecosystem best employed to manage and utilize nature (Hogan 2018, 648).

As I suggested in the introduction of this chapter, by constructing myths, Silicon Valley actors use and rewrite histories. They tell stories that serve them in the present and help to position certain future paths as desirable. By zooming out on the phenomenon of Silicon Valley beyond Big Tech, I showed that Silicon Valley's story presents a continuous cycle of new solutions, always attuned to the zeitgeist of an era. Tech-on-climate discourse creates ever new depoliticized historical narratives in which environmental problems are met by technological solutions, around which new problems emerge that will always be fixed by a new iteration of the technological product (Johnston 2020). Moreover, tech actors and figures create multiple futures at the same time, providing answers for both the short-term and the long-term.

In the second half of this dissertation, I explore how new, revived and escapist myths contain radical plans for "Platform Earth". In the next chapter, I turn to the long-term future by studying current responses to a question that has interested the tech community from its early beginnings: what if we could build a new society from the ground up?

CHAPTER 3

California Forever: The Escapist Imaginaries of Silicon Valley's Cosmic Cowboys

We need a new frontier – a blank canvas on which social or constitutional entrepreneurs can create their products and test them in reality by seeing if they can attract citizens. In the long term, space might provide such a frontier, but right now it is far too expensive. In the shorter term, we have the ocean.

- Patri Friedman and Brad Taylor, "Seasteading: Competitive Governments on the Ocean", 2012, 223-224

Let me assure you, this is the best planet. We need to protect it, and the way we will is by going out into space.

- Jeff Bezos, "Going to Space to Benefit Earth", 2016

1. INTRODUCTION: DESIGNING SILICON VALLEY'S LONG-TERM FUTURE

Silicon Valley actors often operate along two pathways: they either offer solutions that "fix" societal issues and improve everyday life, or they promote a whole new way of life, "decoupled" from whatever came before it. In this chapter, I look at recent examples of the latter: "exit projects" that dream of building new societies from the ground up. Whereas the New Communalists of the 1960s built new "homesteads" that would fit their back-to-the-land lifestyle and politics, the entrepreneurs I discuss in this chapter dream of building their homesteads outside of the Bay Area, and perhaps even outside Earth. Like the pragmatic solutions discussed in Chapter 1, these exit projects are presented as an answer to the climate crisis. But the exit projects are much more spectacular and fantastical and therefore serve as myths, revealing the dreams and visions of Silicon Valley actors about what the future would *ideally* look like. In this sense, they reflect the grand vision that Marc Andreessen shared in his "Techno-Optimist Manifesto" (2023) and his dream to create far superior ways of living. While these visions of new ways of living are fantastical to certain extents, they also generate very concrete, physical manifestations that advance the Silicon Valley "frontier" into new territories.

In this chapter I will first present the "California Forever" project as an example of these dreams of "worldbuilding", but then move on to exit projects that are more radical and more explicitly presented as a response to societal collapse and the environmental crisis. The exit plans I discuss provide "ways out" of the crisis by moving "humanity" into new territory: the ocean and eventually outer space. In that sense, they are a veritable myth. Whereas the dream to "fix the whole Earth" came into being in the 20th century through a surge in technological innovations and an accompanying discourse of whole-systems

thinking, I now turn to solutions that assert that life on Earth as "we" know it is beyond fixing. Although the chapter returns to the contemporary landscape of tech-on-climate discourse, this time I highlight the side projects initiated by Silicon Valley's prominent tech actors. Specifically, I look at the long-term projects that reveal their expectations, dreams and hopes for optimized ways of life and building new communities "from the ground up". These are their ultimate attempts to ensure that California, as they know it, lives forever.

Such exit projects are described by Alina Utrata (2023) as forms of "engineering territory": political exit projects that aim to create new territorial states by venturing out into "new" spaces. Urata conceptualizes these projects as a way for corporations to build new sovereign communities: "By engineering territory—or leveraging new technology to construct territory in ostensibly empty spaces—they purport to have engineered genuine *terrae nullius* in outer space, cyberspace, and the sea" (2). Land that has been deemed empty can then be claimed as territorial property. Although exit projects can take place in physical space, the term also refers to virtual projects, or projects that remain purely speculative.

I will analyze case studies related to two forms of exit projects: seasteading and spacefaring. These projects propose to venture into new spaces outside of California, and even outside of Earth's land. First, I focus on the seasteading movement, as propagated by the Seasteading Institute founded in 2008 by Patri Friedman with the help of Peter Thiel. Among seasteaders, the ocean is represented as the first form of escape, and outer space as the ultimate opportunity to colonize "empty" space. Seasteaders hope to tap into the potential of the sea by building floating communities (also announced as political start-ups) with a minimum of rules and a maximum of freedom. Second, I focus on the companies Blue Origin, founded by Jeff Bezos, and SpaceX, founded by Elon Musk. These two companies are part of the commercial era of space exploration known as "NewSpace" (Rubenstein 2022). Although the role of tech companies in space exploration has become very visible in the past few years, these companies and their founders are also part of Silicon Valley's history. Bezos, who is since 2021 no longer CEO but executive chair of Amazon, founded Amazon in 1994 and Blue Origin in 2000. Musk is CEO of car manufacturer Tesla, brain-computer interface developer Neuralink, and social media platform X, but was also one of the founders of Paypal (where he worked with Peter Thiel). He founded SpaceX in 2002 and became involved with Tesla only two years later, in 2004. Musk has adopted the persona of a cleantech entrepreneur because of his well-established involvement in the electric-vehicle industry and his self-acclaimed role in "a global uprising" against fossil fuel industries (Taffel 2018).[51] In recent years, the space endeavors of Blue Origin and SpaceX have become more visible and increasingly shape the space economy.

The research question of this chapter is: *What visions on the future of humanity in times of climate crisis are expressed in the expansionist and escapist exit projects (homesteading, seasteading, spacefaring) forwarded by Silicon Valley actors?* This chapter explores how these projects of engineering territory are a valuable way to understand how Silicon

51 However, as I also state in the Conclusion, Musk's support for Trump's presidency has gone hand in hand with a change in his public persona.

Valley provides various answers to the problem of environmental crisis. As highly technical endeavors, they present a new perspective on how "techno-fixes" are presented as solution to the climate crisis. I follow Gregers Andersen (2022), who uses the term "desperate science fiction" to describe the escapist projects of tech billionaires as speculative answer to socio-ecological crises. I ask: why do seasteaders and spacefarers dream of such science fictional adventures? How do they frame their form of escapism as solution for humanity, and to what extent do they refer to the climate crisis for its legitimation?

As I will demonstrate through an analysis of case studies from seasteading and spacefaring discourse, the originators of these projects present them as forms of innovation: as radical plans that answer to a general concern for the "crises" of our time. However, I understand these projects as myths that do not present a feasible plan for the future. Douglas Rushkoff (2022) has conceptualized exit projects as part of a particular Silicon Valley mindset that expresses a dream of escapism made possible by technologies. In this mindset, designing "one's personal reality so meticulously that existential threats are simply removed from the equation" is the ultimate design challenge to ensure survival (Rushkoff 2022, 44). Technology then becomes a way to insulate those that can afford it from whatever crisis threatens their livelihood. According to Utrata (2023), these projects should not merely be understood as libertarian projects that look for ultimate freedom, they are also strategic projects that help corporations "to gain legitimacy and recognition from other states" and thereby perpetuate older, corporate forms of colonialism (2). In this sense, they are part of a much longer history of colonialism, which today intersects with new forms of exploitation of land, humans and nonhumans in order to realize the dream of "Platform Earth". With the term "Platform Earth", I draw attention to the environmental worldview of Silicon Valley, but also to its vision of what an ideal future, no longer threatened by climate crisis, would look like. An analysis of "escapist discourse" thus helps to understand Silicon Valley as a cultural and political force shaping discussions of long-term futures and societal ideals through the creation of myths.

In this chapter I aim to understand how the worldbuilding efforts of seasteading and spacefaring provide new insights into the environmental ideology of Silicon Valley. I offer a discourse analysis through a close visual and textual analysis of a selection of promotional materials published by the Seasteading Institute, SpaceX and Blue Origin. These primary materials, 30 in total, include the websites of the three companies, keynotes by their founders, explainer videos, a book and a whitepaper (Appendix 2). I have selected these case studies as they allow me to compare the different forms of media found in seasteading and spacefaring discourse (video, website, document).[52] The choice was simplified because, unlike Big Tech climate discourse, these movements do not (yet) have a wide range of materials available in which they explain the (environmental) rationale of their plans. The selected materials allow me to study and compare what visions of the future emerge in both discourses and analyze how these are presented through carefully framed narratives. As these projects are largely speculative, visuals play an important role in creating an aesthetic of the imagined future. As my analysis will demonstrate, these materials are quite different from the examples of Big Tech discourse I discussed in Chapter 1. Throughout my analysis, I also refer to secondary sources such as newspaper articles and previous studies that have mapped the progress of the projects.

Altogether, I aim to understand how these exit projects are presented as an answer to a feeling of disappointment or despair about current societies, systems, and particularly the reality of climate change. Based on my analysis, I offer a critique on how myths produced around exit projects portray the relation between technology, humanity and the environment. I will argue that the wish to "start over" forms the most radical and spatial interpretation of "decoupling", a term that serves as an ideological signifier of ecomodernism. Decoupling thus includes a desire for separation from the constraints and environmental impact of current societies, even if Silicon Valley actors often proclaim to fix these issues through their technologies.

The chapter is divided into six sections: I start with a brief example of "California Forever" that represents a slightly more modest example of homesteading and worldbuilding as imagined by Silicon Valley entrepreneurs. The next section presents a theoretical discussion of the rise of celebrity entrepreneurs and political exit projects. I will then make a close analysis of the discourses of both seasteading and spacefaring and their framing strategies in sections 4 and 5. In section 6 I draw on my analyses of both movements to unpack how the climate crisis is presented as design thinking challenge. The chapter ends with a conclusion about the function of the escapist projects in forwarding the worldview of "Platform Earth".

2. IT'S TIME TO BUILD: THE "CALIFORNIA FOREVER" PROJECT

One typical example of worldbuilding as the expression of a wish to "start over" is an initiative that promotes a new city, with a title that captures the project's goal of preserving the Silicon Valley mindset: "California Forever". Since 2017, a group of tech billionaires in Silicon Valley has invested in a plan to build a new city from the ground up. The "California Forever" project is initiated by former Goldman Sachs employee Jan Sramek. With his company Flannery Associates, he has bought out current landowners and acquired a large area of farmland in a region 60 miles northeast of San Francisco (Dougherty and Griffith 2023). To fund his project, Sramek convinced venture capitalists to contribute to the construction of this new, dense urban community. Although the project is still in its early stages and nothing has been built yet, Sramek managed to acquire 900 million US dollars of funding to secure a property twice the size of the city of San Francisco (Griffith and Dougherty 2023). Among the investors convinced by Sramek's urban vision is for example Reid Hoffman, a venture capitalist who previously worked at Apple and PayPal and was a

52 Appendix 2 also lists the materials I refer to in my section on the "California Forever" homesteading project. However, the majority of the chapter is dedicated to the analysis of seasteading and spacefaring, which I refer to as the two main discourses.

co-founder of LinkedIn.[53] Another figure is Marc Andreessen, the venture capitalist who wrote the "Techno-Optimist Manifesto" (2023).

Andreessen's investment in the project is not surprising, given the ideas he expressed in a blogpost on the website of his firm titled "It's time to build" (2020). The paper lays out his vision for how the United States can reinvigorate "the American dream". Critiquing the in his view inadequate response to the Covid-19 crisis by the US government, Andreessen blames the state for collecting taxes and not spending this state income properly. He pleas for higher investments in innovative forms of housing, healthcare, manufacturing, education and more, but notes a lack of will and desire among institutions to make such changes. His plea ends with a call to action, which is to start building: "I think building is how we reboot the American dream" (2020). Andreessen (2020) ends his call to build as follows:

> Our nation and our civilization were built on production, on building. Our forefathers and foremothers built roads and trains, farms and factories, then the computer, the microchip, the smartphone, and uncounted thousands of other things that we now take for granted, that are all around us, that define our lives and provide for our well-being. There is only one way to honor their legacy and to create the future we want for our own children and grandchildren, and that's to build.

In this short blogpost, Andreessen constructs a classic narrative about the US as a land of possibilities and a nation of builders. This narrative connects past, present and future in an optimistic, one-sided myth offering a particular vision of a future worth realizing. As I have shown in the previous chapter, such narratives are a form of mythmaking, presenting the history of Silicon Valley in a particular way that benefits the author's current position and business activities. In the case of Andreessen, he celebrates the country and its legacy of innovation, emphasizing that to maintain this line of progress, "we" need to start building better societies. What is precisely being built, remains unclear, but Andreessen (2020) undercuts this critique by sharing that he rather hears ideas about possible projects than critiques on his plans. As in his "Techno-Optimist Manifesto" (2023), Marc Andreesen presents himself as part of a long line of tech innovators who believe humanity (or at least North Americans) can evolve into a superior way of living by using the right tools, systems and ideas.

Such an open invitation to build aptly aligns with the plan for "California Forever", that, as the name gives away, is also concerned with preserving the legacy of Silicon Valley. The project offers Andreessen and other investors the opportunity to connect their names to a new society built with their ideals in mind. On a page titled "Your life here" (2024), the

53 Hoffman was an early investor in OpenAI, but has since founded his own AI business, Inflection AI, together with Deepmind founder Mustafa Suleyman (an AI research laboratory later acquired by Google). Hoffman is also a large donator for the democratic party, the Chan Zuckerberg Initiative and the Giving Pledge initiative by Bill Gates and Warren Buffett (not to be confused with Amazon's Climate Pledge).

initiators explain how the city will offer homes with private gardens, pedestrian-friendly streets, high quality public transport, schools, and shopping areas. It promises to be an idealistic urban planning project bringing new revenues and jobs to the region. Perhaps surprising for a Silicon Valley initiative, the plans do not boast of a high-tech city, but rather seem to offer an escape from such a lifestyle (whether this is hidden to avoid critiques, or is part of the founder's vision, remains unclear).

But before the city can be built, the investors need to convince the community of Solano, which is the poorest county in the state, that "California Forever" will be an asset to the region (Griffith and Dougherty 2023). The website title "California Forever" has been replaced with a more neutral name: "East Solano Plan". Since August 2023, the organizers are lobbying to convince the mayor and local citizens, as citizens will have to vote on the plans (in November 2024). The website describes that they want to make sure their new "friends and neighbors" join them in building a brighter future for the region. A video on the homepage, made for this purpose, shows two farmers giving their approval to the plan (fig. 33). The website offers a wide array of information, including a range of videos, a list of debunked myths and answers to frequently asked questions, which can be read as a response to the critiques it has received, for example regarding the environmental impact of the region and the city's energy needs. The need to assess the impact of the plans on the environment has so far delayed the plans with two years (Dougherty 2024).

Figure 33: The homepage of the East Solano Plan shows a video with a local farmer and supporter of the project, looking at renderings of the new city on his phone. Screenshot by the author (September 2024).

I start this chapter with an introduction of "California Forever", because it presents an example of how Silicon Valley actors are developing new spatial plans in which their political ideals are put to practice. These plans provide insight into how Silicon Valley dreams of expanding into new territories, and what visions and desires emerge around such projects. While "California Forever" is presented as an answer to the housing crisis in Silicon Valley, it is also the materialization of the optimistic belief that "California's best days are ahead", as one of the investors formulates it (Dougherty and Griffith 2023). Moreover, these plans reveal how Silicon Valley positions itself as a political, state-like actor, and how different, sometimes conflicting, visions emerge about what ideal societies look like and who can take part in these plans.[54] In the next section, I turn to scholarly work to theorize the entrepreneurship of Silicon Valley actors and historicize the exit projects this chapter researches.

3. COSMIC COWBOYS: CELEBRITY ENTREPRENEURS AND THEIR EXIT PROJECTS

To understand the significance of exit projects within the context and history of Silicon Valley, I situate my study of seasteading and spacefaring projects in relation to two theoretical fields. One field is concerned with the entrepreneurs that initiate these projects, which allows me to outline the rise of the celebrity tech entrepreneur. The second field theorizes exit projects as a broader tradition within Western capitalist societies. In what follows, I relate my study of the Seasteading Institute, Blue Origin and SpaceX and their vision on the climate crisis to these broader research fields.

3.1 The Rise of the Celebrity Entrepreneur

A large body of literature has drawn attention to the rise of the celebrity entrepreneur as a public figure. With regards to Silicon Valley, tech CEOs and founders have become a powerful group of actors that personally represent their company and advance its interests towards investors, media, governments and the wider public. Ben Little and Alison Winch (2021) describe this group as a "patriarchal network". Apple co-founder Steve Jobs is perhaps the most well-known example of the celebrity entrepreneur. Jobs was the iconic face of Apple for years and successfully promoted his vision on technology across a range of letters, interviews, keynotes and more. His death in 2011 was mourned by fans and colleagues, which cemented his position as a mythical hero of the tech industry (Harju and Moisander 2014). The celebrity status of Jobs has been boosted by the publication of the bestselling biography *Steve Jobs* by William Isaacson (2011), the film Steve Jobs: *The Man in the Machine* (Gibney 2015) and continuous references to his legacy, both in Apple's corporate and public media discourse. Thomas Streeter (2015) has analyzed the representation of Jobs in media discourse as the construction of a romantic individual and a representation of good or benign capitalism. As Streeter (2015, 3108) writes, Jobs is the protagonist of a popular, American tale about a creative entrepreneurial hero "who succeeded not by the use of rational calculation or hard work but by following his inner passion, by being 'authentic' to his inner self". Such public narratives offer highly simplified versions of the complex company dynamics and render the labor of many others invisible. Stories that attribute Jobs' success to his ability to think differently and stay authentic, leave socio-economic factors out of the picture.

54 The "California Forever" initiative also brings another project to mind: the failed plan for a new neighborhood that Alphabet (Google) invested in: Sidewalk Labs (Filion et al. 2023). The two projects share similar ideals about "the good life" and use rendered images to advertise their utopian ideals of urban life. A difference is that East Solano says very little about the role technology will play in the city: it is by no means presented as a "smart" city, which Sidewalk Labs, albeit cautiously, was.

The rise of the celebrity tech CEO is also stimulated by fictional representations of the entrepreneur. Heather Mendick et al. (2023) describe the rise of the geek entrepreneur as a hegemonic figure in films that legitimate male dominancy within tech capitalism. They argue that films such as *The Social Network* (about Facebook and Mark Zuckerberg) (Fincher 2010) have made these figures more accepted as heroes in popular culture. Although the link to popular culture is essential, because tech CEOs incorporate cultural references in their work and play with popular ideas about their persona, my research focuses on the self-chosen public moments in which tech CEOs present themselves. These moments include interviews, keynotes, commercials, founding letters and more. Such corporate discourses have been studied by a range of media and cultural scholars. Researchers have for example analyzed Mark Zuckerberg's and Facebook's discursive evolution and the construction of a particular user identity (Hoffmann et al. 2018), the representation of his leadership in journalistic discourse (Creech and Maddox 2024), or the analysis of Zuckerberg's and Facebook's public responses around the Cambridge Analytica scandal (Hall 2020). In their analysis of the hearings of the 2020 Big Tech antitrust investigation by the US government, Inge Beekmans and colleagues (2023) write how Jeff Bezos (Amazon), Mark Zuckerberg (Meta), Sundar Pichai (Google) and Tim Cook (Apple) took this public moment to position their businesses as essential and politically neutral parties that connect people with their innovative technologies. Beekmans et al. (2023) conclude that "tech CEOs aimed to be accepted as the true "voice" of the people, transforming their tech companies into virtual 'market-governments' and their platforms into virtual 'market-countries'" (n.p.). Despite an increase in backlash (also termed "techlash"), the public appearances of tech CEOs strengthen the companies' position, made possible "by both an assumption of inevitability in the public discourse and a historical preference for industry self-regulation in the United States" (Creech and Maddox 2024, 15). The celebrity entrepreneur, and especially tech entrepreneurs, thus present an ideal type of the American hero. They are the stars of the myth that one can start tinkering with technology in a Palo Alto garage and eventually become the leader of a billion-dollar tech company.

With my dissertation, I want to move beyond the myth of the singular hero and theorize tech actors as part of a powerful network of individuals. I maintain that a networked perspective provides a different, broader lens to understand the landscape of Silicon Valley and the forms of soft and hard power it exercises. In such an approach, I still look at individual tech actors but take into account how they exercise "networked"

forms of power (Turner and Larson 2015). Tech individuals function as representatives of a technological culture and derive their power from the networks they build and the ideas they help spread. As such, they "are full to the brim with the cultural assumptions and social aspirations of the communities they represent" (Turner and Larson 2015, 80). Without overstating their impact (which is an inherent part of their self-promotion), an analysis of tech entrepreneurs is vital to understand the networks that form around technologies, institutions, corporations and more. Importantly, Little and Winch (2021, 28) highlight the gendered, racial, and hierarchical elements of Silicon Valley's network and its worldview, that promotes the world as a patriarchal architecture in which network individuals are the patriarch of their "homestead". A study of the range of projects that tech individuals such as Jeff Bezos and Elon Musk initiate allows for a broader, cross-sectoral understanding of what endeavors these figures invest their time and money in. More broadly, tech entrepreneurs aptly represent the wider cultural relevance of entrepreneurship within the US as a 21st century phenomenon. In his article on entrepreneurship, Imre Szeman (2015) defines the entrepreneur as a key neoliberal subject and writes:

> The status of entrepreneurship as a new common sense of subjectivity and economic practice—an accepted mode through which a congruity is achieved between a responsible, moral, self-fashioning individual and an economicrational individual—would suggest that it constitutes an ideal subjectivity for neoliberal forms of governmentality, one that it has been searching for all along. (484)

As such, my analysis of tech actors helps to further theorize Silicon Valley as an entrepreneurial network that imagines not only a particular future, but also a particular form of subjectivity.

Within the scope of my dissertation *Platform Earth*, this chapter focuses on the ways in which these tech entrepreneurs use their fame and network to advance their long-term visions of the climate crisis. Scott Prudham (2009) notes how entrepreneurs such as Richard Branson position themselves as "environmental crusader".[55] In this role, entrepreneurs advance a discussion of the climate crisis that benefits their position as entrepreneur within a new green economy. Seasteading and spacefaring projects offer examples of how tech entrepreneurs reposition themselves as sustainable visionaries and promote their worldview of "Platform Earth". The myth of the tech figure as a "cosmic cowboy" strengthens their public profile but also allows them to tap into wider felt fears and dreams about the potentials of technology in relation to ecological crisis.[56]

55 Richard Branson is also involved in the space race through his Virgin Galactic enterprise, but not discussed in this chapter because he is a British entrepreneur (founder of the business conglomerate Virgin Group) and therefore not a representative of Silicon Valley.

56 I take the term from an article by W. Patrick McCray (2022) in the *LA Review of Books*, in which he reviews the biography of Stewart Brand by John Markoff (2022).

3.2 Exit Projects and the Terraforming of "Terra Nullius"

Exit projects, understood as privatized, politically motivated attempts to create new cities, countries or living spaces are of course not new. In his book *Adventure Capitalism: A History of Libertarian Exit, from the Era of Decolonization to the Digital Age*, Raymond B. Craib (2022) traces such endeavors back to the 19th century. Although the proposals differ strongly, they have in common that they respond to social and political struggles. In such times, Craib (2022) writes:

> individuals concerned with protecting their wealth, their safety, and their freedom from what they perceived to be a growing government and a threatening rabble, sought to exit the nation-states to which they belonged and to establish their own independent, sovereign, and private countries on ocean and island spaces. (1-2)

Since the 2000s, several individuals who have proposed exit plans have been part of Silicon Valley. Such proposals appeared in this timeframe for several reasons: the burst of the dot-com bubble in the late 1990s that shook the North American tech industry, the 9/11 terrorist attack in 2001, the financial crisis of 2007-2008 and the Covid-19 crisis of 2019-2022. Most recently, the corona crisis presented "an opportune moment for exit advocates to find a silver lining in dark times and double down on promoting disaster capitalism as libertarian salvation" (Craib 2022, 246). The climate crisis is yet another crisis that has prompted the launch of new exit projects.

The increasingly dire situation of the environmental crisis offers initiators of world-building projects a new form of legitimation and urgency that helps them to attract public attention and potential investors. These exit projects particularly represent a response to the climate crisis in far-right wing circles: rather than denying the issue of environmental decline, reactionary environmentalists welcome catastrophe and "see rising-sea levels as an opportunity to start society afresh" (Hughes 2024, 4). However, not all projects can be associated with this far-right movement and the political dimensions of Silicon Valley are too diverse to be categorized as either right-wing or left-wing. Nevertheless, the projects I discuss in this dissertation, especially in this and the following chapter, reflect the political ideals of North American neoliberalism. In a sense, these projects can be seen as the ultimate attempt to design a society after neoliberal ideals, understood as a free-market ideology that distrusts governments and celebrates individual freedom above anything else. Part of this societal ideal is, I will argue, a vision of nature as something that can be used and managed by private companies.

A range of recent studies have examined the politics and visions of projects such as seasteading (Steinberg et al. 2012; Hughes 2024), spacefaring (Dickens and Ormrod 2007; Shammas and Holen 2019; Tutton 2021; Rubenstein 2022; Johnson 2024), blockchain based innovation zones (Lynch and Muñoz-Viso 2024) or a range of such projects (Andersen 2022; Craib 2022; Simpson 2022; Utrata 2023). Following Utrata (2023), these projects all propose a territorialization of space, based on which claims of ownership and sovereignty are made. Engineering territory is not necessarily a physical project, but rather

"a conceptual transformation that can be applied to a variety of spaces" (Utrata 2023, 9). Whether this space is the internet, the ocean or outer space, its underlying logic remains the same. As Utrata argues, engineering territory "allows would-be space colonialists and their corporations to amass and exercise political power in ways that would not be permitted under different conceptualizations of space" (6). If an exit project can present a convincing myth or impactful future imaginary, it offers political power to its initiators and an opportunity to position themselves as voices in global debates on societal issues.

An example of a Silicon Valley exit project bridging the physical and non-physical territorialization of space is the "network state" proposed by entrepreneur Balaji Srinivasan. The network state is described as "a highly aligned online community with a capacity for collective action that crowdfunds territory around the world and eventually gains diplomatic recognition from pre-existing states" (Srinivasan 2022, 8). The network state is imagined as a virtual community that also owns physical land in order to gain "diplomatic recognition", in which citizens sign a smart contract and pay with cryptocurrencies.[57] Similar ideas are presented by the global Startup Societies Network (2023), which proposes building new communities to circumvent slow governments, gather more data, compete over citizens' loyalty, and benefit from innovative technologies.[58]

Exit projects thus exist in different forms, reflecting different political ideals. These projects can be further categorized as one of multiple responses to crises. Zooming in on Silicon Valley, Andersen (2022) notes exit projects as one of three categories of projects that Big Tech proposes in response to risks of socio-ecological collapse: 1) leaving Earth (or rather: exiting "mainstream" societies), 2) geoengineering Earth and 3) intense datafication to steer and manage sustainable human behavior. Such a division allows for a layered analysis of the different projects that Silicon Valley proposes in response to the climate crisis, ranging from the practical to the fantastical, and from the short term to the long term. Although the categorization of Andersen is quite generic, it does help to see projects such as Microsoft's Planetary Computer (see Chapter 1), plans for solar geoengineering (see Chapter 4) and spacefaring as part of one spectrum. Whether it is the dream of uploading one's brain to survive climate disasters, becoming a member of a network state or creating a planetary dashboard: such initiatives can be understood as transhumanist dreams to merge the human body with technology in order to ensure a long-term future.

As I discussed in the previous chapter, projects such as "Biosphere 2" and the concept of "Spaceship Earth" illustrate that fantasies of ecosystemic control and pioneering new spaces are deeply embedded in the history of the United States. Peder Anker (2005, 259) has argued that "Biosphere 2 represented the culmination of a tradition of research

57 Again, the project is backed by Marc Andreessen, to whom Srinivasan also served as a partner in his investment firm. Srinivasan has a radical political position and is said to rather live under the rule of tech companies than a government. In a speech, Srinivasan once said that the US is "'the Microsoft of nations': outdated and obsolescent" (Duran 2024).

58 In her dissertation, Isabelle Simpson (2022) uses the concept of the "start-up societies imaginary" to point to plans for seasteading, charter cities, software countries and crypto-communities as forms of homesteading backed by right-wing entrepreneurs.

into ecological colonization of both outer and earthly space". These dreams and projects were a result of the Apollo mission to the Moon, and the "whole Earth" depiction and realization it brought about. The dream of a controllable, closed ecosystem – to extrapolate the controlled environment of a spaceship to other, much larger applications – has been debated since the beginning. Nevertheless, Spaceship Earth and Biosphere 2 supporters believed that building space colonies or laboratories that mirrored nature could help to manage the dynamics of Earth, the "original" Biosphere.[59] A part of this movement opposes the idea that there are any limits to growth, and instead propagates that researchers should develop ultimate environments for co-evolution (Höhler 2015).

Because of their wish to expand, exit projects are understood as colonial ventures, in which companies colonize spaces and turn them into territory (Utrata 2023). Such projects support the patriarchal network that Little and Winch (2021) discuss, in which new frontiers are constantly sought and "conquered" and where self-claimed "terra nullius" is transformed into new corporate settlements. The expansionist dream also strongly grounds these projects in North American history, in which the myth of the "frontier" and its imagined terra nullius captures the annexation of the American West, but also the internet, and now outer space (Bødker 2004). As Utrata (2023) argues, these processes of colonization are embedded in a much longer history of corporate practices of colonialism. Likewise, Tristan Hughes (2024) argues that exit projects must be understood as new attempts to reinvent territorial expansion and recreate settler practices. Hughes describes the rise of a group of "techno-colonists" that includes Thiel and Friedman, but also neo-reactionaries such as Nick Land and Curtis Yarvin (see also Smith and Burrows 2021). While these individuals are associated with marginalized political visions, the dream of the exit project has been promoted by well-known entrepreneurs such as Thiel, Musk and Bezos. Adopted by these "mainstream" tech figures, the ideas about new governance arrangements or living spaces appear in popular media and enter public discourse.[60] When analyzing these projects, it is therefore crucial to understand, as Lynch and Muñoz Viso (2024, 78-79) write, the "totality of ways in which they may simultaneously fail, be reproduced elsewhere, and have significant impacts on local communities and institutions". Within the analytical framework of this dissertation, I aim to understand how the case studies discussed below function as myths that imagine and reimagine the future in times of climate crisis and thereby shape our understanding of that crisis.

Building on the theories discussed in this section, I seek to further analyze how the climate crisis not only serves a way to legitimate these projects, but how these projects in turn shape our understanding of potential climate futures. I therefore adopt the term "techniques of futuring" introduced by Maarten Hajer and Peter Pelzer (2018). Although they study the potential of futuring exercises to imagine environmental change, I use the

59 For a detailed discussion on the different responses and critiques to the proposals for space colonies in the 1960s and 1970s, see Anker (2005, 254-256).

60 I use the term "mainstream" to describe the powerful position of these individuals in the media landscape. However, the political views of these figures, especially in the case of Thiel and Musk, are known to be quite radical (and increasingly so), see for example Gebru and Torres (2024).

term to scrutinize corporate future imaginaries as they bring together actors and shape the orientations for action. In other words: techniques of futuring point to the ways in which a future-facing project, in my research seasteading or spacefaring, succeeds in favoring certain climate actions over others. A critical study of corporate forms of futuring unveils what actions and future paths are taken into consideration or ignored by the representatives of platform capitalism.

In my study of "Platform Earth", exit projects present, perhaps most literally, the myth to "decouple" human progress from environmental decline. The celebrity entrepreneurs that propose these projects tinker with forms of governments and homesteading futures much like they have been tinkering with computers and the internet. These planetary-scale (re)design projects have been conceptualized as practices of "terraforming", a term that originally refers to science fictional ideas of transforming other planets so that they can sustain human or nonhuman life. With regards to exit projects, terraforming refers to the dreams of radical transformation and territorialization, as part of a long North American tradition of innovations that aim to break new "frontiers". The first new frontier that I analyze is the ocean.

4. SEASTEADING: THE OCEAN AS LIBERTARIAN SAFE SPACE

The seasteading movement is dedicated to creating new living spaces for future communities and industries in open water. The term "seastead" refers to the type of living community that is envisioned: floating platforms that can move around and function as puzzle pieces that can be attached to and detached from other steads at any time. Dreams of seasteading are not new: already in 1895 Jules Verne described a floating island in one of his writings and the term was first used in a report on marine science in 1969 (Craib 2022, 189).[61] But with the foundation of the Seasteading Institute in 2008, the project reemerged in the context of Silicon Valley. Seasteading is promoted as means to realize a sustainable, blue economy by creating resilient living space in times of rising sea levels (Simpson 2022). The Seasteading discourse presents floating cities as the best place to live, guaranteeing maximum freedom for individuals within regenerative communities. In this section I discuss examples from the Seasteading discourse that exemplify how the movement believes it can be ecologically beneficial to the ocean, and thereby planet Earth. The proposed decoupling of the seasteading community from the rest of civilization is not only physical: it also represents the libertarian, small-state ideals of the founders and their followers, expressing the wish to operate as an

61 Another example of a seasteading community is "Sealand", located on a military fortress near Suffolk in the United Kingdom. The community was founded in 1967 and is still active. The website (Sealand 2024) explains the ideals of the community, which align with other seasteading examples: "Sealand created everything you would expect from an independent country: a functioning government, passports, permanent population, constitution, currency, stamps and the means to defend our sovereignty. Today, the Bates family governs our small state as hereditary royal rulers. Join our adventure and get a Noble Title of your own. Push forward. Plant your flag. Make waves!"

autonomous, political entity. In what follows I first introduce the Seasteading Institute, after which I will share my analysis of the Seasteading Institute website and texts. I will highlight three framing strategies that characterize the seasteading discourse: the persistent call for freedom, the use of vagueness and the economic-environmental lens.

4.1 The Seasteading Institute: What Future Is Imagined?

The Seasteading Institute founded in 2008 is a relatively longstanding promotor of seasteading. According to the website, it is a nonprofit organization that promotes, researches and establishes a community around seasteading, but that does not intend to design and build the platforms. Max Chafkin (2021) describes how the Seasteading Institute was seen as a dangerous and weird initiative from the start, but it has been moderately successful in combining the entrepreneurial spirit and techno-optimism of Silicon Valley with a more outspoken, libertarian political agenda.

The Institute presents oceans as ideal living space, as environments which have been previously overlooked and are therefore largely "unclaimed". The two earliest representatives of the Seasteading Institute are intrinsically linked to the American economy and Silicon Valley. The first is Patri Friedman, engineer and grandson of economist Milton Friedman, who is famous as proponent of free market capitalism, a vision that is echoed in both the ideas of Patri and the seasteading movement. The second is investor Peter Thiel, who was the founder of fintech company PayPal, software company Palantir and investment funds including Clarium Capital (defunct since 2013) and Founders Fund (which has invested in Musk's SpaceX).[62] Thiel was also an early investor in Facebook and a financial supporter of Trump's 2016 presidential campaign. According to Thiel's biographer Max Chafkin (2021, 137), the seasteading project was appealing to Thiel as a "physical manifestation of PayPal's approach to skirting financial laws" and as a way "to ally himself more deeply with the conservative movement". Most important for Thiel was the opportunity of seasteading to "disrupt" existing democratic government models and build new, privatized forms of government. Thiel and Friedman met when the latter was an engineer at Google. After hearing Friedman's vision on seasteading, Thiel decided to invest in the project and convinced Friedman to give up his job and devote his career to the movement of seasteading (Chafkin 2021). With its strong political dream of independence made possible by technologies, the movement is a good example of an exit project backed by Silicon Valley.

Next to Thiel and Friedman, there are two figures holding important positions in the seasteading movement: Titus Gebel, chairman of the board of the Seasteading Institute and linked to the adjacent Free Private Cities initiative, and Joe Quirk, president of the board, who refers to himself as "aquapreneur" and "seavangelist". Craib (2022, 188) describes the ideological orientation of the movement as "one that understands freedom

62 Thiel is not an official founder of the Seasteading Institute, but an investor who has also promoted the movement. Isabelle Simpson (2022) names Wayne Gramlich as the official second founder: a computer engineer who left the institute shortly after its start (187). Thiel is also no longer actively involved in the institute since several years.

as a private commodity and promotes seasteading as a means to engage in libertarian experiments in governance and commitments to profit". The ideas expressed in the seasteading movement are thus a newer version of the libertarian dreams figures such as John Perry Barlow expressed regarding the internet in the 1990s: both have a strong conservative, individualistic and anti-governmental component.

The politics of seasteading align with those of founder Peter Thiel, who is one of the more controversial figures of Silicon Valley. His company Palantir offers several surveillance tools for corporate and military purposes and describes its mission as designing "technology to help institutions protect liberty" (Palantir 2024b).[63] Craib (2022, 193-195) notes that all of Thiel's projects reveal his interest in employing technologies for libertarian goals. In recent years, Thiel operates in the background and does not often share his vision publicly.[64] He is not very visible on the website of the Seasteading Institute, as opposed to Friedman, Gebel and Quirk, who have advanced the seasteading vision through a cultural production of materials.

As I move to the analysis of these materials, the first elements with a noteworthy visual style are the homepage and logo of the Seasteading Institute. The homepage of the Seasteading Institute website opens with a screen-covering picture of an azure blue ocean with a floating mansion in the middle. Layered over this image, the slogan of the Institute appears in blue tones: "Reimagining civilization with floating communities". The homepage also features the logo of the Seasteading Institute: a figure standing amid blue waves, with its arms in the sky, holding up a ship (fig. 34).[65]

Up to now, the movement has been confronted with engineering issues and the regulatory difficulties of living outside of state sovereignty (e.g. Craib 2022). The website reveals the speculative character of the seasteading project: there are only rendered images of seasteads, calls to get involved, offer legal help, or become a business member. The webpage lists "active projects" with telling titles such as "Atlantis Sea Colony", "Ethos Island" and "Freedom Haven", which are all still in a planning phase.[66] The seastead that came most

63 Palantir for example presents the "Gotham platform", what they call an operating system for global decision-making. Despite this generic description, the website makes clear that this is a system for military purposes, making warfare more effective by offering soldiers "an AI-powered kill chain" (Palantir 2024a). This example demonstrates the widespread dream for dashboard control, but it also shows the ongoing connections between the US military and the tech sector. Palantir also has connections with oil and gas companies to provide them with software for their operations. The name Palantir is derived from Tolkien's *Lord of the Rings* universe.

64 In 2023, Thiel declared that he would no longer involve himself in US politics (Gellman 2023), although he has since financially supported the campaign of Trump's vice president J.D. Vance.

65 Some have pointed out that the logo draws inspiration from the logo of the Burning Man festival (also a figure with its hands in the air). Fred Turner (2009) has written about the significance of the free-spirited festival for Google specifically, and Silicon Valley in general. Burning Man was the place where Joe Quirk first heard about seasteading, and the festival also served as a model for his ideal form of society (Gelles 2017).

66 The webpage also lists a "past" (failed) project titled "Blue Seed" which was designed to be a "Googleplex" for start-ups off the coast of San Francisco, in international waters. This seastead would offer work and living space for tech entrepreneurs without a work visa.

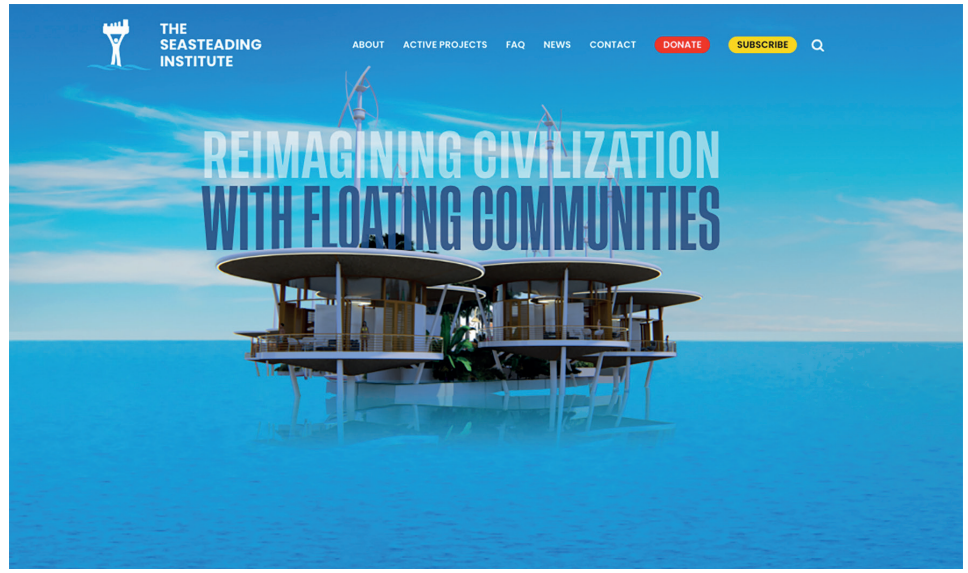


Figure 34: The homepage of the Seasteading Institute with its slogan and logo. The image shows a rendering of a potential seastead. Screenshot by the author (September 2024).

closely to becoming reality was located in French Polynesia, thanks to an agreement with the government. The "floating city project" – a special economic zone with its own cryptocurrency – was discontinued, according to the Institute, because of political "fighting", misinformation and a cryptocurrency crash. Significantly, the website does not mention that local inhabitants were critical of the potential environmental impact of the plan, nor the fact that the project would not yield taxes and thus would not help improve the socio-economic problems of French Polynesia (Wong 2017; Simpson 2022). On the website, the feasibility of the plans is never questioned. Instead, the Institute, for example in Joe Quirk's blogpost "What's in our Way?" (2024), refers to "obsolete" regulation and a lack of funding (paired with a call to donate) as the two main obstacles it is facing. The question then is: how can this insecure future be turned into a feasible and desirable narrative?

4.2 Ultimate Freedom as Governance Ideal

Born out of the political and conservative beliefs of Friedman and Thiel, a shaping element of the Seasteading Institute is a deep distrust in state government. Although the dream of living at sea has a much longer history, the Covid-19 pandemic has renewed the interest in the seasteading project. In response to the crisis, the initiators of the Seasteading Institute have protested against the increase of government control, especially rules that invaded their privacy, while they also feared the possibility of an economic meltdown (Ingram 2020). These perceived fears fueled the seasteading community's wish to "decouple" from current societies.

The first framing strategy that I found, based on my analysis of seasteading materials, is that the movement represents seasteads as an opportunity to create a community

offering absolute freedom to its inhabitants with no form of state intervention. To strengthen this message, the seasteading discourse proposes its plans as the only feasible and sensible future path. This is a strategy I also observed in corporate discourse in Chapter 1: alternative future paths are set aside as undesirable or unattainable.

For my analysis, I first turn to a keynote Peter Thiel gave at the Seasteading Institute Conference in 2009, which is archived on Vimeo by The Seasteading Institute. Thiel gives the keynote in a small conference room to a small (mostly white, male) audience and the recording quality is quite poor. In his presentation, Thiel offers a simple framework, stating that seasteading is desirable and possible, and that anyone who thinks it is "bad" or impossible, is wrong. If people are not convinced it is a feasible future, he argues, it is because they have gotten used to a society in stasis, disappointed by the lack of speed in technological progress. He says: "One of the critical questions we have to ask is: whether we are in this exponentially growing technological civilization, or whether we are in a place where there is stasis, and nothing is happening". Of course, Thiel himself is against a static society, which he sees as the opposite of the desirable vision of an exponentially growing, technology-advanced civilization. This argument reproduces the logic of pragmatism that I have discussed earlier in Chapter 1: to ensure a prosperous future the proposed pathway is presented as the only viable way forward. In this narrative, a quite radical solution is framed as a pragmatic, inevitable idea. It offers a utopian, bold future perspective of an advanced society liberated from slow governments. Across the discourse, the creators construct a vision of a future that is moving beyond anything we can currently imagine. In the paper "Seasteading: Competitive Governments on the Ocean", Patri Friedman and Brad Taylor (2012) write: "We tend to overlook the enormous potential of ongoing technological change, but the progress we have seen since the industrial revolution may be only the beginning" (229). Such a vague but strong statement about the belief in technological progress reflects the tendency in tech-on-climate discourse to shut down debates by creating a teleological narrative, pointing to the yet unknown but never disappointing possibilities of innovation.

One central belief of the seasteading movement is that large, bureaucratic governments are not able to harness the potentials of technological innovation. Seasteaders want to disrupt and innovate the state. Governments are continuously portrayed as slow and inefficient, which, according to Joe Quirk, president of the Seasteading Institute, would not be the case if governments had to *compete* over the attention and money of citizens. In a book with the pompous title *Seasteading: How Floating Nations Will Restore the Environment, Enrich the Poor, Cure the Sick, and Liberate Humanity from Politicians* (2017) that Quirk wrote with Patri Friedman, the benefits of a corporate government are often stressed. Quirk and Friedman write: "If only governance providers had to compete to keep mobile citizens as if they were customers! Then citizens would hold the two key powers you need to keep innovation robust: the power of the customer to exit, and the power of new providers to enter" (2017, 296). Capitalist competition is imagined here as the key element to foster innovation. The seasteading movement pleads for a fluidity of governance that is hard to combine with democratic nation states, but that in the small communities of seasteading

is hailed as a groundbreaking possibility. This problem of scale is however not adequately addressed.

In the 2020 "Seasteading in a Post Covid 19 World" video (a keynote with images and Quirk as voice-over), Quirk mentions another benefit of corporate and competitive governance as opposed to what he calls "bad government": individualization. He refers to computer engineer Steve Wozniak to highlight the potential of innovators and original thinkers. Wozniak briefly worked for Hewlett Packard Company before he cofounded Apple with Steve Jobs and Ronald Wayne in 1976, executing his vision to make personal computers available for mass consumption. Quirk connects the seasteading initiative to this moment in computer history and asks: "Forget the personal computer. What about the personal government?" Without any form of nuance, Quirk makes a connection between a compact machine like a computer and a large institution like a government. The historical narrative that is drawn here is an example of a myth of progress, in this case to imagine governance as a personalized service for the citizen-consumer as a logical outcome of past events in a completely different context. This rhetorical strategy places Quirk and his project in a long, successful line of celebrity entrepreneurs.

The political ideal of the seasteading movement is a personalized government in which the client-citizen is king. This idea is further explained in the white paper "Free Private Cities" by Titus Gebel (2022). He introduces the concept of "government as a service" as an advantage of the free private cities he envisions, listing the ideals of "autonomous regulation and administration", "voluntary participation", "the live and let live principle" and "free contract cancellation" (Gebel 2022, 5). In this governmental model, if the citizen-consumer is not satisfied with the product, they can switch to another government. The moveable nature of seasteading platforms allows seasteaders to end a "subscription" to a government whenever they like and become a member of another free private city. There is no reciprocity between the state and the citizen.

The idea of a subscription-based system or service is not new within platform capitalism, but government as a service signifies a new domain for individualization; a domain in which its realization seems impossible. It also demonstrates that the seasteading discourse is quite radical in its dismissal of governments. The proposed future plan is therefore quite niche and directed at a much more specific audience compared to the promotional materials of Big Tech companies that I discussed in Chapter 1. Nevertheless, the seasteading movement may express wide felt disappointments about present-day societies. Free Private Cities, for example is presented as a rational response to such frustrations: "Entrepreneurs all over the globe are creating pockets of freedom and political innovation in a world of systems that have not lived up to our expectations", the website states (Free Cities Foundation 2024). Here, entrepreneurs are imagined as model citizen, whose ideal societies take the form of "pockets of freedom", strictly isolated from the outside world.

4.3 Strategic Vagueness and Long-Term Pragmatism

As I have previously pointed out in my analysis of tech-on-climate discourse in Chapter 1, uncertainties about the feasibility of plans are repeatedly hidden behind broad and vague statements. However convincing these statements sound, they often hold little ground. Within the language of the seasteading discourse, dense with one-liners and repetitive lists of what a seastead could or should be, it is difficult to find any clear information about when seasteading will become a reality and for whom it might be available. The website cannot refer to any concrete examples of successful seasteads and uses mainly artistic impressions to visualize the future they are imagining. The framing strategy of deliberate vagueness that I discussed in Chapter 1 is here a necessary tool to promote seasteading and present an attractive future in times of crisis.

Although all the statements seem to give the impression that seasteading can soon become reality, a specific timeline is never mentioned. Instead, the audience is constantly asked to donate to the institute so they can lobby for necessary legislation, pay for research on the topic and get their own flag (the holy grail, according to Quirk). Consider the quite tenacious closing statement in Quirk's video (2020): "Support the storytelling that is driving seasteading into the imaginations of next year's heroes. Because this is the immediate future. The ocean Renaissance is fast approaching. Please make a big donation. Oceans first, Mars next". The video contains a direct plea to viewers to donate to the Seasteading Institute. Quirk addresses his audience as pioneers, heroes even, who can become part of working on an ideal future. This is described as an "immediate", fast approaching future, which is unspecific, but creates the expectation that seasteads will soon be real places to live. It also implies that seasteads will be realized before Mars colonies, an even more long-term future that I discuss in the next section. Quirk acknowledges the task of storytelling, or branding, of the Seasteading Institute: more than building actual seasteads, the institute's goal is to build a community around these ideas. It is a type of advertisement that, although in an extreme way, evokes the spirituality of the Californian counterculture. It recalls the DIY mentality of the *Whole Earth Catalog*, resembling its quirky jargon and its confident future vision. Pioneering and the possibility of unlimited innovation are used as central arguments to attract investors and participants to build this future.

The images shown in the video and throughout the discourse support the innovative edge of the institute. Their futuristic design, often poorly executed, can give readers and viewers an impression of what living on a seastead might look like. Although some artist impressions are professionally made, Quirk's video (2020) is nothing more than a slideshow of images that are of rather mediocre quality. The website of the Seasteading Institute has a same basic, low-quality design (fig. 35). The DIY aesthetic is consistent throughout the seasteading discourse and makes it an exception in the slick advertising-oriented world of Silicon Valley. The futuristic yet old-fashioned aesthetic ironically underlines the impression that the Seasteading initiative is still in its early stages and will not materialize soon.

Another question that remains unanswered within the vague statements of the seasteading discourse, is for *whom* this future is designed. The Seasteading texts seem directed at anyone who agrees with their political views and who is looking for a new

community. Although the call to embark on the seasteading journey seems to be directed at anyone who politically aligns with their ideas, the accessibility of seastead communities, for example in terms of affordability or diversity, is never discussed. I recognize here the strategy of temporal differentiation and the journey metaphor that I discussed in Chapter 1: the audience is called upon to be a pioneer and join now, in order to ensure a grand future on the long-term. The website does not reveal how the "now" and the "later" are connected, because both are only discussed in vague terms. Nevertheless, the website creates a sense of emergency through slogans such as "Stop fighting" and "Cure the Sick" as two of its "eight moral imperatives". Although the unclarity of certain fundamental questions might be daunting to some, seasteaders seem to embrace the potential of the unknown, and focus on the promises of liberation and growth it might hold and solutions that may not have been envisioned yet.

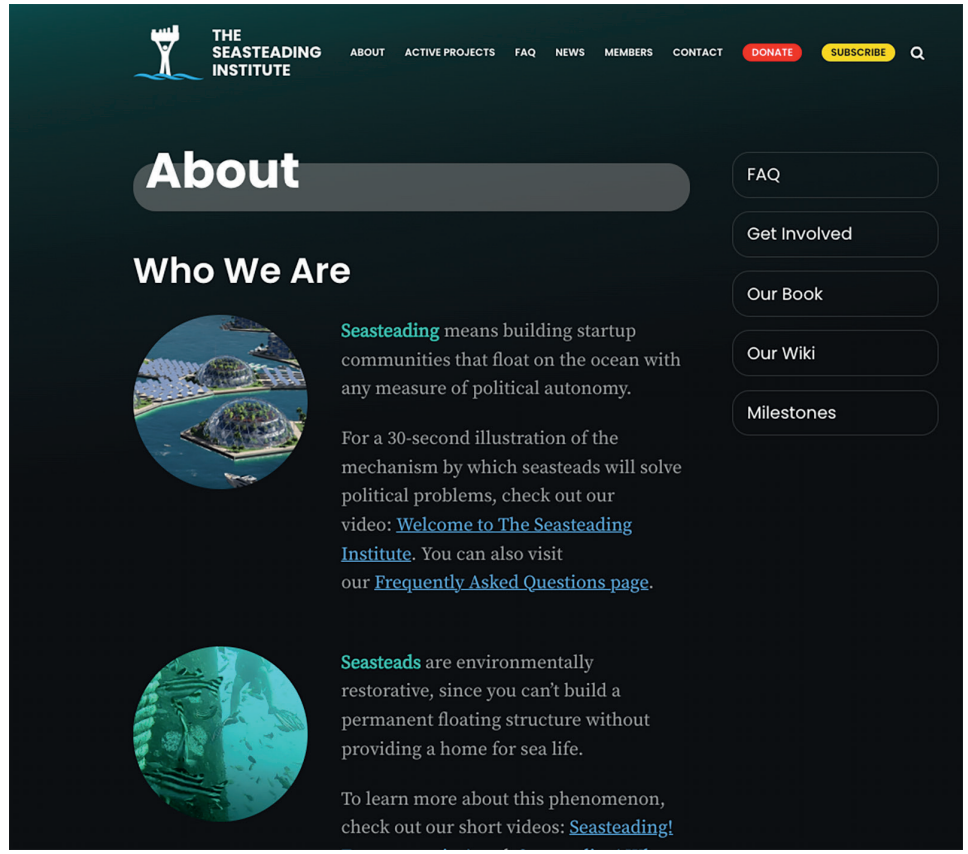


Figure 35: The "About" page of the Seasteading Institute has a simple design and features renderings of seasteads that appear across the materials. Screenshot by the author (September 2024).

4.4 The Economic Benefits of Saving the Earth: Taking Responsibility

A third strategy that I found in my analysis of the visual and textual discourse of seasteading is to emphasize the economic potential of seasteading in light of the climate crisis. In the seasteading discourse, the climate crisis is acknowledged, at least superficially, and seastead communities are seen as a logical answer to provide a safe living environment. As the movement became aware that the climate crisis offered a potent frame to legitimize the political ideals of the movement, seasteading became more and more presented as an environmental solution (Simpson 2022, 188-189). The motivation to solve the climate crisis is addressed as a pressing problem in the seasteading book by Quirk and Friedman. They write: "A global movement of seasteaders believe the Aquatic Age is upon us, and if humanity is to solve our most pressing problems, we must build a blue and green civilization on blue-green algae" (Quirk and Friedman 2017, 9). The book names algae as the central solution in their mission to restore the environment. Algae are presented as solution to food and water shortage and as means to ensure the elimination of fossil fuels, and the self-sufficiency of seasteading communities. Seasteads are imagined to be green societies, because of the separation from polluting societies and the ability to produce their own, more sustainable energy facilities, food and water resources, while also cleaning the oceans (Quirk and Friedman 2017).

An analysis of the website reveals that newer materials in the seasteading discourse present the communities as "eco-restorative". On its homepage, the institute presents "floating ocean cities as a revolutionary solution to some of the world's most pressing problems: rising sea levels, overpopulation, poor governance, and more". Without detailing how the seasteads are actually built, they are imagined as bio-based infrastructures that would seamlessly merge with their surroundings. As such, they are presented as a solution that would solve a range of problems. In a video (2020) titled "Seasteading? Eco-restorative!", the voice-over explains that the way to save the ocean, is to live on it. After acknowledging the problems of declining biodiversity and acidic oceans, the video states that seasteads will be able to "reverse much of this damage" (fig. 36). As part of the "Frequently Asked Questions", the website answers a question about rising sea-levels by stating that "Seasteaders are working on designs to host critical infrastructure, offices, residences and everything threatened communities need to be resilient in areas prone to flooding and vulnerable to rising seas". Or as they state elsewhere: "you can't build a permanent floating structure without providing a home for sea life" ("About").

The movement thus presents itself, although shallowly, at the forefront of a necessary, global environmental transition. It does so, however, without ever explaining exactly *how* a floating city would help solve the climate crisis. Joe Quirk makes a similar bold statement in his "Seasteading in a Post Covid19 World" video: "You say: Sustainability? Hmm, that is so 2019. We have already moved on to environmental regeneration. [..] Join us. This is how we win". A forceful statement like "This is how we win" does not explain anything about the "how" nor the "what" or the "we" of the winning, but instead remains deliberately vague. Environmental regeneration is thus never explained but addressed as a possible way of dealing with the climate crisis, in such a way that it embodies a new

Figure 36: Artist impression with geodesic domes, plants and solar panels to demonstrate the eco-restorative qualities of seasteads. Screenshot by the author from the "Seasteading? Eco-restorative!" video (2020).

form of environmentalism. The Seasteading Institute's solution to the climate crisis will not only make sustainability an irrelevant term, but it will also make the institute "win" the fight against the climate crisis. In this kind of imperialist language, Quirk imagines that the progressive tactics of the institute will make it an inspiration for the entire global climate movement. Moreover, in his paper on Free Private Cities, Titus Gebel mentions the economic incentive to win the climate battle:

> Free Private Cities have an interest in maintaining a clean environment as a means of attracting residents. In principle, environmental protection in the Free Private City is based on the protection of individual rights. Environmental damage is unthinkable without affecting property, possessions or persons. (2022, 9)

The movement imagines that its focus on responsibility and profit will urge seasteaders to take care of their environment. The value of nature is thus purely seen in economic terms, and the diversity of nature is reduced to a clean environment within the boundaries of seastead properties.

4.5 Critiques

My analysis of the seasteading narrative reveals several problems and paradoxes of this highly ideological discourse. In this subsection, I discuss critiques that follow from my discourse analysis of the seasteading narrative. I detail four critical points focusing on the lack of sustainability and inclusivity of the movement.

First, the natural environment is not recognized as a complex ecosystem and will most likely not be protected but harmed by a worldwide seasteading community. As I have noted before, if ecosystems are mentioned within tech-on-climate discourse, they are "isolated" and "sanitized" in a way that does not take the complexity of ecosystems

into account. The use of the term is thus metaphorical and shallow; it is another example of a "cybernetic-ecosystemic dream", as Hogan (2018) calls it. Although the seasteading discourse on the one hand sketches, in text and image, a vision of an upgraded nature, or "technolandscape" as I previously discussed in Chapter 1; on the other hand, it still treats nature as an ecosystem that can be controlled and portrays a seastead as a miniature ecosystem that can sustain itself, much like the failed experiment of "Biosphere 2". The ecosystemic dream thus expresses a political vision, in which, put simply: controlling nature equals freedom for humans. As China Miéville (2007) critically writes, the seasteading movement presents a bizarre syllogism: because states own land, land is not a desirable and suitable place to live in the future, and because seas are largely unclaimed, seas provide the perfect escape. The fluidity of the ocean thus works as a metaphor to present governance and homesteading ideals.

Second, the movement does not address a range of issues and potential disasters that come with climate change. It presents itself as a solution to crises but does not address its own complicity in environmental issues. Beyond its narrow definition of climate action, the seasteading movement does not disclose any information on how they will precisely deal with problems such as plastic waste, ocean acidification or rising sea levels. The seasteading vision completely overstates the positive benefits of seasteads and brushes the negative environmental impact aside. Moreover, the website does not discuss how the seasteads are built or sustained. The authors for example imagine that a seastead can move away in case of storms, which is going to be an enormous challenge, if at all possible. Its rejection of governments also implies that the seasteading community is unwilling to cooperate on solving issues that have to be tackled globally, such as rising sea levels. In addition, the potential effects of seasteading on the ocean's biodiversity are never discussed. Although they like to give readers this impression, the seasteading movement cannot decouple itself, as movement in general nor as way of living, from the consequences of climate change. Neither is the ocean a place without limitations, on which seasteads can be housed without consequences. If the seasteading texts ever allude to the possible risks, they place trust in the potential of new industrial and technological developments. In short, seasteads are examples of extractivist practices that, as Craib (2022, 245) writes, "outsources its expenses onto the public". And, I would add, they are examples of broader tech-on-climate practices that outsource potential problems to future generations by placing their trust in future tech-fixes and ever-new cycles of innovation. As the answer to the climate crisis falls short on many levels, it is hard to see the urgency of the climate crisis as more than something that gives superficial, moral support to the seasteading proposal.

Third, the exclusionary tendencies of the Seasteading Institute are masked by a shallow discourse of inclusion, that is in fact, I argue, a model for exclusion. The seastead society is based on the idea that one pays for a subscription, which underlines that this will be a society organized around income and class. The accessibility of the community is presented as the core value of the movement, while it is only accessible for people who fit their ideal type of a citizen. This ideal type of citizen is an entrepreneur, modeled after the initiators of the movement and their individualistic politics. As Imre Szeman (2015, 474) critically writes about neoliberal entrepreneurship: "the entrepreneur is abstracted and universalized into a model for all citizens (indeed, a model that may have the potential to replace the citizen as such)". Within the context of Silicon Valley in general and the seasteading movement more specifically, the model citizen is a combination of an entrepreneur, a user, and a subscriber.

Based on this entrepreneurial ideal, the right of emigration (and thus immigration) is for Quirk and Friedman (2017) what sets seasteading aside from nations. They write: "Today land-based nations serve as gated communities, shutting out those yearning to unleash their dreams upon the world. Existing countries don't want to absorb them. Seasteads will require them to survive economically" (299). The hospitality thus comes with strings attached: seasteads are only for those who can sustain themselves economically. While the authors frame governments as gated communities, it is in fact the seasteading community that seems to embody that description. With its proposal of user contracts and economic thresholds, the private cities seem to operate as what Keller Easterling (2016) refers to as "corporate zones", in which companies act as sole governing actors. Yet, nowhere on the websites or other materials are the limits to independency discussed. This begs the question: how different is the role of a seasteading director from a governmental agent? How different are the fees charged to users different from taxes? The movement dismisses borders between seasteads, but also creates high demands for who can count as a citizen-user. Moreover, it thus remains unclear what forms of governance seasteaders envision to organize their new communities. They (naively) believe that as a result of competition, the best solution will automatically arise. Moreover, their plans are built on a false idea that the sea is unregulated, because it *is* regulated by law, for example through the United Nation's Law of the Sea Treaty (Craib 2022, 190-191).

Fourth, the movement simplifies the organization of a civilization and perpetuates older forms of colonialism. As Miéville (2007) rightly points out about the seasteading discourse, the question of labor is never addressed. This finding remains the case in my analysis of the seasteading discourse and that of the Seasteading Institute: labor is never mentioned. In addition, there is no mentioning of caring or law facilities or any other form of social infrastructure and public services – as if childcare, schools, or hospitals, are not necessary. This aligns with the lack of any reflection as to the organization of the community.

Faced with the question of feasibility, the movement has already toned down its unfeasible idea to live on open seas and directed its attention at host states that would welcome their communities (which failed in French Polynesia). In either form, the projects ignore any resistance the movement has faced and continue to reproduce "the racial logics at the heart of settler colonial regimes" (Hughes 2024, 18). The one-sided vision of history shared in the materials that I have studied does not deal with or acknowledge the violence of colonial settler history. As Craib (2022, 207) writes about the seasteading discourse: "The past is warped beyond recognition into a libertarian infomercial" (207). Indeed, in the narrative of continuous progress the perspectives of those that have suffered, or still suffer, from colonialism are rendered invisible. Instead, the movement presents a mythical version

of history that imagines seasteaders as the "successful" successors of earlier settlers. In its ideals, the movement perpetuates a colonial logic and takes its white, male, rich owners as model for the citizen it wants to attract. Problematically, the seasteading discourse does not acknowledge that freedom for some comes at the expense of freedom for others. As the quotes I have shared above demonstrate, the discourse imagines that seastead colonies will come into being in a vacuum, "decoupled" from any other societies. However, in terms of logistics, supplies, people and climate, the connection to the rest of the world is undeniable: a "new" world can only exist as fantasy. This fantasy is expressed through a confident, utopian vernacular in which the false opposition between regressive, cumbersome governments and innovative, movable seasteads plays a central role.

In conclusion to this section, it is safe to argue that the utopian ideal of seasteading will remain precisely that: utopian. Seasteading presents a myth that can never be (fully) realized and is neither sustainable nor inclusive, even though the texts and visuals persist in arguing the opposite. It is hard to pin down seasteading as a movement, because it mixes two quite different if not contradictory things: the perhaps feasible option of houses built on oceanic surfaces, with the fantasies of escaping governments by installing fully privatized floating platforms that will save the Earth. What counts as a "we" in seasteading discourse is not always clear and switches according to the interests that need to be protected. This rhetorical switch makes it hard to discuss the exclusivity of the seasteading goal. In their analysis of seasteading, Philip E. Steinberg and colleagues (2012) argue that seasteading might not live up to its promises but can still be successful in expressing a wider-felt sentiment. They write:

> as a mechanism that utilizes marine romanticism and science fiction fantasy to spur a critique of twentieth century state-regulated capitalism, the seasteading movement can be seen as one wedge of a much larger neoliberal project in which the "free medium" of the ocean frequently plays a leading role. (Steinberg et al. 2012, 1545)

Building on the critique of seasteading as a romantic, science fictional fantasy, I conclude that the movement represents a libertarian, conservative political ideology reflecting unattainable ideals of self-sustaining communities. In a political sense, the ideal of living and designing one's own life without the hassle of a government, reveals a strong lack of solidarity towards others, especially to less fortunate fellow citizens. Rather than changing unequal conditions, the project is aimed at protecting a way of life of a highly elite group of actors. In the next section of this chapter, I study how such ideals about other possible worlds take form in spacefaring discourse.

5. SPACEFARING: INFINITE MATERIALS, INFINITE OPPORTUNITIES

The space economy is increasingly dominated by the tech companies that are the subject of this dissertation. Especially tech moguls Elon Musk and Jeff Bezos hold central positions within this growing industry. The dream of spacefaring is not new: it has been part of science projects and science fiction for a long time. Now, science fictional narratives of spacefaring are directly influencing commercial space travel plans. Because of this blurring, it makes sense to extend the definition of science fiction, as Anderson (2022, 283) does, to include the creation of "imaginary models of radical transformations of human history initiated by technoscientific novums". However, the space economy is an actual billion-dollar industry, which makes it distinctively different from the seasteading discourse. In what follows, I first introduce SpaceX and Blue Origin, after which I will present my analysis of the companies' websites, videos and keynotes. I discuss the central strategies used to present space exploration as a way of securing the future of humanity in the light of climate change. I highlight three framing strategies based on my analysis of spacefaring discourse: 1) space exploration as the only way forward, 2) strategic vagueness about the timeline and inclusivity, 3) the celebration of a nostalgic understanding of the past.

5.1 The Era of NewSpace

The new era of spacefaring, also known as "NewSpace", started at the beginning of the 21st century (Rubenstein 2022). In a report by McKinsey and the World Economic Forum (2024), the global space economy is estimated to grow from a 630 billion to 1.3 trillion dollar-industry between 2023 and 2035. In an optimistic tone, an article announcing the report claims that the space industry will "solve many of the world's most pressing challenges".[67] NewSpace thus captures the rise of an extensive, commercial space industry. Yet, the most influential players in the space industry are still governmental institutions: the National Aeronautics and Space Administration (NASA), China National Space Administration (CNSA), European Space Agency (ESA) and Russian Federal Space Agency (Roscosmos), with new organizations emerging.

Since the Cold War, the exploration of outer space has been, and still is, a governmental project with an important geopolitical function. The Sputnik satellite was launched by the Soviet Union in 1957, NASA's Apollo program took shape in the 1960s, and the moon landing of 1969 was a defining cultural moment (Weinzierl 2018). In his book *The Long Space Age*, Alexander MacDonald (2017) argues that private parties have been involved in space exploration even before the US and Russia started to invest during the Cold War. For Macdonald (2017), "the resurgence of private-sector space efforts in the early twenty-first century represents a return to an earlier pattern". Now more than ever, the spacefaring industry is considered to be the "final economic frontier" (Weinzierl 2018).

67 The article (McKinsey 2024) explains how they calculated the estimated growth: "This figure includes both "backbone" applications—such as those for satellites, launchers, and services like broadcast television or GPS—and what we term "reach" applications"—those for which space technology helps companies across industries generate revenues".

While the time of centralized space exploration is not over, recent successful, commercial enterprises by SpaceX, amongst others, have sparked the interest in private endeavors in space. Such endeavors for example explore the possibilities of mining rare minerals in space, as an answer to the shortage of and geopolitical debates around critical raw materials. But, The NewSpace economy has also led to many public-private partnerships, in which private parties are contracted by governmental organizations such as NASA. For tech billionaires, NewSpace forms an interesting new economic sphere in which they can explore and test new innovations (Dickens and Ormrod 2007; Shammas and Holen 2019). As this section will show, outer space is not only a site for economic expansion, but also an escape in times of climate crisis and the ultimate testing ground for the design thinkers of Silicon Valley.

The analysis in this section focuses on the role of the two main space companies that are strongly affiliated with Silicon Valley: Elon Musk's SpaceX and Jeff Bezos' Blue Origin. Both are heavily involved in building the "road" to space. Their mission of "humanity-saving space exploration" is an example of the technological utopian projects that emerge out of Silicon Valley (Crandall et al. 2021, 842). Whereas SpaceX aims to start a new civilization on Mars, Blue Origin focuses on using the orbit for industries and living communities in spaceships. The financial resources of SpaceX and Blue Origin are intrinsically linked to their owners' past in the American tech industry: Musk's and Bezos' space enterprises, I argue, should also be understood as new cultural and infrastructural signposts of the business plans and worldview of these entrepreneurs.

Although SpaceX and Blue Origin present long-term visions of worldbuilding in outer space, they are currently investing in more small-scale plans such as laying out satellite infrastructures. SpaceX has a satellite program for national security, while Musk's other company StarLink is developing commercially available satellites. This involves developing and testing vehicles such as reusable rockets and spacecrafts allowing for short explorations, transporting cargo and astronauts, or developing space engines. Both companies offer short trips to space for high prices, which have been purchased by a few wealthy entrepreneurs (e.g. Drake 2021). SpaceX has so far been more successful in attracting business deals, but Blue Origin is steadily expanding its business. Both companies have contracts with NASA and are continuously in competition to win additional bids. The winning bid for SpaceX for a Moonlander deal with NASA led to complaints from opponents like Blue Origin. More recently, Blue Origin secured a 3-billion-dollar contract to build a lunar lander for NASA's mission to the moon, which also requires a large investment from the company itself, and a collaboration with defense contractor Lockheed Martin and Boeing (Bohannon 2023; Chang 2023). Rubenstein (2022, 10-12) describes the race as one of the geek (Musk) versus the nerd (Bezos), with Musk seeking public attention and making "noise" and Bezos executing his work largely outside of the spotlights. A prime example of the difference in their approach, also mentioned by Rubenstein, is the dramatic, promotional event where SpaceX sent a red Tesla car into space by attaching it to a rocket. I will return to this differentiation throughout the analysis.

Musk and Bezos, both heads of a conglomeration of companies and infrastructures and thus centrally positioned in the platform ecosystem, are now increasingly shaping the space industry. Because of the enormous financial investments needed for space exploration, Musk and Bezos benefit from the huge fortunes they have gathered through their other businesses. Although Amazon and Blue Origin, for example, remain separate companies with separate boards, Bezos forms a connection between the two. He derives his power from his position as "network entrepreneur" who has the financial budgets, resources and connections to turn his wild ideas into new businesses. Likewise, Musk forms a link between SpaceX, StarLink, Tesla, X and his other economic endeavors. More than in the case of seasteading, spacefaring plans are a mix of current economic partnerships and technological innovations and speculative future plans. As Rubenstein (2022, x) writes: "the intensifying "NewSpace race" is as much a mythological project as it is a political, economic, or scientific one. It's mythology, in fact, that holds all these other efforts together, giving them an aura of duty, grandeur, and benevolence". The next sections explore how spacefaring offers a myth about a desirable future in service of Earth, by analyzing a keynote and a video by Musk and Bezos that place their operations in the context of ecological collapse.

5.2 Space Exploration as the Only Way Forward

In September 2016, Elon Musk gave an hour-long keynote at the International Astronautical Congress, titled "Making Humans a Multiplanetary Species". On a large stage, surrounded by two screens and a large projection of Mars, Musk lays out his vision for the future. The SpaceX CEO presents the projects the company is working on, with its ultimate goal to reach Mars and prepare the planet for human presence. Musk enters the stage while receiving loud applause from the audience and opens his talk with stating that he will use his keynote to share how he thinks "we" as humanity can make it to Mars within this lifetime. Musk (2016) says:

> What I really want to try to achieve here is to make Mars seem possible. Make it seem as though, as something that we can do within our lifetimes. And that you can go. And is there really a way that anyone can go if they wanted to? That is really the important thing.

With these opening lines, Musk introduces the work of SpaceX as a communal project that benefits all of humanity; a project of which the results will be visible within the lifetime of the audience he is speaking to. As Musk uses the expression that he wants to make it "seem" possible within "our" lifetime, he gives the impression that the object of his talk is to create a story that sounds convincing to the audience: to give them a future perspective, a horizon, that they can hold on to. Similar to how Joe Quirk mentioned the importance of storytelling, Musk gives the idea that the story might be even more important than the actual events. Standing in front of the image of Mars, Musk reveals the logic behind his plans:

> First of all: Why go anywhere? Right? I think, there are really two fundamental paths. History is going to bifurcate along two directions. One path is we stay on Earth forever. And then there will be some eventual extinction event. I don't have an immediate doomsday proph-

> ecy. But eventually, history suggests there will be some doomsday event. The alternative is to become a space-bearing civilization and a multi-planet species. Which I hope you would agree, that is the right way to go. Yes? [Applause and cheers from audience — Musk points to Mars] That's what we want. So how do we figure out how to take you to Mars? And create a self-sustaining city. A city that is not merely an outpost but that can become a planet in its own right, and at best we could become a multi-planetary species.

Musk presents the ultimate reason that justifies the space project: there is no alternative. By presenting only two possible ways forward, Musk makes the audience choose between waiting for doomsday or getting serious about spacefaring. Other options are not acknowledged. The climate crisis is not mentioned in the talk, but the doomsday event he alludes to is most probably, in my view, ecological collapse. Such a worrisome outlook on the future gives Musk's project the urgency that helps to convince the audience of its need. Clearly, for Musk any kind of stasis is not an option, nor is there an alternative, which is exactly the argument that Thiel presented to promote seasteading. Musk presents an even bleaker scenario: either there is an end to humanity, or humanity will move forward and become a multi-planetary species.

Analyzing the discourse, I observe a framing strategy that creates a strong opposition between the optimists and the pragmatists versus the worriers and the thinkers. In previous chapters I have analyzed this framing strategy as a common element of tech-on-climate discourse. However, Musk takes the strategy to new heights. Not only is a society in stasis worrisome, but it will also not prepare us for disasters that are yet to come. Bezos has made similar statements, for example at a conference in 2016, when he said: "You don't want to live in a retrograde world where we have to freeze population growth" (Kulwin 2016). Similar to Musk's path towards a "doomsday event", Bezos argues that stasis, or moving "backwards" (in a "retrograde" world) is the wrong alternative, and instead pleas for ever moving forward (see also the Blue Origin 2019 "Mission" video). Moving forward, in Musk's and Bezos' worldview, means stimulating as much growth and expansion as possible, not only on Earth, but also beyond, in space. For them, moving forward means realizing the individualistic and free-market ideals they hold; a dream that should one not be held back by "big" governments or "strict" regulations.

Musk presents SpaceX as the authority that will lead humanity to a hopeful future of growth and prosperity. This is an example of the framing strategy of "democratization": spacefaring is presented as a "social" project that would benefit all of humanity on the long-term. To emphasize this point in his keynote (2016), Musk directly addresses the audience. SpaceX is researching how "you" can go to Mars, and he asks the audience to reconfirm that going to Mars is indeed what they want. When he speaks these lines, Musk points to the projection of Mars behind him, and the artist impression of a person looking from a spaceship at the red surface of Mars (fig. 37). The audience applauds. Although the moment is cheerful, Musk leaves no room for others to disagree, which fits the format of a keynote. But the cheers from the audience (which happens upon his request) also reflects his conviction that no one in their right mind would disagree with him. The future he imagines is pro-

Figure 37: During his SpaceX keynote (2016), Elon Musk points to the visual renderings of a flight to Mars and states "That's what we want." Screenshot by the author.

gressive and exciting, so there is no good reason to be against it. By presenting the future as a story that can only take two routes, those that are against becoming a multi-planetary species are automatically supporting the doomsday option.

Although Musk nor the SpaceX website mention the climate crisis as such, Musk is still portrayed (and partially understood) as an environmental crusader who will solve any challenge humanity might face. The idea of Musk as hero, or pioneer, is widespread. Musk, as Sy Taffel (2018, 174-175) argues, "fulfills the role of the 'genius', 'visionary', individual associated with the brand" whether its Tesla or SpaceX. His efforts in developing electric vehicles as part of Tesla has given him the reputation of being a sustainable entrepreneur. More than Bezos, Musk has a fanbase of "musketeers" who support his every, controversial move (Li 2024).[68] Nevertheless, his public persona has changed since he took over Twitter, named it "X", and became a strong proponent of free speech, as well as a supporter of and investor in Donald Trump's presidency.

Turning now to Bezos and Blue Origin, I continue my analysis with promotional materials from the Blue Origin's discourse, particularly a 9-minute video (2023) that is designed as a trailer for space exploration as hopeful climate future. Despite the differences between the two companies and their CEOs, the simplified opposition between believers and non-believers returns in the Blue Origin texts. Across the Blue Origin materials, one phrase constantly returns: going to space will benefit Earth. This is also the name of the

68 In the *Wired* article, Li (2024) comments on fandom around tech entrepreneurs such as Musk: "Not only do they celebrate his accomplishments and wealth – his net worth has surpassed 209.9 billion dollars – but also defend his controversial abuses of workers' rights. His tweets are regarded as gospel to his flocks, unveiling the wisdom of a billionaire genius set to revolutionize space travel and electric cars among others. The Musk obsession might be the most intense, but the rising trend of admiration for wealthy tech entrepreneurs is becoming increasingly common".

50-minute keynote Jeff Bezos gave in 2019, sharing the plans and mission of Blue Origin, together with a lot of technical details about the vehicles (fig. 38). In essence, the video (2023) with the same title, contains a similar message, elaborately discussing the rationale behind the company's motto. A group of people, presumably Blue Origin employees, appear as talking heads. This studio footage is combined with shots of the Blue Origin launch sites, outer space, natural and urban environments, the "whole" Earth, and artist impressions of space colonies (fig. 39).[69] The narrative of the video unfolds as follows. It starts with presenting the reusable and operational "New Shepard" space vehicle as the beginning of the space vision of the company. It then states the problem that the company is fixing: Earth is the best planet there is, we know that Earth is finite, and we will run out of energy to use. We need to use energy more efficiently, but we also need to have more energy available. The solution is to make space more accessible, move polluting industries to space and mine resources from the Moon. This is a project for many generations, which will allow humanity to prosper and for the Earth to be saved.

The narrative is fascinating in many ways, for example in how it presents particular elements of societal development as a given. It is a given that humans will continue to use more energy, and that we cannot and should not stop this increase. Because, the video argues, this "metabolic rate" of energy use ensures that humanity can continue to innovate and societies can continue their "era of dynamism". As one employee states: "we are at our best when we are inventing, when we are growing, when we are making progress". As we have seen in other examples, the narrative pits those who support this future vision against those who are against this kind of growth and dynamism. The video tries to convince the audience that they should be excited about the future vision of the company, because it ensures a healthy planet for future generations. Eventually the Blue Origin video (2023) presents spaceships as potential living communities and envisions Earth turned into a garden or national park. As the employees share: "an enduring human presence in space is the long-term solution for Earth. We are building a critical part of the infrastructure that's going to allow others to unlock the road to space so that future generations can unleash their creativity" (2023).[70] In other words, my analysis shows that Blue Origin is building their version of "California Forever" but on a larger scale: they are aiming for "Earth Forever".

Both SpaceX and Blue Origin emphasize that becoming a multi-planetary species, as bizarre as it sounds, is the best option not only for humanity but also for planet Earth. On the "mission" pages of both companies, this message is highlighted (figs. 40+41). Whereas

69 The idea of space colonies draws heavily on the work of aerospace engineer Gerard O'Neill who, as Craib (2022, 189) writes, "in the 1970s and 1980s, drew up elaborate plans and technical studies for the colonizing of Earth's "orbital space with city-size habitats". In the keynote, Bezos cites O'Neill as an inspiration for his space colonies.

70 The message of the video (2023) is the same as the one presented in the video (2019) and as header on the mission page of the website (and in the 2019 keynote): "Blue Origin was founded by Jeff Bezos with the vision of enabling a future where millions of people are living and working in space for the benefit of Earth. In order to preserve Earth, Blue Origin believes that humanity will need to expand, explore, find new energy and material resources, and move industries that stress Earth into space".

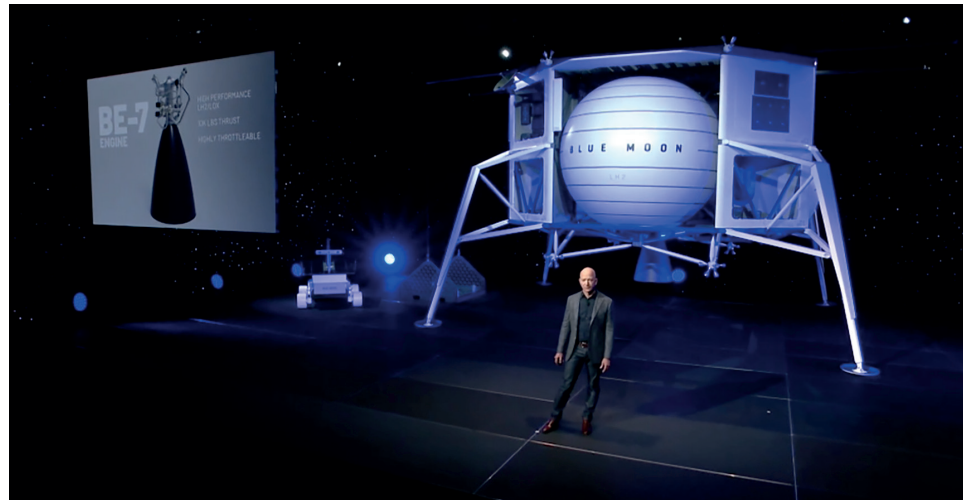


Figure 38: During his Blue Origin keynote (2019), Jeff Bezos stands on stage in front of the Blue Moon lander. Screenshot by the author.

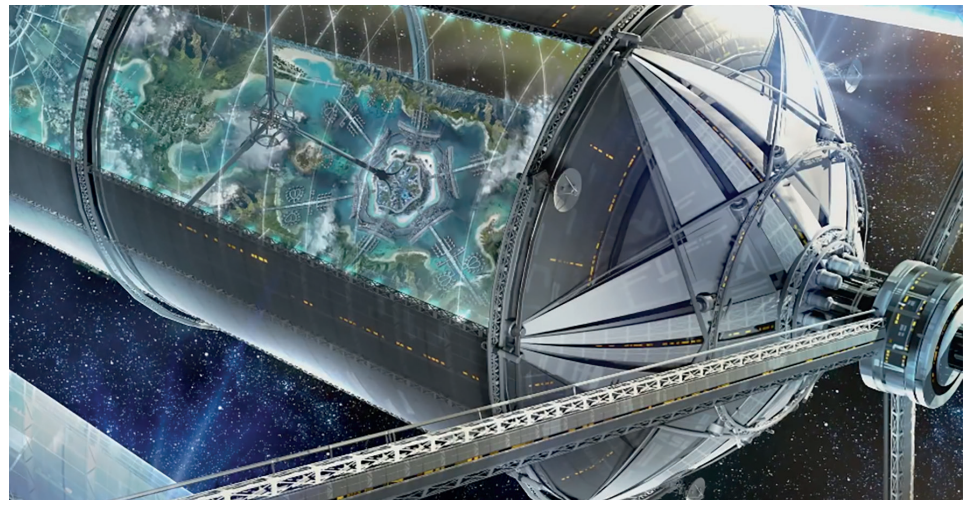


Figure 39: The Blue Origin video (2023) contains visual renderings of space colonies, the long-term vision of Jeff Bezos. Screenshot by the author.

SpaceX never mentions the climate crisis and Musk only refers to a doomsday event, Blue Origin is more explicitly promoted as a green project. In the discourse of Blue Origin, the climate crisis is clearly addressed as a rationale behind their space operations. The website of Blue Origin has a webpage dedicated to "sustainability". This page opens with the previously mentioned 9-minute video (2023), and its mission statement that Blue Origin "exists for the benefit of Earth" and is aimed at preserving Earth ("protect our home") for future generations. The webpage also introduces their efforts at developing reusable rockets and engines, greening their production chain and their non-profit "Club for the Future". The

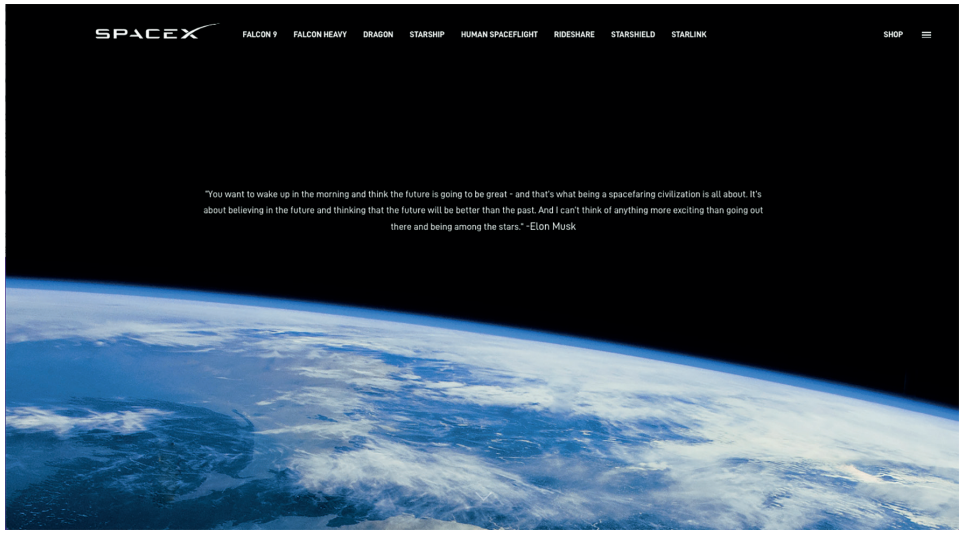


Figure 40: The "mission" page of the SpaceX website shows a quote by Elon Musk in front of a picture from space. Screenshot by the author (September 2024).

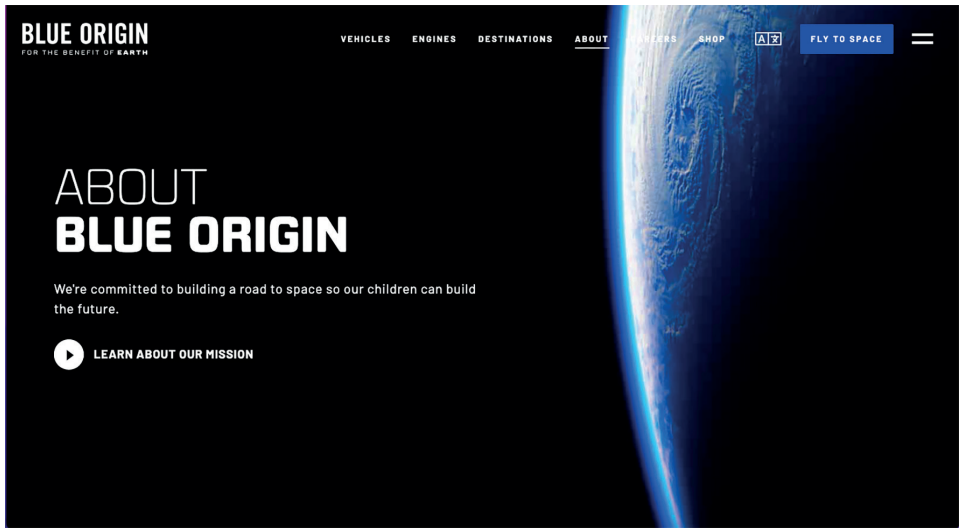


Figure 41: The "about" page of the Blue Origin website presents the company's mission to build a road to space in front of a picture from space and includes a link to the "mission" video (2019). Screenshot by the author (September 2024).

wish to continue extractivist practices, such as mining in space, is presented here as sustainable, which shows that Blue Origin implies these practices are not as harmful in space as they are on Earth.

The environmental and long-term benefits of spacefaring can only be presented as a convincing solution by materially "decoupling" these plans from the actual conditions

of Planet Earth. Spacefaring supporters see no consequences for Earth if space is exploited and industrialized, but they do see negative consequences if we would *not* embark on this future path. Spacefaring, according to the Blue Origin video, will not hurt or stress planet Earth, but relieve it of humans' impactful activities (or "rejuvenate" it, as the sustainability page states). Using vague statements combined with classic techspeak about "unlocking potentials", the company avoids discussing hard questions, possible dangers and side-effects of its projects, both now and in the future.

5.3 Strategic Vagueness: "You" Can Join Us "Soon"

In the examples from the spacefaring discourse discussed above, one word often returns: "we". "We" need to grow and innovate, so "we" need to go to space. The phrase "we" does not refer to a fixed group, which allows the companies to adjust the term to fit their narrative. In most cases, "we" refers to the company and its employees, or alternatively, to humanity as a whole. The communal "we" that Musk and Bezos use gives the impression that we all believe in and support their plans. The websites of SpaceX and Blue Origin also allude to the idea that everyone can gain access to a spaceflight on the short term, and to the outer space communities on the long term. On the Blue Origin website, the visitor is drawn to a blue button on the upper right of the page that reads "fly to space". This button directs the user to another page of the website, with a call for participants to sign up for space flights. With phrases such as "book your flight" and "reserve a seat", the page resembles a travel website, alluding to the process of booking a more mundane "Earth" journey. The background picture and the text on this Blue Origin booking page advertise that people can "purchase a window seat" (fig. 42). These simple phrasings give the impression that booking a space flight can already be done by everyone, hiding the fact that such options are highly limited and incredibly expensive. Similarly, SpaceX features a

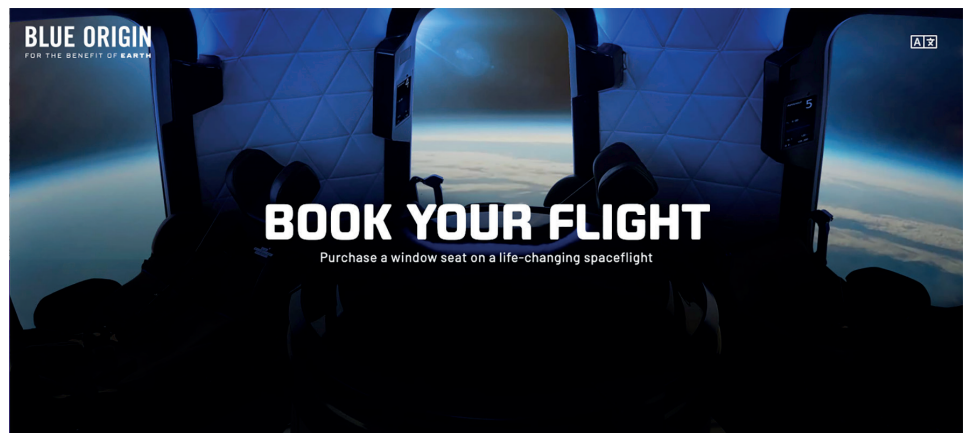


Figure 42: The Blue Origin website advertises with the option of booking a spaceflight, visualizing what one might see if they purchase a window seat on board of a Blue Origin spaceship. Screenshot by the author (September 2024).

separate webpage titled “human spaceflight”, where people can read about the different destinations and missions SpaceX is organizing and envision themselves on a spaceflight (fig. 43). These webpages and images are designed to create a feeling of awe by picturing an extraterrestrial “technological sublime” (Nye 1994). In a black-and-white graphic on the same page, SpaceX presents it destinations out to users: space station, Earth orbit, Moon and Mars. The spacefaring companies thus indicate that they are working with long-term goals, giving the impression of such a future as tangible, feasible and inclusive.

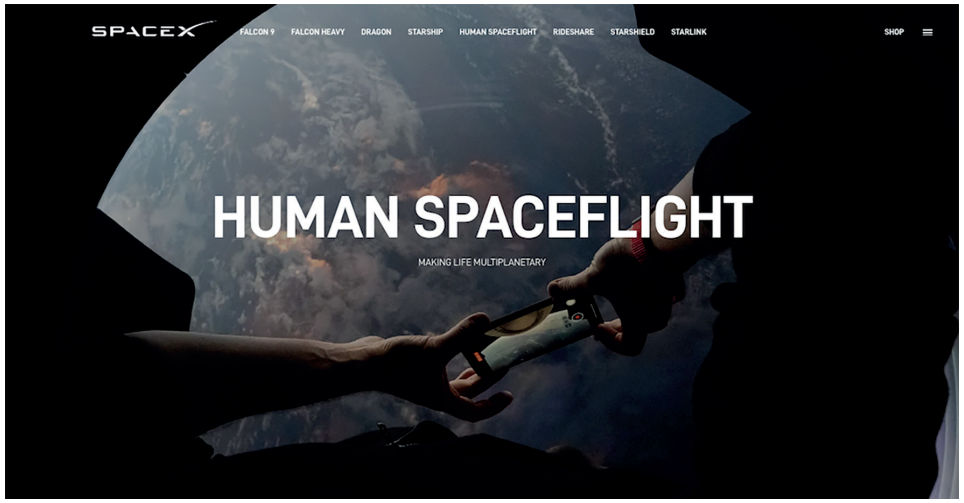


Figure 43: The SpaceX website advertises with the option of booking a spaceflight, picturing a person taking a photo through the window of a spaceship. Screenshot by the author (September 2024).

Across the promotional materials, SpaceX and Blue Origin and their CEOs promote the democratic potential of their plans while remaining vague about the ways in which the space activities they are undertaking now will help to materialize their long-term future vision. Not only the target group of SpaceX and Blue Origin remains undefined and is suggested to be much larger than it actually is, the timeline of their plans is also kept deliberately vague. Although Musk gives an idea of what people can expect to see in their lifetime of the SpaceX project, he does not exactly specify when or how humanity will become multi-planetary. Throughout his keynote presentation (2016), short-term projects like successful spaceship launches are mentioned, while the idea of a multi-planetary species is pushed to a distant future. Of course, these plans are largely science fictional, thus the use of vague statements and equally vague timelines is essential to keep the audience engaged. When, or even if, the goal of a multi-planetary civilization can ever be achieved, remains to be seen. In a later section of the keynote, Musk does present a more specific timeline. He discusses previous launches for which he can name clear dates, but “next” steps are only plotted on an abstract timeline. Similarly, the timeline on the “mission” page of the SpaceX website only celebrates and pictures past achievements. As the timeline appears on the screens behind him, Musk jokingly comments: “Timelines. I’m not the best at these sort of things”.

Another central term in the spacefaring discourse is the notion of “future generations”. In the Blue Origin video (2023), one of the speakers shares that “we have to inspire the next generation to carry this torch for the benefit of Earth”, thus imagining spacefaring as a multigenerational project. The video also shares the wonders of an ever-expanding human race: we would have even more innovators, an incredible civilization and even “a thousand Mozarts or Einsteins”. The fact that the video names these two figures as noteworthy examples, demonstrates what the ideal human subject and future for Blue Origin looks like: more (male) geniuses. With space imagined as an environment for individual exploration and greatness, Blue Origin’s statement embodies what Dickens and Ormrod (2007) call “cosmic individualism”. The vague timelines and references to future generations are part of the strategy of temporal differentiation that I have discussed in Chapter 1. Activities that happen in the present are only loosely connected to activities in the future. However, I argue, the bond between the “now” and the “not-yet”, as Goldstein (2018) calls it, is crucial. The current space economy is legitimated in spacefaring discourse through its ultimate goal, however vague, to ensure a prosperous future for humanity. In its vagueness, spacefaring discourse gives the impression that the imaginary of space and the possibilities it offers are not limited by any political, technical or environmental constraints. Instead, space is presented as an environment full of endless opportunities. Space may be difficult to conquer, but it offers great rewards.

Whereas the fluidity of the ocean is a key metaphor in the seasteading discourse, the limitlessness of outer space is a key metaphor within spacefaring discourse. In both cases, seasteading and spacefaring, the imagined environment is presented as completely decoupled from Earth. Although the spacefaring discourse is not as explicitly political as the seasteading discourse in the sense of escaping from bureaucratic governments, it presents its own form of escapism. Outer space is imagined as an environment that is outside state territory, a new frontier, and thus can be owned by whoever gets “there” first. The abundance of space and the absence of rules in the territory of outer space are seen as a possibility for exploration and exploitation.

Organizations such as the European Space Agency have critiqued SpaceX for its continuous launch of large amounts of satellites into Earth’s orbit, leading to a shortage of available radio frequencies and orbital slots, as well as large-scale pollution (Hall 2024). In response, Musk claims that there is still plenty of space for other organizations to launch satellites. In a *Financial Times* article (Waters 2021) that addresses the problem of space pollution, Musk is quoted saying: “Space is just extremely enormous, and satellites are very tiny,” [...] “This is not some situation where we’re effectively blocking others in any way. We’ve not blocked anyone from doing anything, nor do we expect to”. Even more telling is the response from space analyst Laura Forczyk: “No one owns the skies, and all are free to use them” (Waters 2021). Forczyk describes the increase in satellites as a traffic management problem, thus implicitly acknowledging that some form of regulation is necessary. At the same time, she argues that everyone is free to use space as they like, falsely portraying it as an unregulated place similar to international waters. In fact, there are several treaties, most prominently the Outer Space Treaty of 1967, designed to protect

outer space. However, these regulations are ambiguous, do support commercial exploitation and are not all signed by the US, such as the Moon Treaty (Weinzierl 2018).[71] When space travel becomes a bigger economy, more dilemmas can be expected.

5.4 Retrofuturism: "Cool" Entrepreneurship and the Celebration of Nostalgia

Because Musk and Bezos are hesitant to attach dates or timelines to their projects, the keynotes and websites remain vague, relying on flashy visuals to keep the audience interested. The visuals shown in the keynotes and on the websites are all carefully designed. This is a remarkable difference between the space exploration and the seasteading discourse. Although seasteading texts include images with the same futuristic, smooth aesthetic, the space discourse offers more professional and often moving images. The videos offer seductive artist impressions of a space journey, paired with a soundtrack in the style of science fiction movies. Halfway through his keynote (2016), Musk, for example, shows a short trailer of what a journey to Mars might look like. The images are designed in warm and pastel tones, showing an idealized trip of traveling to outer space. The moving images are dreamy and glossy, directly and indirectly taking inspiration from films such as Kubrick's *2001: A Space Odyssey* (1968). The audience of Musk's keynote responds to the video with a long applause. Similarly, Bezos' keynote (2019) includes artist impressions to show what space shuttle communities might look like. These images, also included in the Blue Origin video (2023), show highly speculative space colonies that look futuristic and retro at the same time. They combine high-tech infrastructures with low-tech farms or contrast the futuristic architecture of a spaceship with the down-to-earthness of deer, trees and waterfalls (fig. 44).

The images portray romantic visions of a future, designed to evoke a sense of awe amongst the audience and a realization that they are witnessing something cool and hopeful. Both Bezos and Musk draw extensively on science-fiction narratives, such as Star Trek (Little and Winch 2021).[72] This is mostly notable in the case of Elon Musk, who regularly names the books that most inspired his work: such as Douglas Adams' *Hitchhikers Guide to the Galaxy* (1979) and Isaac Asimov's *Foundation* trilogy (1951-1953). Musk is often

71 Weinzierl (2018) writes the following about space regulation: "The 1967 Outer Space Treaty, which continues to be the main framework for international cooperation, strikes an ambiguous middle ground on the development and use of resources in space. It encourages—but does not require—cooperation on responsible use. An attempt by some nations to put in place a more restrictive agreement, the 1979 Moon Treaty, has not been signed by any spacefaring nation. The resulting ambivalence over property rights in space has had no real effects for decades. But with the rise of commercial space, choosing a regulatory approach to property rights has taken on new urgency. The United States upset the regulatory status quo—and facilitated the growth of asteroid mining companies—by passing the Commercial Space Launch Competitiveness Act in 2015, a law that grants property rights to the resources on a planetary body (though not to the body itself) to whoever 'gets there first'. The law's treatment of property rights reflects the principle that the first actor to utilize a resource earns the right, as the law says, 'to possess, own, transport, use, and sell'" (189).

72 Bezos reinforced the relation between science and fiction when he invited the actor William Shatner (who played Captain Kirk in *Star Trek*), to be part of a short trip to space (Andersen 2022).

Figure 44: The Blue Origin video (2023) shows artistic renderings of space colonies, visualizing both natural and urban environments, including wildlife.

criticized for not really understanding the sci-fi he takes inspiration from, as he molds it to fit his own financial interests. Critics such as historian Jill Lepore (2021) have argued that Musk appropriates dystopian fiction into his utopian vision on an extraterrestrial future, but in fact politically opposes the fiction he is inspired by.

The futuristic, yet nostalgic visualizations of spaceships that are presented as the perfect environment for future cities, national parks or agricultural businesses, are a form of mythmaking. As such, they are more than just utopian, escapist dreams. Spacefaring discourse contains forms of mythmaking that offer a particular understanding of the past, present and future. It combines a nostalgia for a time of American imperialism with a dream of accelerating innovation. The plans of Blue Origin and SpaceX are deliberately presented as a new stage in the American project to build a "better" world. The Blue Origin videos (2019, 2023), for example, state that "we" need to go back to the Moon, drawing a straight parallel from the Apollo mission to the company's efforts. Similarly, the 2023 video deploys a nostalgia towards an older, imaginary idea of nature: the Earth should "return" to being a garden. These nostalgic elements create a sense of retrofuturism that, I argue, is key to understanding ecomodernist ideology. As a form of whole-systems thinking, the Blue Origin narrative imagines an Earth that can return to a stable, harmonious state if human prosperity is successfully decoupled from it. To strengthen this message, the discourse is full of pictures of the Earth taken from space.

The utopian elements of SpaceX and Blue Origin, for an important part brought forward through their imagery, promote the message that spacefaring is a "cool" business. When Bezos explained why he imagined a future with space colonies, he said: "The problem with other planets ... people will visit Mars, and we will settle Mars, and people should because it's cool, but for heavy industry, I would actually put it in space" (Kulwin

2016). Bezos imagines Mars as a location that should be colonized because it is possible and would be "cool", but he sees more actual use in focusing on outer space itself. Across the discourse, coolness is offered as an argument to draw audiences in and promote a future that heavily leans on technological innovation. As Thomas Frank (1997) argues in his book *The Conquest of Cool*, businesses have a long history of appropriating coolness within consumer culture. Such a framing fits the persona of the celebrity entrepreneur, who works on realizing daring plans that others have not even dreamed of, within the context of the free market.

5.5 Critique

Space has played an important role in the collective imagination of North Americans from the 1960s onwards. In a time where the climate crisis confronts us with uncomfortable future scenarios, the infinity of space has sparked science fiction writers, directors, and tech CEOs to explore new future visions. The visions by Blue Origin and SpaceX might seem impressive at first glance, but they brush over many uncertainties about the feasibility of creating extraterrestrial communities or moving industries to space. The discourse leaves many questions unanswered about how such a future would be achieved and what these new industries or communities would look like. But a more pressing question in relation to the climate crisis is: what are the risks and consequences of space exploration? In the final part of this section, I offer two critiques on the basis of my analysis so far.

First of all: spacefaring, like seasteading, does not, in any way, offer an adequate response to the climate crisis. The idea that spacefaring is a sincere and useful response to the climate crisis, or any doomsday event, is an illusion. As Andersen (2022) writes, presenting such exit projects as a response to climate crisis provides billionaire CEOs like Musk and Bezos with an alibi. It is in fact a way of legitimizing the profits they have made elsewhere. The spacefaring projects suggest that they care deeply about the future of the planet and the lives of other beings. Instead, the projects offer new opportunities to develop and sell technological products and, at best, offer a range of exit options for themselves and those who can afford it. If a concrete sustainable solution is ever suggested, it is as part of a pro-growth economic discourse that stresses for example that reusable rockets are cheaper and therefore allow for more growth in the space economy, or that the possibilities for mining materials are endless. As space exploration is immensely costly, SpaceX and Blue Origin can only lengthen the distance of missions and increase their frequency if they can reuse elements of or entire spaceships. For both Musk and Bezos, these projects help them to strengthen their position as a network entrepreneur and diversify their business portfolio. Spacefaring is presented as an exit project in the case of disaster, but it is primarily, I argue, a counterproductive solution that may actually bring the earth closer to an ecological collapse.

Secondly, while the spacefaring discourse claims to address all of humanity, more than the seasteading discourse does, it intensifies and overwrites existing inequalities. With the far-fetched futures that are laid out in spacefaring discourse, the audience is asked to take part in something that will not materialize soon – if ever. Mary-Jane Rubenstein (2022) describes the religious elements within the spacefaring economy and

its discourses. She understands it as a new expression of the long-living interconnections between Christianity, capitalism and imperialism. Spacefaring discourse separates the believers from the non-believers, which makes for example fans of Musk, the "musketeers", believers of a religion that he preaches. Rubenstein (2022, 5) writes: "although few of these Musketeers would describe themselves as religious, they have bought into a classic myth of disaster and salvation delivered by a self-appointed savior". Spacefaring is thus not only an imperialist project, but also a semi-religious one. Both Musk and Bezos have stressed that the economic development of humanity, or at least that of the United States, cannot and should not be hampered. Although the seasteading discourse is more libertarian, both discourses celebrate a form of individualism and a certain ideal of the good life – meaning the ability to design life after one's own interest. The emphasis on personal freedom perfectly aligns with Silicon Valley's ecomodernist ideology, stressing that growth is good and sustainable as long as it is decoupled from environmental impact. By unlocking limitless energy, resources and new atmospheres where homesteads can be built, either at sea or in space, the problem is solved. However, in no way do these plans or discourse present any real answer to the loss of biodiversity, rising temperatures, extreme weather conditions, or any of the other climate disasters that have occurred and will occur in the future.

To conclude this section: as the commercial space industry is still in an early stage, SpaceX and Blue Origin have the ability to shape the future-of-humanity narrative after their own interests. Space projects offer Musk and Bezos a way to create a strong legacy in terms of technological achievements. The only future that they want to work on, is one in which humans expand their reach into outer space and explore the ways in which humanity can "decouple" its future existence from planet Earth. To what extent their dreams or goals are realistic does not seem to matter yet: what is important is that the horizon they sketch provides legitimacy to their current economic practices. Blue Origin – the name that refers to Earth as the blue planet – harnesses the climate crisis more strongly than SpaceX to secure its legitimation, but both predominantly dream of new technological achievements and projects that are simply "cool". Spacefaring thus forms what Peter Dickens and James S. Ormrod (2007) in reference to David Harvey call the "outer spatial fix"; an opportunity for capitalism to further expand and strengthen its position. Such a fix relies on "the increasing commodification and privatization of the commons, and the increasing compression of time and space by new technology" (Dickens and Ormrod 2007, 58). As I have shown, these strategies are reflected in the plans and actions of the two companies.

One last issue I want to emphasize is the exclusionary nature of these exit projects. The constant referral to a unified humanity allows the companies to ignore the highly unequal living conditions of humans and the risk they run in the case of climate disasters.

6. THE CLIMATE CRISIS AS THE ULTIMATE DESIGN CHALLENGE

The seasteading and spacefaring projects I have analyzed above are mostly fantastical and speculative projects imagining long-term futures, that are in fact neither attainable nor sustainable. At least not yet, and presumably never. Compared to the case studies I analyzed in Chapter 1, these initiatives are not so much tied to the major tech companies of Silicon Valley but rather illuminate the personal projects of Silicon Valley actors and their long-term visions and investments. The differences between these and other initiatives reveal the diversity of ideas and projects emerging in tech-on-climate discourse, ranging from small-scale recycling initiatives to large-scale worldbuilding efforts. As it is the goal of this dissertation to understand the environmental ideology of Silicon Valley as a cultural project, exit projects are important in revealing some of the longstanding dreams and desires expressed by its prominent actors. In this section, I highlight three key elements of mythmaking that further help to grasp the project of "Platform Earth" and its ecomodernist ideology: 1) design thinking, 2) frontierism and 3) retrofuturism.

6.1 Disenchantment and Design Thinking

The future-facing and speculative characteristics of exit projects demonstrate, I argue, how the climate crisis is ultimately seen as a challenge that can be fixed with Silicon Valley's modus operandi: design thinking. The concept of design thinking describes the articulation and framing of problems and solutions that has become the central focus of the tech industry (Daub 2020).[73] The prevalence of design thinking illustrates that Silicon Valley is not merely a tech industry but has always been a business sector in which new designs, lifestyles, hopes and dreams are packaged and repackaged. While technological innovations, datafication and infrastructures are crucial in Silicon Valley, tech companies also sell visions and promises how innovation can change the life of a user, as I have argued with my colleague Nuno Atalaia (Atalaia and Riemens 2023).

Design thinking is described by Lilly Irani (2018) as a corporate, cultural shift from the economical to the mythical; it marks a change in focus in the American sector from developing new technologies to locating new markets and developing new concepts. Design thinking thus describes Silicon Valley's focus on the affective dimensions of products and "promises to make innovation continuous and replicable" and thus profitable (Irani 2018, 3). Over time, design thinking has become a technical expertise that North American companies have foregrounded to hierarchically position themselves in relation to upcoming Asian companies and designers. For Irani, design thinking thus represents a racialized and gendered understanding of what counts as "creativity" and who gets to engage in it. By drawing attention to design thinking as a valuable but mythical practice, other forms of (technical) expertise and other crucial parts of the production chain are rendered invisible and devalued, as well as the laborers involved in it. Emily K. Crandall et al. (2021) use the

73 For a broader, historical discussion of the concept of design thinking and its ties to California's Stanford University, see for example Auernhammer and Roth (2021).

concept of "enchantment" to refer to this process. They argue that Silicon Valley and its culture of "tech-bro masculinity" create an image of a technical utopia that aims to resolve the disenchantment with the modern world. For these authors, the mythical understanding of Silicon Valley hides the exploitative forms of labor and extraction that fuel the industry. In my view, the envisioned homesteading, seasteading and spacefaring communities similarly create a myth about the long-term future that can enchant those who fear their ways of life are threatened by climate change. Building on Irani (2018) and Crandall et al. (2021), I understand Silicon Valley's pioneering and innovative "spirit" as a strategic discursive framing that obscures underlying racial, gendered and colonial hierarchies. The public discourse of tech companies confirms this hierarchy: the workforce and working conditions of the companies show a very partial idea of who is "celebrated" as an employee, potential user or citizen.

I argue that exit projects play a pivotal role in the mythmaking of Silicon Valley as an industry of design thinkers. The seasteading and spacefaring projects demonstrate how the actors do not shy away from thinking through wicked problems and developing equally wicked solutions. However, the problem is that seeing the climate crisis as a design challenge builds upon a very particular, limited idea of what that crisis entails. With design thinking, the climate crisis becomes part of a rationale to promote certain future investments and projects, without truly offering a solution to that crisis. Such critiques are dismissed by the celebration of the innovative, daring and creative qualities of tech billionaires. I claim that the enchantment with such futures and figures is problematic in several ways: for its legitimation of "engineering territory" and for its singular understanding of the human subject.

6.2 The Frontier Spirit and Technocolonialism

In a spatial sense, these projects are new forms of territorialization that add to the complexity of "big data ecologies", the term Mél Hogan (2018) uses to critique the relation between land, earthly materials, and the tech sector. By presenting their operations in relation to the environmental crisis, tech companies position themselves as best equipped to manage natural resources and land. Exit projects allow tech individuals to territorialize new terrains and to make outer space or oceans part of their big data ecologies. By expanding into these new territories, exit projects claim to offer a solution to the limited availability of finite resources, thus presenting a solution for a problem Silicon Valley has partially caused. This solution does not require them to alter their business operations, but rather allows them to intensify these.

I am hesitant to use the term "colonialism" with regard to the operations of tech companies, as the concept runs the risk of becoming a metaphor that does not do justice to the complexities and atrocities of historical forms of colonialism (Tuck and Yang 2012). However, I do agree with Mirca Madianou (2019, 2022) and Nick Couldry and Ulises Mejias (2019) that there *is* a form of technocolonialism that intersects with and overwrites older practices of colonialism. Through the term colonialism, it becomes apparent that the imperialist practices of tech companies should be understood in relation to historical forms of

colonialism. As Rosi Braidotti critically writes in *Posthuman Feminism* (2022):

> If this scenario looks familiar, it is because it is a blatant repetition of imperial expansion. In their eagerness for the future, this system is destructive of the present. It also offers grim prospects for the Indigenous population, who will be the most affected by this irrational refusal to renounce extractive economic 'growth'. All living entities will ultimately be affected by the self-destructive nature of this neo-colonial capitalist economic order. (234)

As seasteading and spacefaring offer new forms of "homesteading", they perpetuate the "frontier mythology" of US history. In this sense, the historical figure of the cowboy can be compared to the contemporary "cosmic" cowboy. As Little and Winch (2021, 87) write: "Frontier mythology glosses over the violence of settler colonialism and organises itself around the American identity of the gritty and resourceful pioneer, as well as a specific imaginary of the colonial household". They name Bezos as the example of a frontier mythologist, a perceived patriarch of the Amazon "state", who actively affiliates himself with the cowboy aesthetic, and who belongs to the top 25 landowners of the US. Bezos, Musk and Thiel all manifest a paternalistic attitude prioritizing their powerful position and land ownership above the interests of their employees, or original landowners. Exit projects provide a particular aesthetic and value to the overarching persona of the celebrity entrepreneur. These riskier endeavors might require a balancing act between the pragmatic, trustworthy entrepreneur and the risk-taking, imaginative qualities of the cosmic cowboy, but they can also reinforce and re-invigorate one another. Both convey the message that societies and states are not able to "manage" nature successfully and save us from climate change or keep up with the "inevitable" progress that technological innovations "unlock". Their proposals therefore aim to design new societies after the model of successful companies and their digital platforms. Even "California Forever", the least radical plan of the three, presumes that Silicon Valley entrepreneurs are best capable of designing the ideal city. As such, exit projects present an example of libertarian political ideals, in which their inventors distance themselves from the governments they despise, even though the US government is "perhaps its greatest, venture capitalist" (O'Mara 2019, 15).

6.3 The Politics and Aesthetics of Retrofuturism and Longtermism

The aesthetics of spacefaring and seasteading discourse create a vision of a new "Atlantis", through a combination of nostalgic and futuristic elements. As I have shown above, the influences from science fiction are clearly visible and acknowledged. Bezos draws inspiration from the Star Trek franchise, whereas Thiel is a known Star Wars fan and Musk is a fan of the writings of Azimov (Little and Winch 2021). Although the exit projects I have discussed here are not purely (science) fictional, they do share with science fiction the construction of "imaginary empires" within capitalist societies (Hassler-Forest 2016). The promotional materials studied in this chapter provide an insight into how imperialist exit projects rely on convincing practices of "worldbuilding". Worldbuilding, understood as the ability to create a compelling fictional universe, is a form of mythmaking and design

thinking that brings a future far removed from current everyday life to the realm of the imaginable. As I have discussed in this chapter, exit projects construct the myth that all of humanity can be saved from ecological collapse through spacefaring or that one can live in meticulously designed, highly competitive start-up societies through seasteads. To convey this future, the discourse relies heavily on images that visualize space travel or life at sea. Both aesthetically and politically, exit projects recall idealized versions of the past: to return earth into a garden of Eden, to reinforce the dominance of the patriarchal figure, or to return to the early days of the American empire.

The retrofuturistic aesthetic is soothing; it is smooth, simple and is intended to evoke a sense of the technological sublime (Nye 1994). Those who immerse themselves in the future of spacefaring or seasteading are served a utopian vision in which hard questions are avoided. The new plans are spatially and temporally separated from the status quo of today's society or the state of nature. Although a company like Blue Origin does acknowledge that we need a short-term plan to deal with climate change, it also argues we should think about the long-term. This argument is often made by those who believe in "longtermism": a type of thinking that argues it is morally just to focus most attention on the long-term future (Samuel 2022). Whereas Musk is often linked to this movement, all plans discussed in this chapter are concerned with safeguarding a long-term future for Silicon Valley and a certain way of life, presenting this as the most "rational" approach. The long-term focus serves as a rhetorical strategy to not deal with current issues or implement short-term solutions. Longtermism is a concept that is tied to transhumanism, an ideology that became popular in Silicon Valley in the 1990s (Gebru and Torres 2024). Celebrating human exceptionalism, neoliberalism and techno-optimism, transhumanists are concerned with securing "the transmission of humanity's potential over the long term" (Taillandier 2021, 346). Seasteading and spacefaring initiatives are prime examples of this school of thought.

Perhaps the type of futuring that Silicon Valley engages in is best understood with another "ism": "accelerationism".[74] As Rosi Braidotti (2022, 230) writes, "Delirious accelerationism designates the biotechnological drive to control and reinvent living forms beyond the terms set by the naturalized order of Western colonialist modernity". She discusses corporate space exploration as a way to design futurities that can sustain contemporary capitalism. In the dreams of spacefaring, we see the ideals of longtermism, accelerationism and transhumanism coming to fruition. Braidotti defines transhumanism as a project that "believes in the fusion of human consciousness with computational networks" (61). Braidotti writes:

> While preaching moral universalism the transhumanists pursue self-interest and implement the profit motives of advanced capitalism. In so doing they stipulate the dominant formula of transhumanist ethos: it is analytically post-anthropocentric, in that it confirms the decentring of the human by technology, but normatively, it reinstates the individual as holder

74 See the article by Gebru & Torres (2024) in which the authors discuss these ideological strands as part of a bundle they call "TESCREAL".

> of neo-humanistic ethical values, and politically it is aligned with economic neoliberalism. (2022, 61-62)

Following Braidotti, I can identify how the transhumanist and ecomodernist ideology in the discourse of exit projects follows a formula. It combines an *analytical* acknowledgement of interconnections, ecosystems and climate catastrophe with a *normative* ideal of the human subject as an enlightened being that oversees and rules the ecosystems he is part of. This is an ideal human figure modeled after the network entrepreneur that employs methods of design thinking to sustain and expand his empire. This formula demonstrates how exit projects serve as a fruitful analytical lens to better understand the overarching modus operandi of Silicon Valley actors.

7. CONCLUSION: REBOOTING THE AMERICAN DREAM

In this chapter I have introduced exit projects that are presented as a way out of ecological collapse. Instead of making a meaningful contribution to how the climate crisis urges us to re-organize everyday life and global economies, several Silicon Valley actors prefer to look elsewhere. Their exit projects vary in terms of the timelines they propose, their focus on digital and or physical space, their wish for political independence and the extent to which they are focused on climate-related issues. But as my analysis shows, they employ similar strategies of mythmaking to sketch hopeful climate futures and imagine communities designed after their own liking.

To conclude, I return to the question I started this chapter with, regarding the visions on the future of humanity in times of climate crisis that can be found in expansionist and escapist plans. These plans envision starting anew and expanding the reach of the tech culture of Silicon Valley as the best if not only way forward. This form of "futuring" is grounded in the cultural history of the United States: it presents a nostalgic vision of "rebooting" the American dream. Such a plan is, I claim, the culmination of the cybernetic-ecosystem dream (Hogan 2018) and whole-systems thinking that, as I discussed in Chapter 2, arose in tech-culture in the 20th century. The controlled ecosystem of a new city, a seastead or a space colony would be one that is, ideally, completely "decoupled" from current societies and systems.

Through their promotional materials, the seasteading and spacefaring movements present their future communities and economies as more inclusive, safe, sustainable and desirable than current ones. My analysis addresses a number of framing strategies through which the promotional materials "sell" their message: they present their plans as the only way forward and as inclusive and pragmatic projects, promising ultimate freedom to those who embark on their seasteads or spaceships. This vision is partially futuristic, bringing a long-term vision into the "now", but it is equally nostalgic, recalling science fictional forms of worldbuilding and the American narrative of reaching new frontiers. Most importantly, the exit projects expose the expansionist and colonial spirit of Silicon Valley actors. Their initiators proudly present new examples of American frontierism and the wish to conquer "empty" spaces that have not yet been upgraded to the technolandscapes Silicon Valley dreams of.

But, I argue, rather than outlining a vision of what a different society could look like, these plans primarily express discomfort about current societies. As Peder Anker (2005, 240) writes in his historical analysis of space colonization: "space colonies came to represent rational, orderly, and wise management, in contrast to the irrational, disorderly, and ill-managed Earth". Following Anker's argument, exit projects are proposed as solutions to ecological collapse in case the Earth and its complex ecosystems cannot be "tamed". At the same time, the plans envision ideal forms of government, extrapolating the spirit of Silicon Valley and the rules from its playbook to new spaces, economies and discourses. And with their image of an ideal type of government, comes an ideal type of the self-sufficient, entrepreneurial citizen-user.

In light of the climate crisis, exit projects can be understood as extreme attempts by these companies to reassure the public that there is a hopeful future possible. Despite their optimism about the future, I argue, however, the boldness of these plans in fact evokes an unsettling feeling as it demonstrates the tenacious expansion drift with which these actors lay claims on spaces and resources. The exit projects show that their trust in technological innovation has no limitations and that these actors do not (wish to) oversee any consequences of their radical plans. Even if they admit they are unsure what the future might look like, they propagate that technological developments will accelerate progress and bring about a harmonious world. In this sense, these projects reflect the utopian and transhumanist spirit that has been a part of Silicon Valley ideology since the rise of the internet in the 1990s.

I introduced "California Forever" as the name of the project that aims to reboot the American dream by building a new city designed in line with the Silicon Valley ethos. But theoretically, the phrase aptly describes the growth mindset of Silicon Valley and its wish to design a legacy for the entrepreneurial community. In fact, "California Forever" could be the motto of the myth of "Platform Earth" that this dissertation studies. The various exit projects, I claim, serve as a model to understand the broader efforts of worldbuilding Silicon Valley engages in through processes of platformization and the promotion of its "modus operandi" of design thinking.

The case studies I have discussed in this chapter demonstrate that platformization is not only a technological and economic but also a cultural process. In worldbuilding and escapist discourse, tech entrepreneurs create visions about better futures by reproducing longstanding myths and desires about individual freedom, conquering new frontiers and, in a twisted way, saving our "blue origin", Planet Earth. What makes it so unsettling is the fact that these plans are presented as climate solutions. In light of the climate crisis, Silicon Valley entrepreneurs use the argument of resilience to "sell" their plans to build new communities or economies, that are in fact, very unsustainable. The vision is that expansion is our way out or should at least be considered as such.

The promotional materials of worldbuilding plans are designed to legitimize and sustain the current economy of platform capitalism and green growth: a future that offers

more of the same, and not something radically different. While the future visions they sketch might not be for everyone (and cannot be), on the short term they present a way of expanding the economic influence of the founders. Especially spacefaring presents concrete economic opportunities: to organize and control the infrastructures for space mining, space tourism, or space research. Scientists are pointing to the risks of the privatization of space; problems such as space pollution and increased carbon emissions, potentially damaging the Ozon layer, are already materializing (Hall 2024). If we peel away the novelty of the seasteading and spacefaring plans, what emerges is a longstanding, problematic North American dream of expansion by pioneering and venturing into “unregulated” spaces, from cyberspace to outer space.

The next chapter provides a fourth perspective on the modus operandi of tech entrepreneurs by focusing on philanthropical projects as forms of worldbuilding and design thinking. These charitable plans reveal how tech entrepreneurs present themselves as concerned world citizens, but also provide a glimpse into the future of green platform capitalism.

CHAPTER 4

Platform Earth as Political Horizon: Expressions of Ecomodernism in Tech-for-Good Discourse

The problems we face require all hands on-deck. Philanthropy has a crucial role to play in providing effective flexible funds and risk-taking capacity, and in bringing independent expertise to the design of solutions.

- Bezos Earth Fund, “Who we are”

1. INTRODUCTION: FROM COSMIC COWBOYS TO CARBON COWBOYS

In November 2021, Jeff Bezos took the stage during the 26th UN Climate Change Conference (COP26) in Glasgow to declare that his spacefaring company Blue Origin was not a distraction from, but a driving force behind his efforts to battle climate change. Bezos shared: “I was told that seeing the Earth from space changes the lens from which you view the world, but I was not prepared for just how much that would be true” (BBC 2021). During his keynote, Bezos pledged that he would, as soon as possible, spend two billion US dollars on climate innovations and the restoration of nature, and a total amount of 10 billion in a period of ten years (fig. 45). He will do so through the Bezos Earth Fund, the foundation he started in February 2020. As has now become a returning observation in my analysis of tech-on-climate discourse, the Bezos Earth Fund announces its goals with sweeping statements about “combatting the climate crisis” and claims to be “the largest philanthropic commitment ever to fight climate change and protect nature” (“Our Journey” webpage). To promote his fund, Bezos shares grand visions of what he believes a better future would look like, promising large sums of money for an equally large range of solutions. His public appearance as a green philanthropist allows Bezos to demonstrate a new side of himself. With his Bezos Earth Fund and appearance at COP26, Bezos positions himself not as a tech CEO or space explorer, but as a caring, grounded individual and a political actor who is concerned about the climate crisis. To strengthen this new image, Bezos emphasizes that the fund is a family affair: his partner Lauren Sánchez is vice chair of the fund. A testimony to his personalized approach is the picture published on the “Our Journey” page of the Bezos Earth Fund, which exemplifies the on-the-ground involvement of Bezos and Sánchez (fig. 46). Such personal, leisurely representations of Bezos at media events, in website blogs and videos allow him to manifest himself as a “paternal statesman”: a philanthropist and activist whose actions are designed to benefit his “household” Earth (Little and Winch 2021, 123). While Amazon has been extensively criticized for its underperforming sustainability efforts and nonbinding Climate Pledge, Bezos develops a new story about himself as a risk-taking, innovative and caring environmentalist.

Figure 45: Jeff Bezos speaks at the United Nations Climate Change Conference, COP26. This footage is part of the “Let’s Stand Together to Protect Our World | Bezos Earth Fund” video (2023). Screenshot by the author.

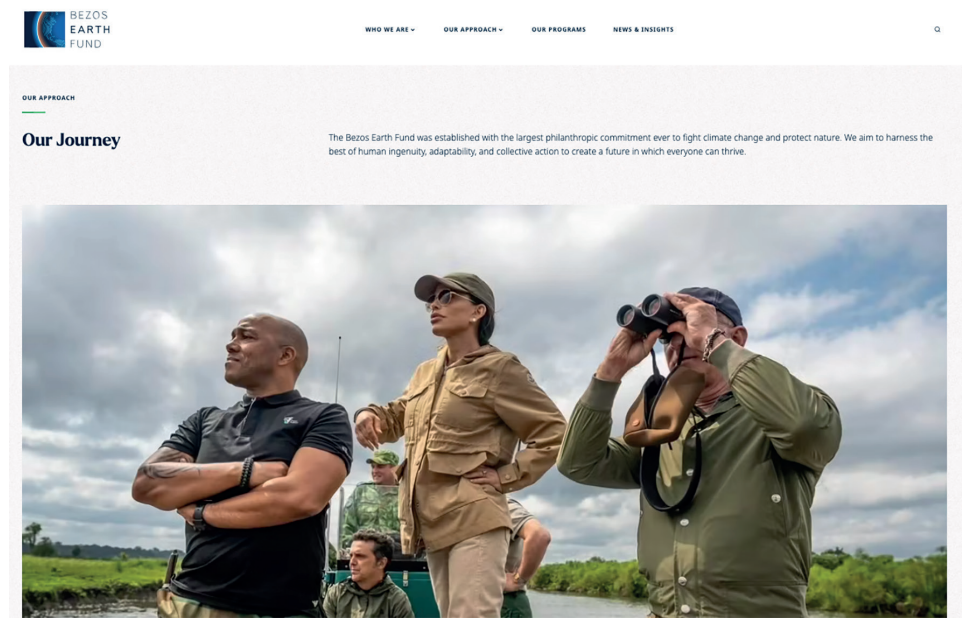


Figure 46: The “Our Journey” page of the Bezos Earth Fund pictures Lauren Sánchez (middle) and Jeff Bezos (right) on an excursion. Screenshot by the author (September 2024).

This chapter looks at charitable organizations, understood as institutionalized forms of CEO activism, to better understand the humanitarian positions of Bezos and other Silicon Valley billionaires. I particularly focus on three case studies related to three prominent Silicon Valley tech actors: Bill Gates and the Gates Foundation (founded in 2000), Mark Zuckerberg and the Chan Zuckerberg Initiative (founded in 2015) and Jeff Bezos and the Bezos Earth Fund (founded in 2020). I focus on these three philanthropies primarily because they are initiated by three of the most prominent and wealthy (tech) billionaires, but also because they have developed promotional materials (websites, videos) through which they publicly position their funds in the philanthropic landscape and share their missions. Other tech billionaires such as Google CEO Sundar Pichai and Elon Musk also engage in philanthropy, but the former does it through the Google organization (not on a personal title) and the latter does not report on the activities of his fund, the Musk Foundation. I call this particular form of tech discourse "tech-for-good discourse".

Tech-for-good discourse offers a new perspective on the role of Silicon Valley in the climate crisis by focusing on the individuals who have used philanthropical organizations to present themselves more freely as wealthy individuals who want to "do good" in the world. The focus on these figures provides new insight into the influential position of Silicon Valley and its genre of ecomodernism in the global field of politics and policy. As individuals, these actors participate in global debates on humanitarian issues. Their philanthropic work points to yet another dimension of the networked forms of power, enabled by a culture of interdisciplinary entrepreneurship (Turner and Larson 2015). Building on existing work on philanthropy and entrepreneurial culture, I will analyze how actors within the Silicon Valley network share a vision of a greener and more equal future and to what extent this "networked vision" shapes climate debates. Although their philanthropic activities are presented separately from business endeavors, I will claim that such a distinction cannot be maintained.[75] Tech-for-good initiatives are a core element of how tech entrepreneurs expand their cultural and economic power. The research on and development of geoengineering solutions, for example, is largely funded by nonprofit organizations that are partially owned or backed by tech entrepreneurs (Temple 2024).

In the previous chapter I have shown that seasteading and spacefaring projects represent a future and a way of life that are physically or politically *decoupled* from current societies. In contrast, the philanthropic projects I study in this chapter present ways for these same individuals to *couple* themselves to society and societal issues. As the Bezos Earth Fund illustrates, the narrative here is that through the right forms of action, the right donations and the right projects, societal issues including the climate crisis *can* be solved. Yet, I will argue that although tech-for-good discourse appears as a form of engagement that "couples" Silicon Valley to the world, it perpetuates the process of decoupling I have identified in previous chapters.

75 This distinction is especially blurry in the case of the Chan Zuckerberg Initiative, which, as I explain later in the chapter, calls itself a philanthropic organization but is legally set up as a for-profit, limited liability company (LLC). An LLC has different regulations in the US than a nonprofit organization, for example in terms of paying taxes and disclosing information (Philanthropy Roundtable 2021).

The philanthropies of Jeff Bezos, Mark Zuckerberg and Bill Gates address all kinds of humanitarian causes and, as I will show, battling the consequences of climate change is for some a primary and for others an increasingly prominent interest. Next to political discussions on technology and innovation, climate debates are a new way for the representatives of Silicon Valley to enter the global political arena. At climate conferences such as the UN Conference of the Parties, foundations form a significant segment of the participants engaging in climate negotiations (Morena 2017). At COP26, for example, Bezos was not the only tech billionaire present: Bill Gates and president of the EU commission Ursula von der Leyen announced a partnership in climate technologies between his Breakthrough Energy Catalyst initiative and the European Investment Bank (European Commission 2021). The announcement of the partnership forms a noteworthy moment in which Silicon Valley and the EU, representing two very different institutions, ideologies and discourses, proposed a joint approach to the climate crisis. In the video (2021) announcing the collaboration, Von der Leyen claims that taking climate action is not a challenge, but a great opportunity, and that together with Breakthrough Energy the European Commission can "accelerate the promises of green tech solutions". Bill Gates adds that the collaboration will help to build new global industries that could even prevent the climate crisis.

To understand this wider political and economic context, I first analyze materials published by the Chan Zuckerberg Initiative, Bezos Earth Fund and the Gates Foundation. I then include an analysis of a text that lays out a vision for a prosperous climate future in more detail and thus allows me to contextualize philanthropic projects and their ecomodernist ideology. This is the book *How to Avoid a Climate Disaster: The Solutions We Have and the Breakthroughs We Need* (2021) by Bill Gates. In the video with Von der Leyen, this book is strategically positioned behind Gates in the frame, as a symbol of his climate engagement (fig. 47). Through this twofold approach, I will scrutinize the political dimensions of tech-on-climate discourse and further develop my ideological critique on the worldview of "Platform Earth" and its determination towards apolitical, rational and financially motivated climate solutions.

In the light of this conflation of politics, philanthropy and corporate interest, I ask the following question: *how do Silicon Valley billionaires position themselves in environmental and geopolitical debates through their tech-for-good discourse?* I aim to develop a closer understanding of the worldview expressed through (green) philanthropy, and of the personas of tech CEOs who want to exemplify their good intentions and righteousness. They do so by investing in projects that may not immediately benefit their own companies, but often do so indirectly. Based on an analysis of philanthropic projects and personas, I expand my critique of ecomodernist ideology as it recasts itself as corporate CEO activism. I will argue that corporate CEO activism conveys a narrative of tech figures as political actors, ethical business partners and environmental crusaders, thus further promoting the technocratic approach to climate crisis solutions I have highlighted throughout this dissertation. Despite the aura of political neutrality, Silicon Valley actors have high stakes in the promotion of certain climate solutions over others. Philanthropy offers them a lucrative outlet to forward these ideas and create financial, technological and social infrastructures that serve Silicon Valley's brand of green capitalism.

Figure 47: In the video (2021) announcing the collaboration between the European Commission and Breakthrough Energy, Gates's climate book is carefully positioned behind him. Screenshot by the author.

The chapter uses the following methodological approach. I perform a close analysis of the websites of the Chan Zuckerberg Initiative, the Bezos Earth Fund and the Gates Foundation with a focus on statements about their mission, vision and approach. I also analyze the projects and blogposts in which these organizations crystallize their expectations of technology for good in general and the climate crisis more specifically. As I have previously done in chapters 1 and 3, my analysis pays close attention to not only the texts and rhetorical strategies (narratives, greenspeak) used on these pages, but also to the (moving) images through which projects or the CEOs themselves are depicted. In total, my corpus exists of 33 materials (see Appendix 3). I analyze the charitable initiatives against the background of larger changes within the philanthropic sector, under the influence of digitalization and platform capitalism, and the rise of CEO activism. Inspired by the analysis of tech figures by Fred Turner and Christine Larson (2015, 58), I study "interlinked and especially visible examples of a mode of intellectual power and networked celebrity that has substantially shaped American public life". This will help me to understand how the specific "mode of power" exercised by tech billionaires can legitimate and spread certain cultural norms. As part of my analysis, I ask: how do the foundations describe and visualize their mission? How do they reference climate-related issues and what solutions do they propose? To what extent do they formulate technological solutions and what promises are made about them? How is the presentation and tone different in comparison to the sustainability materials directly produced by tech companies?

The goal of the chapter is to offer a fourth and final perspective on "Platform Earth": the worldview that presents an affirmative relation between technology, humanity and the environment. In previous chapters, especially Chapter 3, I have criticized the singular understanding of the human that emerges in tech-on-climate discourse and theorized it as a transhumanist and exclusive form of subjectivity. This chapter further explores how tech discourse deals with the obvious inequalities between tech actors and their audience, or people in general. As the philanthropic projects claim that tech billionaires can offer solutions to all kinds of problems, this discourse also shows how such general visions are presented as an answer to real-life issues that citizens face, which often seem far removed from the way society is usually imagined in tech-on-climate discourse.

In order to situate my analysis in a broader theoretical context, I first conceptualize tech-for-good as a specific 21st-century form of philanthropy. I then present my analysis of the three foundations that this chapter covers and critiques: the Chan Zuckerberg Initiative, the Bezos Earth fund and the Gates Foundation. I will then offer an analysis of Gates's book and climate vision. The analysis is followed by a critique of philanthrocapitalism as expression of ecomodernist ideology. In the conclusion I connect my observations of tech-for-good discourse and CEO activism to the ongoing economic and infrastructural expansion of the tech sector. From planetary dashboards and AI challenges to zero-carbon fertilizers: the representatives of Silicon Valley can, I argue, be seen as "carbon cowboys" who are taking up active positions in discussions on geoengineering, carbon capture and storage, nuclear energy and more.[76]

2. TECH CEOS AS PHILANTHROCAPITALISTS

I will first situate my analysis of tech-for-good organizations in the specific North American context of philanthropy. In three subsections I map out literature that has discussed 1) philanthropy as a cultural phenomenon particular to the US, 2) the rise of celebrity activism and tech philanthropy and 3) the colonial and imperial underpinnings of philanthropic activities.

2.1 Philanthropy as a North American Phenomenon

Whereas humanitarian initiatives can be executed by (non-)governmental organizations, philanthropy specifically refers to privately initiated projects. In the North American institutional landscape, with its liberal politics and historical "small" state, philanthropy is a large industry that holds a significant societal position and connects private funding to causes that are considered a social "good" (Arnove 1980). In the introduction to the edited volume *Philanthropy and Cultural Imperialism*, Robert F. Arnove (1980) describes philanthropy as an institutionalized form of "scientific giving" that is exclusively North American. Early examples of philanthropists are wealthy businessmen like Henry Ford, Andrew Carnegie and John Rockefeller who gathered their fortune during the Industrial Revolution and started foundations around the 1920s (Arnove 1980, 3-4). These foundations were influential in setting policy agendas, creating international knowledge networks and shaping education

76 My use of the term "carbon cowboys" is inspired by an article on the dubious role of American entrepreneurs in carbon compensation schemes in South America (Antunes 2024).

systems. Both within the US and the international context, Arnove (1980) argues that these philanthropies have forwarded a certain hegemonic ideology, and thus acted as cultural imperialists. He writes:

> the activities of the giant philanthropic foundations were concerned not only with promoting stability and orderly change in the emergent national society, but with extending the "benefits" of Western science, technology, and value systems abroad. (Arnove 1980, 5)

As philanthropists decide what causes they deem worthy to support, philanthropy has been a prominent way of promoting certain cultural values and "exporting" hegemonic ideas abroad, for example to the Global South. Still today, American foundations such as the Ford Foundation and Gates Foundation remain prominent agenda-setters, not only on a political, but also a cultural level (Maclean et al. 2021).

Since the 1920s, liberal American philanthropy has gone through several changes, over time directing public attention and financial means to different issues. During the 20th century, philanthropic activities became increasingly connected to economic interests. The capitalist approach to philanthropy is often described as "philanthrocapitalism", a term first coined by economist and author Matthew Bishop. In their book *Philanthrocapitalism: How the Rich Can Change the World* (2008), Bishop and Michael Green describe the ways in which rich individuals engage in philanthropic efforts, discussing the potentials and pitfalls of these activities. While the book acknowledges negative elements such as tax evasion associated with philanthrocapitalism, it does support, as the subtitle demonstrates, the optimistic belief that if organized and regulated properly philanthropy can change the world and create a better future.

With its optimism about the potential of philanthropy and capitalism, the book by Bishop and Green (2008) presents one of two ways in which North American philanthropy has been studied: as a positive byproduct of capitalism, in opposition to a financially beneficial "ethics theatre". Some (usually popular non-fiction) works celebrate the social activism of businesses and businessmen as a form of ethical capitalism. Similar to Bishop and Green (2008), Michael Strong (2009) has celebrated the potential of philanthropy in his book *Be the Solution: How Entrepreneurs and Conscious Capitalists Can Solve All the World's Problems*. However, others critique these activities as positive PR efforts, merely designed to protect market interests. In the latter sense, philanthrocapitalism is understood as a form of morally just, "conscience capitalism", of which the societal benefits are heavily debated (Farrell 2015). For critics such as Nathan Farrell (2015, 269), conscience capitalism "does not represent a challenge to neoliberalism but instead is a way to reinvigorate the project in the aftermath of the financial crisis and facilitate its continuation by promoting the free market and its facilitation by the state while undermining alternatives". These works differ in their assessment on whether the philanthropic projects of billionaires have the ability and motivation to improve welfare in ways that other organizational structures cannot, or whether they hamper such developments. Similar to Farrell (2015), Mikkel Thorup (2013) describes philanthrocapitalism as the process in which capitalism is, at least at face value,

transformed into a charitable enterprise. Thorup writes:

> The claim is that capitalist mechanisms are superior to all others (especially the state) when it comes to not only creating economic but also human progress; that the market and market actors are or should be made the prime creators of the good society; that capitalism is not the cause but the solution to all the major problems in the world; that the best thing to do is to extend the market to hitherto personal or state processes; and, finally, that there is no conflict between the rich and the poor but rather that the rich are the poor's best and possibly only friend. (556)

Thorup argues that philanthrocapitalism describes a new approach of capitalism, in which the creative, problem-solving abilities of capitalist inventions are foregrounded as the legitimation for its profit-driven business model. Thorup's work (2013, 558) builds on theories about the "spirit" of capitalism to describe philanthropy as a new practice through which capitalist companies adjust their operations in response to critiques. Thorup's argument therefore aligns with that of Jesse Goldstein (2018), who critiques the green spirit of capitalism for its legitimization of continuing extractivist practices. In my analysis, these two approaches meet: I am interested in, and critical of, both the green and philanthropic spirit of Big Tech companies and figures. I will argue that these spirits overlap and reinforce each other, resulting in an even stronger legitimation of platform capitalism. In other words: the philanthropic and environmental activities and discourses of Silicon Valley together embody the benevolent role tech actors want to play.

Philanthropy thus represents a creative, solution-seeking form of capitalism that can bring about the "good" life for everyone. The focus on creativity brings the concept of "design thinking", foregrounded in the previous chapter, to mind. With design thinking I refer to the conviction that technologically innovative and creatively designed solutions can fix any problem. The foundations can offer these solutions while benefitting the economic model of platform capitalism through which the fortunes were amassed. As Thorup (2013) writes, philanthropy is increasingly seen as a valuable way to improve the competitiveness of a business, but also allows a business to reframe *itself* as philanthropic. By this definition, green platform capitalism exhibits a creative, philanthropic spirit tailored to the problem of the climate crisis.

As I have argued in the Introduction of my dissertation, sustainability initiatives have slowly become a "mandatory" part of tech businesses, strengthening the proposition that there is such a thing as a good, green yet profitable tech sector. In this chapter, I focus on philanthropies that function "separately" from tech companies but nevertheless help to legitimate the activities of companies adjacent to the philanthropic organization. In other words: if a network entrepreneur becomes a philanthropist, his charity amplifies the morality of all his networked activities. Thorup (2013) distinguishes four categories of philanthrocapitalism: consumer philanthropy, corporate philanthropy, billionaire philanthropy, and celebrity philanthropy. As I discuss below, celebrity and billionaire philanthropy overlap in the case of tech actors such as Zuckerberg, Gates and Bezos.

2.2 Celebrity and CEO Activism

Celebrities often use their platform to draw attention to societal topics or issues. Authors in this field of study have paid particular attention to the personas engaging in such philanthropic activities. Existing work investigates the rise of celebrity activism (Tsaliki 2015), celebrity humanitarianism (Richey 2015) or celebrity environmentalism and conservationism (Brockington 2009). Whether these activities are effective or not, they illustrate how celebrities use their status and network to raise awareness for social issues. More recent work has, in reference to terms such as corporate social responsibility, examined the rise of corporate or more person-centered CEO activism. Through their typology of CEO activism, Layla Branicki et al. (2021) demonstrate that not all forms of activism are the same: the activist CEO can engage in public issues with a higher or lower business relatedness, and the moral intensity or political sensitivity of a topic can also vary. These elements affect the impact but also the riskiness of a CEO's involvement. Overall, celebrity activists and billionaire philanthropists show personal involvement in the issues they draw attention to. In recent decades, according to Thorup (2013), their engagement and affective relation to the topic has become more and more important. The need to demonstrate personal engagement also explains the high visibility of the initiators of charities, as well as the careful construction of promotional materials within tech-for-good discourse. CEO activism thus works as a form of personal branding that has become popular since the rise of social media. Examples of such engagements are mediatized challenges (e.g. ALS ice bucket challenge), or statements on issues (e.g. black squares as part of the antiracist Blackout Tuesday initiative), offering opportunities for celebrities and CEOs "to perform their social value, while simultaneously demonstrating how the social media technologies they develop could solve major societal problems in a 'fun' way" (Little and Winch 2021, 88).

Relevant for this research is the specific persona of the tech CEO: American businessmen who have accumulated a fortune in the tech sector and are now recognized as a specific category of philanthrocapitalists. In his book *Tech Billionaires: Reshaping Philanthropy in a Quest for a Better World* (2017), Lewis D. Solomon describes how in the 1980s and 1990s a new type of philanthropist emerged who differed from earlier American philanthropists like Carnegie and Rockefeller. The difference is that tech innovators turned to philanthropy by spending their money on large-scale problems outside of the scope of their companies. By stepping into the NGO "business", tech billionaires brought aspects of their Silicon Valley entrepreneurialism to the context of philanthropy. This resulted in a specific approach to philanthropy that is characterized by personal involvement, marketing savviness, and a focus on innovation, which shapes the projects they are willing to support and the ways in which they invest their money (Solomon 2017, 1). Solomon (2017, 1-4) writes that tech billionaires have transformed philanthropy in four ways: 1) they gift during their lifetime rather than after, 2) they want to be personally involved to oversee and optimize the impact of their spending, 3) they mostly spend money on global issues that require high-risk investments they feel are not yet covered by other institutions and governments and 4) they bring an entrepreneurial and competitive approach to philanthropy, as well as a strong belief in capitalism, thereby blurring the boundaries between profit and non-profit

business approaches. Analyzing tech founders such as Bill Gates and Google's Larry Page and Sergey Brin, Solomon (2017) describes the emergence of a persona who believes in engineering solutions for complex problems and who runs his philanthropy in the spirit of the (platform) capitalist culture of Silicon Valley. This is a key insight to which I will return throughout the chapter.

Tech billionaires form a particular type of philanthropist, for whom the climate crisis is a favorite theme of their philanthropy. Whereas art, education, and healthcare are traditional topics of philanthropy, climate change and nature conversation have become a more central topic since the 1970s (Morena 2017). This development parallels the rise in attention for climate change and sustainability as demonstrated in previous chapters. Edouard Morena (2017) has traced the historical development of climate philanthropy since the 1980s onwards and describes how it has transformed:

> In the process of re-evaluating their climate strategies, foundations refined the liberal philanthropic approach by making it even more "focused" and "strategic". This basically took the shape of a very targeted, results-driven and metrics-based approach to philanthropy. These new grant-making methodologies were directly inspired by corporate practices (market analysis, target setting, evaluation). (98)

The results-driven, calculating approach to philanthropy Morena describes developed during the same time in which, as I discussed in Chapter 2, environmentalism changed and started to reflect similar principles. With the rise of neoliberalism in the 1980s and 1990s, the value of nature came to be understood in economic terms, which led to a similar, targeted and metrics-based approach. These developments in philanthropy as well as the reorientation of political and economic systems are all shaping elements in a cultural and discursive transformation in understandings of nature and its value for humanity. Calculative philanthropic strategies further developed in the 2000s, when business moguls started to more explicitly connect the entrepreneurial, neoliberal spirit of their profitable businesses to philanthropy. Morena (2017, 100) illustrates this development with a telling example from the Energy Foundation that contributed to a report titled "Design to Win: Philanthropy's Role in the Fight against Global Warming". The competitive phrasing "design to win" is a variation on the rhetoric of the climate crisis as a battle that can be won with the right, carefully designed tools.

In the past few years, the public valuation of the creative and managerial qualities of Silicon Valley entrepreneurs has helped to frame these actors as best equipped to manage and design philanthropic organizations. This belief is for example expressed through the popularity of the concept of "effective altruism": the idea that one can and should calculate and rationalize what is the most effective way of spending money. Effective altruism is popularized by William McAskill (a philosopher at the Global Priorities Institute, University of

Oxford) and has resonated with many actors in Silicon Valley (Gebru 2022).[77] The concepts of effective altruism and longtermism (which I discussed in Chapter 3) are closely related: both promote certain solutions and approaches that would ensure a prosperous future for humanity for generations to come. Effective altruism signals the idea that companies and billionaires can reorganize philanthropy most effectively, thereby bringing together corporate business interests, PR opportunities and issues such as the climate crisis in a beneficial constellation. An example of an American based fund that proclaims effective altruism is Open Philanthropy, founded by Facebook co-founder Dustin Moskovitz (Open Philanthropy 2024).

Works on CEO activism or corporate philanthropy often take Bill Gates as an example, who with his foundation, but also his book *How to Avoid a Climate Disaster* (2021), positions himself as a concerned entrepeneur regarding the topic of climate policies. Matthew Canfield (2023) discusses Gates' philanthropic activities and its underlying ideology of innovation, arguing that it promotes a particular idea of what progress looks like, or what help is best to give. Similar to Nathan Farrell (2015), Canfield scrutinizes the underlying motives and narratives of this type of philanthropy or conscious capitalism. With his focus on innovation, Canfield argues, Gates not only promotes digital solutions for African agricultural businesses, but he also mobilizes these solutions as a logical alternative to calls for agroecology or climate justice (Canfield 2023, 17). Canfield (2023, 18) argues that "the ideology of innovation recognizes only certain forms of knowledge as innovative and only certain subjects as value creators thereby justifying capitalist expansion into the agricultural knowledge economy". This is an important insight for my analysis, because it questions what solutions, voices and forms of knowledge are considered effective and valuable, and which ones remain marginalized.

Another figure critiqued for his celebrity activism in the field of climate change is Richard Branson, CEO of the Virgin Group. Scott Prudham (2009) describes the climate activism of Branson as a strategy to sustain the business model of the markets in which he operates, and as a way to promote a political agenda about corporate climate solutions. Prudham refers to a statement made in *Wired* magazine by another capitalist environmentalist, Fred Krupp of the US-based Environmental Defense, that neatly summarizes the approach individuals such as Krupp and Branson advocate: "We've put Earth at the brink of climate calamity, thanks to rapid industrialization and market forces. That's part one. The sequel is how we get out of this fix. I believe it's those same forces, innovation and profit and nothing else that can stop global warming" (quoted in Prudham 2009, 1595). Such a statement acknowledges the problem of growth capitalism but sees the solution in an intensification of capitalism. Krupp even emphasizes that there is "nothing else" to consider, demonstrating the discursive strategy (discussed in Chapter 1) of supporting only a narrow, self-chosen range of solutions while dismissing others.

77 Gebru writes (2022): "Some of the billionaires who have committed significant funds to this goal include Elon Musk, Vitalik Buterin, Ben Delo, Jaan Tallinn, Peter Thiel, Dustin Muskovitz, and Sam Bankman-Fried, who was one of EA's largest funders until the recent bankruptcy of his FTX cryptocurrency platform".

Whether it is the climate crisis or another cause: CEO activism draws attention to a particular set of problems and solutions that are, either directly or indirectly, related to the corporate interests of these individuals and the sector they work in. In their discussion of different forms of CEO activism, Branicki et al. (2021) write that the moral standpoints reflected in philanthropic contexts are inherently tied to the corporate interests of these actors and dictate the ways in which this morality is expressed. The authors point to the risks that the blurring of private and public spheres creates, empowering CEO activists to shape the ways in which public issues are discussed. They conclude: "If CEOs continue to expand their forays into matters of public political concern, the extent to which democratic debates can exist outside of corporate-friendly issues could be jeopardized" (Branicki et al. 2021, 283). This critical understanding of CEO activism is further developed by studies on the postcolonial dimensions of philanthropy.

2.3 Postcolonial Critiques of Philanthropy

Beyond a critique of the shallowness and self-enriching components of tech philanthropy, there is also an ethical critique of philanthropy rooted in postcolonial thinking. Arnove's (1980) description of philanthropy as cultural imperialism already captures the idea that the philanthropist knows how others can best be helped, for example mobilizing a Western gaze towards what Global South individuals might "need". Inderjeet Parmar (2012) argues that philanthropic organizations "have been a key means of building the 'American century,' or an American imperium, a hegemony constructed in significant part via cultural and intellectual penetration" (2). Arnove (1980, 1) opens the introduction of his edited book with the statement that philanthropists "have a corrosive influence on a democratic society; they represent relatively unregulated and unaccountable concentrations of power and wealth which buy talent, promote causes, and, in effect, establish an agenda of what merits society's attention". This includes an impact on the formation of public policies. In Arnove's view, these organizations obstruct more radical forms of social change by maintaining an international class system and the cultural hegemony of the US. After all, the foundations choose their investments based on their cultural values. This strand of critique on postcolonial or neo-colonial philanthropy is highly critical of the "white savior", a messianic character, or what Prudham (2009) calls the "crusader", a victorious figure deeply rooted in western histories of colonialism and Christianity.

In a similar vein, but taking the concept of humanitarianism as a starting point, other authors have described the rise of "digital humanitarianism": a promotion of technological tools in humanitarian projects (Johns 2023). Digital humanitarianism does not only refer to investments in technological innovations, but also to the mediatization of these industries, prioritizing datafied tools for humanitarian issues such as climate emergencies or war conflicts (Richey 2015). Mirca Madianou (2022, 282) argues that tech-for-good initiatives within digital humanitarianism suffer from technological determination, presenting "a teleological narrative that conflates the future with notions of progress and the good". Digital humanitarianism presupposes that with the right technology, a complex situation can be steered in the right direction, dictating too much power to technology and the

ability to oversee its effects, thereby ignoring particular local conditions and uncertainties. Madianou (2022, 291) argues that tech-for-good initiatives rework colonial legacies and should therefore be understood as technocolonialism, which she describes as "the constitutive role that digital technologies and data play in entrenching existing power asymmetries between people in need and aid agencies". While technology and data are thus presented as means to prevent and solve inequalities, they can simultaneously sustain and deepen these inequalities.[78]

A similar critique is expressed by Vandana Shiva (2022), who writes about the eroding effects of philanthrocapitalism in the agricultural sector on local communities in India. She describes how philanthropists such as Bill Gates want to "innovate" farming by making it part of the globalized food system by monopolizing and privatizing land, often leaving farmers in more precarious situations. She critiques Gates: "his dystopian vision is to drive diversity, health, and freedom to extinction by controlling complex systems of seeds, knowledge, agriculture, and food" (Shiva 2022, n.p.). Shiva's critique echoes Canfield's study of the ideology of innovation and its limited understanding of progress, but also illustrates what I have previously defined as "whole-systems thinking". This type of thinking – structured around the "ecosystem" metaphor and part of North American tech discourse since the 1950s – will serve as a lens to analyze the ways in which tech philanthropies express dreams of control through ecosystemic models. The colonial critiques on the reinforcement of inequalities, together with the particular position of corporate and CEO philanthropy within the context of the US, provide the critical analytical lens through which I study the philanthropic activities of Bezos, Zuckerberg and Gates.

I end this section with a few practical details about philanthropies. While the term "foundation" does not have a fixed meaning, there are several forms of foundations that come with different regulations. In the US, private funds and public charities are both listed as "501(c)(3) organizations": a type of trust or corporation that is exempt from federal income tax. Within this category, organizations can either be listed as a private fund or a public charity (Council on Foundations 2024). Private funds must yearly spend at least 5% of their assets in grants, meaning that money that is donated to these funds is not necessarily spent. For this reason, the coverage of philanthropic billionaires by *Forbes* measures their donations not by looking at the income of a fund, but by calculating money given to charitable recipients (Au-Yeung et al. 2021). Such a calculation leaves out pledges or money given to Donor Advised Funds (DAF), that do not require institutional financial reporting. The structure of billionaire philanthropy follows a consistent path: money flows from the for-profit corporations to the individuals, then to their philanthropic organizations and finally, a portion of that money is given to organizations the philanthropists want to support. Importantly, the Chan Zuckerberg initiative is different from the Bezos Earth Fund and the Gates Foundation, because is it not registered as a private fund or public charity, but rather as a limited-liability company, which can operate through a for-profit model

78 See *Automating Inequality* by Virginia Eubanks (2018) or *Race after Technology* by Ruha Benjamin (2019) for comparable critiques.

(Philanthropy Roundtable 2021).

If individuals or companies want to donate to a fund, they can do so through a public charity that is aligned with the foundation. The Gates Foundation, for example, has started "Gates Philanthropy Partners", a public charity aimed at individual donors who want to support the Fund, as well as a "Strategic Investment Fund" aimed at corporations.[79] The funding landscape is complex to understand; billionaires support different funds, start new funds, finance each other's funds, and change their funding habits over the years. And while some give public information about their spendings, others are more secretive. An example of the latter category is Elon Musk: his Musk Foundation (founded in 2001) has a very minimal website that briefly lists his funding interests in plain text against a white background, but contains no further information whatsoever (Musk Foundation 2024). As the *New York Times* reports, this is illegal: the fund "has failed in recent years to give away the bare minimum required by law to justify the tax break, exposing it to the risk of having to pay the government a substantial financial penalty" (Fahrenthold and Mac 2024). The newspaper did find his tax filings, which also reveal that half of the spendings the fund has made can be linked back to Musk's enterprises. He for example donated money to a community after a SpaceX rocket exploded and polluted the town (Fahrenthold and Mac 2024).

In 2021, Forbes published a list of the 25 top givers in the US and calculated that Warren Buffett has given the highest amount of money to charity: 42,8 billion of his net worth of 88,8 billion. Bill and Melinda Gates (although Melinda has since left the fund following their divorce) are runners up, having given 29,8 billion of their 120,7 billion net worth. Mark Zuckerberg and Priscilla Chan have given a significantly smaller number of 2,7 billion, while their net worth is 90 billion (Au-Yeung et al. 2021). Bezos' fund is not mentioned in this list by Forbes, but his net worth of 211,4 billion (in 2024) is higher than that of Gates and Zuckerberg. According to the website of Bezos' fund, he has spent 2 billion so far, and he has pledged to spend another 8 billion before 2030. In the next section, I analyze the public materials of the three funds to understand how Zuckerberg, Bezos and Gates present their philanthropic efforts in relation to the climate crisis.

79 On the "Grants & Ventures" page, the CZI website shares the following information: "CZI is composed of four funding entities: the Chan Zuckerberg Initiative, LLC; the Chan Zuckerberg Initiative Foundation (a 501(c)(3) private foundation); the Chan Zuckerberg Initiative Donor-Advised Fund (DAF) at the Silicon Valley Community Foundation; and Chan Zuckerberg Initiative Advocacy, (a 501(c)(4) organization)." Each of these entities has to comply with different regulatory obligations.

3. THREE CASES OF GREEN TECH PHILANTHROPY

As the previous section discussed the underpinnings and complexities of philanthrocapitalism in general, the following analysis homes in on the mission and vision of the Chan Zuckerberg Initiative, the Bezos Earth Fund and the Gates Foundation, as well as their specific climate-oriented projects. For each organization, I discuss their website and a video that presents their philanthropic approach, alongside other examples from the funds' websites. Through a close analysis of the texts and images within their tech-for-good discourse, I aim to contribute to the literature described in the previous section by comparing the narratives created by the three funds. As with most philanthropic projects of wealthy individuals, the funds carefully design the approach of their operations. In addition to health and education, the climate crisis seems to be an increasingly interesting cause for tech philanthropists to invest in, with Bezos' Earth Fund as prime example.

3.1 Engineering Change: The Chan Zuckerberg Initiative

In 2015, in honor of his newborn daughter, Mark Zuckerberg shared a lengthy letter on his Facebook page, in which he announces the start of the Chan Zuckerberg Initiative (from now on: CZI). Together with his wife Priscilla Chan, he promises to give 99% of their Facebook shares (said to be worth 45 billion dollars at the time of writing) and spend the earnings on "leaving the world a better place" for the generation of their daughter and generations to come (CZI 2015). Emphasizing the fund as a project motivated by their family, Zuckerberg and Chan directly address their daughter Max and write:

> As you begin the next generation of the Chan Zuckerberg family, we also begin the Chan Zuckerberg Initiative to join people across the world to advance human potential and promote equality for all children in the next generation. Our initial areas of focus will be personalized learning, curing disease, connecting people and building strong communities.

The four focus points reflect the background of the couple: Chan is a trained pediatric and teacher, and Zuckerberg the founder of Facebook. Whereas education and health care are concrete topics they engage with, the latter two goals of connecting people and building strong communities are a bit vaguer. Nevertheless, these goals align with the mission of Facebook and Meta and are seamlessly transferred to the philanthropic project of the couple. The CZI website is not transparent about how it spends its money, nor could I find any financial reports on their website, which aligns with the fact that the initiative is not officially a foundation, even though it is presented as such.

The website provides more insight into the goals of the CZI. On the page "What we do" they list three themes: science, education and community, which correspond to the goals mentioned in the founding letter. However, the fund is also interested in exploring the possibilities of technological solutions. CZI has created a separate website to explain how technology informs their work. On the "Tech@CZI" website, it becomes clear that Chan and Zuckerberg want to bring their knowledge from the tech and health sector to the field of philanthropy. This mindset does not only shape the issues they want to take on, but also how they will run the organization itself. According to their slogan, they want to reimagine "philanthropy with technology", categorizing their interests as scitech (science), edtech (education) and central tech. CZI sees itself as a "new kind of philanthropic organization focused on engineering change at scale". CZI is thus primarily developing new technological tools and employs technocratic language to promote this approach. The phrase "engineering change" is one example through which the organization promotes the idea that large issues can be solved by effective and high-tech forms of engineering.

A look at the website and the CZI letter of 2022 (accompanied by a video) reveals a range of such technocratic phrases. Chan and Zuckerberg describe their employees as a "community of builders", who share a passion to "create, pilot and iterate together", building "tools" that can "unlock a better future" (fig. 48). The language has a playful tone, framing societal challenges as games to be played or as hurdles to be overcome. The letter also demonstrates this framing, as Chan and Zuckerberg write: "The only way forward is together – volleying ideas back and forth, trying them out, learning from our mistakes, and making breakthroughs that crack open the next stage of the puzzle" (CZI letter 2022). Such playful expressions are used across tech-on-climate discourse, as I have discussed in Chapter 1. The term "breakthrough," for example, is also a key term in Bill Gates' book *How to Avoid a Climate Disaster: The Solutions We Have and the Breakthroughs We Need* (2021) that I discuss in the next section. Terms such as "community", "tools", "change", and verbs

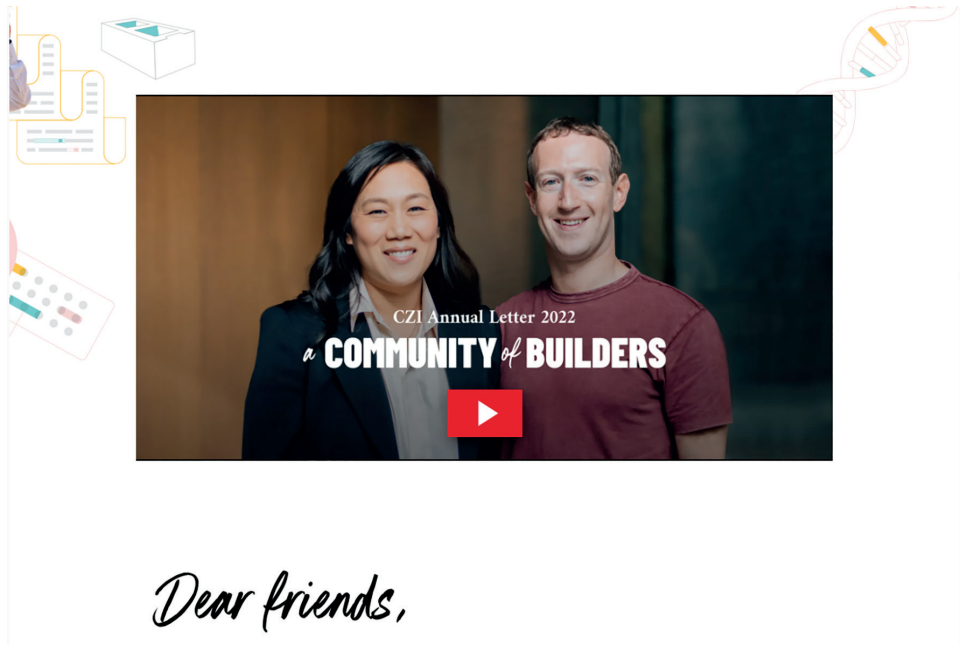


Figure 48: The website of the Chan Zuckerberg Initiative shares a yearly letter by its founders, as well as a video. In 2022, the letter was titled "A community of builders". The letter starts with the "handwritten" phrase "dear friends". Screenshot by the author (September 2024).

such as “building”, “cracking”, “engineering”, “unlocking” and “creating” are all fundamental in the Silicon Valley playbook, that has been updated in light of the climate crisis. The vocabulary, I claim, expresses the entrepreneurial spirit of Silicon Valley and centralizes its design thinking expertise. By doing so, the CZI presents itself as the authority that can solve any issue they choose to focus on.

By foregrounding the entrepreneurial spirit, the expertise that Zuckerberg claims on behalf of his business trickles down to his philanthropic activities. A recent example is the way in which artificial intelligence (AI) applications are celebrated as the latest breakthrough technologies. CZI expresses an interest in using AI technologies for example in a blog titled “AI will help scientists crack the code on human health and disease – here’s how” (2024). This celebratory claim was promoted at a conference titled STAT 2024 Breakthrough Summit West, where CZI sponsored a panel to stage its own employees and ideas within a conference context. The conference presentation and blogpost demonstrate how the organization uses its financial means to present itself as actor within larger knowledge infrastructures such as the scientific biomedical community. The CZI prides itself on its own agility, its inventiveness, sense of community and ability to take a long-term perspective into account. Importantly, it also advances a specific idea of how knowledge is produced through the idea that it is possible, with AI, to “crack” the code of health, as if such a code exists.

The same message arises in the video titled “Reimagining philanthropy with technology” (2024) that is highlighted on the homepage of the tech website of the organization. The video contains a range of shots of people working in teams, teachers and doctors at work, and a group of children laughing at the camera. The video shows these people interacting with technology, which fits the message that technology forms the heart of their philanthropic work. As the female voice-over announces: “scientists, educators and changemakers on the front lines need better tools” which is why the CZI is “reimagining philanthropy” (fig. 49).

With statements such as “building technologies to accelerate science and education”, the video captures the mission of upgrading philanthropy and accelerating progress. This terminology returns across the CZI webpages. Later in the Tech@CZI video, the voice-over states: “progress is not inevitable, we must continue to engineer solutions to hard problems”. These statements only imagine one way forward: taking the necessary technological and innovative steps through which solutions can be engineered. Solutions are presented in response to the problem that is identified: a lack of tools among changemakers. The promotion of techno-fixes is thus a core element of tech-for-good and tech-on-climate discourse.

With its focus on science (e.g. curing diseases) and education (e.g. tools for teachers), the climate crisis is not visible as a main theme by the CZI and is not immediately noticeable on its website. Yet, a closer search on the website does reveal several updates regarding climate innovations, mainly reporting about funding that CZI has given to initiatives with sustainable goals. An analysis of these updates shows the CZI’s commitment to funding carbon dioxide removal projects: techniques that help to remove CO2 from

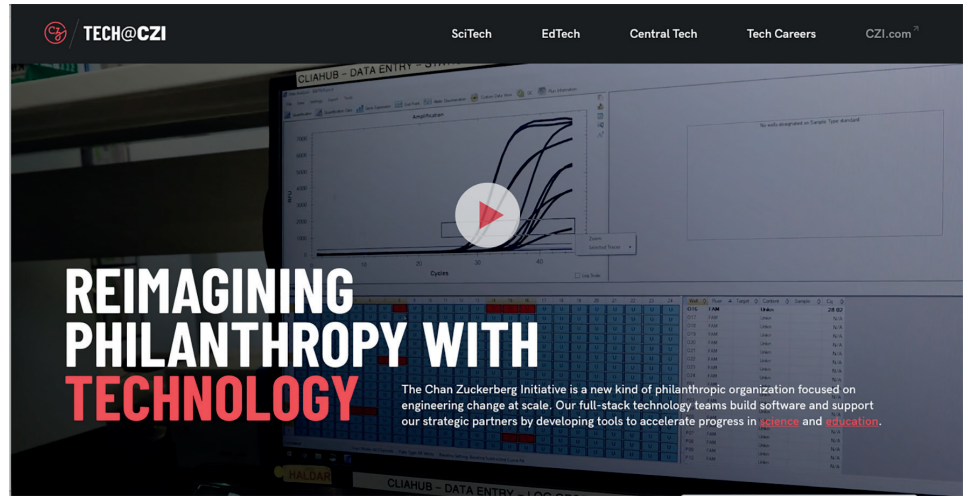


Figure 49: The homepage of the Tech@CZI website contains a video about the fund’s mission to “reimagine” philanthropy with technology. Screenshot by the author (September 2024).

the atmosphere by storing it elsewhere.[80] A blogpost from April 2023, for example, lists four approaches that “revolutionize” climate technology, all examples of carbon dioxide removal, a form of geoengineering. The article mentions the risks and potential trade-offs of carbon dioxide removal projects, but also argues that the Intergovernmental Panel on Climate Change (IPCC) deems these technological interventions necessary. In an article from February 2022, CZI again refers to the IPCC to account for their investment in carbon dioxide removal projects. Some companies and solutions are the same as mentioned before, but this article also includes reforestation projects (carbon farming) and projects to capture CO2 from the atmosphere and store it underground or in the sea for the longterm (carbon storage). In yet another news article from December 2022, CZI discusses the program “Building tribal leadership in carbon removal” which supports the involvement of indigenous communities in carbon removal projects. CZI applauds the initiative because it takes the leadership, vision and land ownership of indigenous communities seriously while also benefiting the carbon removal industry. The project demonstrates how CZI combines its preference for investments in carbon removal projects with its focus on advancing equity and inclusion. The article again refers to the IPCC and its scientific discourse to legitimate this investment, stating that it will help to reach climate targets “while simultaneously building towards a shared future in which the earth’s rivers, oceans, and lands thrive and continue to sustain the billions who rely on them” (2022). Both the reference to indigenous communities and to the IPCC demonstrate that the CZI aligns itself with other knowledge discourses to legitimate and rationalize its practices, which is a common discursive strategy

80 The European Commission (2024b) differentiates carbon removal from carbon farming: the first requires technical ways to capture CO2 and requires storage in reservoirs or products, the latter refers to climate solutions regarding carbon sequestration and storage, by cultivating forests and reducing emissions from soils.

(Van Leeuwen 2007). However, the CZI only acknowledges other authorities on its own terms, thereby perpetuating an imperialist view on the "other".

Carbon capture projects fall under the category of geoengineering, a term that refers to a range of technical climate solutions, broadly separated in carbon capture projects and forms of solar geoengineering. For both methods, but especially the latter, the benefits and risks are still fiercely debated (Surprise and Sapinski 2023).[81] Whether or not these are the right solutions is not so much the point of my cultural analysis; rather I aim to look at *what* kind of solutions are proposed in tech-for-good discourse; *how* these are presented as feasible, desirable and inevitable; and *why* these are presented as such. Both forms of geoengineering are, for example, concerned with changing atmospheric conditions, and not with lowering carbon emissions. The fact that these solutions are discussed by CZI, at the intersection of climate and technology, demonstrates the interest in these techniques by Silicon Valley actors. As technological climate solutions, they present an interesting business case that does not demand any behavioral or economic changes on behalf of the company or its users. Moreover, the selection of solutions that are discussed – and in which the tech philanthropies invest large sums of money – shapes the direction of debates about climate solutions, steering technological and economic infrastructures in certain directions while ignoring or perhaps even obstructing others. The IPCC (2023), for example, has mentioned the need for decreases in the use of carbon, in addition to carbon capture, but the CZI chooses to focus on the latter. I will return to the discussion of geoengineering solutions in the sections on Gates' climate efforts.

Returning to the analysis of CZI's promotional materials, it becomes apparent that CZI sets large goals: it wants to contribute to fixing the climate crisis but also "cure, prevent, or manage all diseases by the end of this century" (website CZI). CZI has developed several tools with this goal in mind, started science programs, and even created scientific institutes. One of these is the Chan Zuckerberg Biohub Network, with institutes in San Francisco, New York and Chicago. On the website of the Biohub, the institute describes its goal as funding the most "risky" and "exciting" research projects. The Biohub Network illustrates how CZI is working actively to create knowledge infrastructures that connect the organization to scientists and scientific knowledge, while emphasizing its edginess and risk-taking qualities. In a critical research article about the Biohub Network, Mehta and Assadpour (2017) list some of the issues that emerge when a philanthrocapitalist organization engages in medical research, warning for potential ineffective, inaccessible research, drugs and technologies, as well as research being vulnerable to bias, with no oversight and transparency to prevent this. The hub might also, they argue, be exempt from tax regulations that other organizations must comply with, thus undermining support for state investments and research funding (Mehta and Assadpour 2017, 43). Although the medical

81 There are also reports that problematize less technological projects such as reforestation, because of the ways in which they sustain inequalities around land ownership (Calma 2024). Nevertheless, carbon capture is increasingly seen as a solution that we cannot do without, although critics point to the unknown long-term risks and stress that such projects can help sustain extractivist economic practices and do not release us from the need to decrease energy use (Surprise 2020).

branch is a much more prominent part of CZI than the climate crisis, its general promises, as my analysis shows, are formulated in an abstract language that fits all kinds of issues. The overall approach of CZI is explained as "engineering" a better future, "cracking" any crisis that might prevent humanity from achieving that future. The critique about the ineffective and untransparent modus operandi of the Biohub thus offers a critical note to CZI's operations more generally. CZI describes its risk-taking approach as beneficial to communities and is very certain about its abilities to solve large issues, but it does not address the downsides of its approach.

Based on my analysis, I conclude that while the CZI may finance and develop potentially useful research and technological applications, the organization allows Chan and Zuckerberg to consolidate their position in education and research. They do so by presenting a specific vision of what those activities entail, and how one arrives at solutions to complex problems. The website discloses little to no information about why causes or institutions are funded and how the money of the organization is spent. In the CZI worldview, the human subject is understood as a techno-optimist, a tinkerer, explorer, and risktaker. While the climate crisis is acknowledged, it is not (yet) a core interest of the initiative. This is wholly different for my next case study: the Bezos Earth Fund.

3.2 Creating Systemic Change: The Bezos Earth Fund

As mentioned in the introduction to this chapter, the Bezos Earth Fund (from now on: BEF) was launched in 2020, at the beginning of what the fund's website lists as "the decisive decade" ("Our journey"). The BEF is the only one of the three funds that specifically focuses on climate change issues: it is fully dedicated to "combatting" the climate crisis, as explained on the "Our journey" page. The fund also differentiates itself by announcing it wants to take all the planned action already within the 2020s; Bezos wants to spend his billions within this decade. What will happen after that, for example if the goals set by the fund turn out to be unattainable, is not mentioned. As of summer 2024, the website states the BEF has spent 2 billion, thus 20% percent of its total pledge. The "Our Programs" page of the website lists the seven thematic programs BEF invests in: conserving & restoring nature, future of food, environmental justice, decarbonizing energy & industry, economics, finance & markets, next technologies and monitoring, data & accountability. Each program shows the grants that have been allotted, and the amount of money that has been spent within the program.

Through rhetorical and visual elements, the page presents the mission of the fund as somewhat of a military operation, delineating and visualizing that Bezos, his partner Lauren Sánchez and their team – dressed as "rangers" – are fighting the climate crisis and can potentially win it (fig. 46).[82] This is a variation on the language of the CZI, that is also

82 The former wife of Jeff Bezos, writer Mackenzie Scott, is also one of the biggest philanthropists of the US and has given over 5 billion to organizations within a few years. Her wealth is also connected to Amazon, as she holds a 4% share in the company. Scott discloses very little information about her fund. Her fund is organized as a donor-advised fund (DAF), which is a lightly regulated form of funding that does not require transparency (Kulish and Ruiz 2022).

about competition, but more in the sense of gamification. The mission page of the BEF offers information about the tactics of the fund. It states: "we are focused on harnessing the best available science and assessing political, economic, social, and technological factors to identify barriers and opportunities where our support will have maximum impact" ("Our journey"). The maximization of impact through careful calculations is a central strategy of the funds. The BEF propagates that a successful philanthropy must assess how its impact can be maximized. The statement above acknowledges the complexity of climate issues, but also reveals the calculative focus of the fund, without specifying what kind of impact the fund wants to maximize. Funds like BEF and CZI emphasize that their philanthropies are equipped to take on challenges that different organizations, or even funds, cannot. Like the tech companies these funds are related to, the organizations are presented as pioneers at the frontline of innovation: they are the first ones to detect what approach is most impactful and effective. On the "Our approach" page, the BEF states that the strength of philanthropy is its flexible funding and capacity to take risks regarding its investments. The notion of flexible funding points to the popular notion of effective altruism, foregrounding the idea that all money should be put to use in the most effective manner. At the same time, as I have noted about tech-on-climate discourse in general, the BEF emphasizes that fighting the climate crisis must be a team effort, so they cannot solely be blamed if the results are not as good as expected.

The analysis of the BEF website illustrates how much the fund foregrounds Bezos, with references to his many corporate activities and his personal mission. In a promotional video (2022) titled "Working for a World Where People & Nature Thrive" (visible on the "Our approach" page), Bezos draws a connection between his space company Blue Origin and his Earth Fund, as he also does in the keynote at COP26 mentioned in the introduction. The video opens with satellite images of the ("whole") Earth while Bezos as voiceover speaks a familiar message: "we" need to leave the world better than we found it. Bezos expresses the need to save the Earth for future generations and again refers to his transformative experience of seeing the Earth from space. In the rest of the 2,5-minute video (2022), Bezos, Sánchez and some of their colleagues explain how the fund is adapted to the urgency of the climate crisis and will be more "aggressive" in finding solutions, taking "calculated risks that others just might not be able to take, and we can think really big". The video also contains footage from "pastoral" nature and shows the couple at work, for example planting trees (fig. 50). The video presents Bezos as a caring, worried figure who wants to take a step forward and lead a green transformation, together with his partner. In these and other visual materials, Bezos is dressed in leisure or outdoor clothing, emphasizing his "cowboy" persona. But the video also expresses the core goal of the fund: to work on a "systems transformation". And to achieve that goal, the BEF advocates a systemic approach.

The notion of a "systems transformation" and the goal of achieving "systemic change" are dominant elements within the BEF materials. These statements illustrate the hubris among tech philanthropists about the impact of their funds. The focus on systems change also offers a contemporary example of the tradition of "whole-systems thinking" I have identified in Chapter 2. On the "Systems change" page, the fund identifies fifty key

Figure 50: In the "Working for a World Where People & Nature Thrive" video (2022), Bezos and Sánchez are filmed while planting a tree. Screenshot by the author.

transitions that together form the systems change they want to realize. Because they want to monitor these changes, the BEF has started a "Systems Change Lab" to track the progress within these transitions, identify potentials for action and "catalyze change". This lab is advertised with the slogan that "It's time to change the way we think about changing the world", again stressing the transformative potential of tech philanthropy. On the separate website dedicated to the lab, a "data dashboard" shows the state of climate adaptation regarding fifteen categories such as transport, oceans, carbon removal, power and more, although the website currently only has information about five of these. The dashboard visualizes what changes are occurring and whether "we" as humanity are not, somewhat, or fully on track (fig. 51). The analysis of the website exemplifies how the BEF propagates an understanding of the world as an ecosystem that can be analyzed, managed and improved with the right technological tools.

Part of whole-systems thinking is promoting the idea that we do not know enough about climate change, and that we need better ways to monitor this. All three funds present themselves as an essential part of the solution to this problem. In this sense, the BEF's data dashboard is closely related to previously discussed case studies such as Microsoft's Planetary Computer and Amazon's Sustainability Data Initiative, which aim to provide data visualizations that give insight into climate actions for policymakers, researchers and governments. In the case of the BEF's Systems Change Lab, the "About" page explains it can help actors "understand the state of play across each system, determine which challenges require the greatest attention and discover which actions can accelerate change". The video (2022) that promotes the lab is quite similar to that of Microsoft's Planetary Computer discussed in Chapter 1. The video is an animation that shows the environmental decline awaiting us if we follow the same path, here represented by a group of cyclists biking

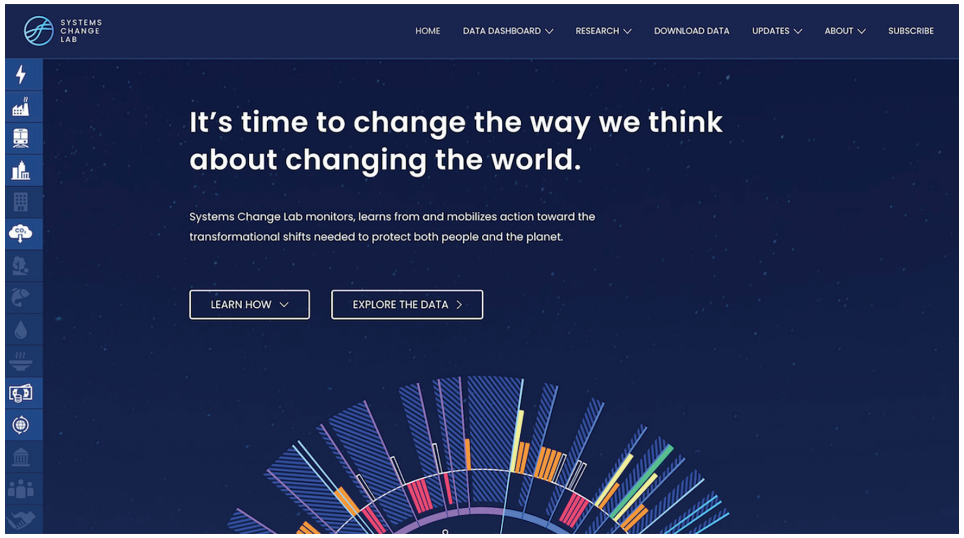


Figure 51: The homepage of the Systems Change Lab, co-founded by the Bezos Earth Fund, explains how the lab monitors, learns from and mobilizes action. Screenshot by the author (September 2024).

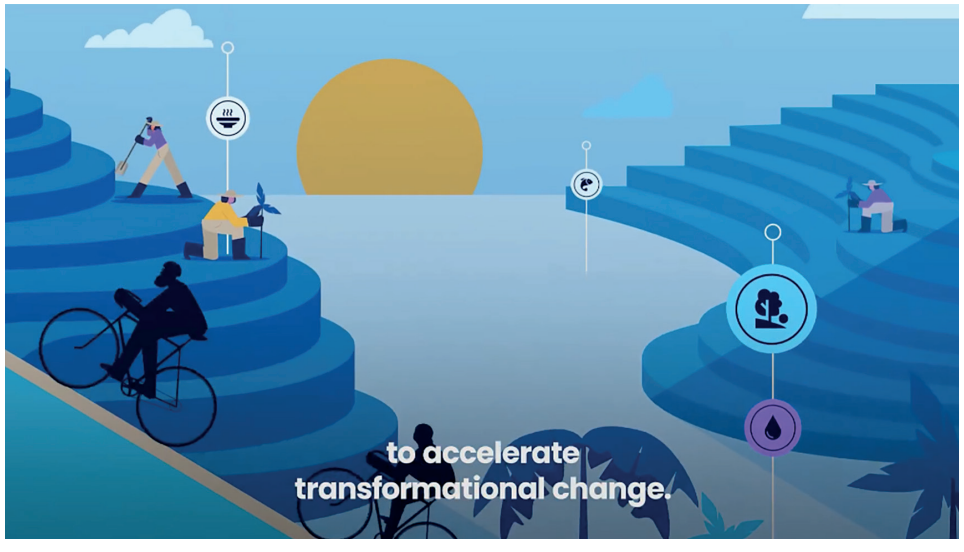


Figure 52: In a colorful animation about the Systems Change Lab (2022), a voice-over explains how the lab accelerates change, while the drawings visualize how information is collected and how people engage in sustainable activities. Screenshot by the author.

through an animated landscape (all shots are in red). The video then introduces the other, better route we can take if we create systems change to avoid a climate catastrophe, for which the lab can provide the right data and tracking software, thus "unlocking insights" that can "accelerate change" (all shots in blue) (fig. 52). As I have previously argued about the Planetary Computer, such dashboard initiatives shift the focus from implementing environmental solutions to monitoring the current situation and gathering more data, thereby strategically reconfiguring the problem that needs solving. The website of the Systems Change Lab similarly mentions that its three main goals are: monitoring, learning and sharing, and nudging and campaigning. The "About" page states that actual changes are expected to be made by partners, messengers and coalitions.

The Systems Change Lab, I argue, aptly demonstrates how whole-systems thinking and the ecosystem metaphor works through in contemporary tech-for-good discourse. What the fund creates is only an illusion of cybernetic control and insight, with the lab serving as a control room offering an overview of the external, "wicked" issue that is climate change. Moreover, it makes clear how the CEOs design their funds in line with their corporate activities, which illustrates how philanthropy is not a step away from but an intensification of their capitalist practices.

My analysis of the website makes clear that it is hard to track what the foundation is actually investing in. The BEF offers several initiatives that are ill-defined. Take the Land & Carbon Lab project, about which the website (2020) states:

> Using satellite and drone technology, coupled with AI-informed algorithms, Land & Carbon Lab will provide real-time information on land use changes and embedded carbon flux at a very fine scale for the entire world. Harnessing the data revolution, it will power solutions for sustainable landscapes, enabling entrepreneurs, local communities, companies, governments – anyone who wants or needs – to participate in new, nature-based economies.

This quote shows that the project is centered on datafied innovations, seeing the production of data as a core method to learn more about the state of the land. Nowhere does the page explain what nature-based economies are, or how algorithms and real-time information will help realize these.

Recently, the BEF has also embraced AI as potential tool. In April 2024, the fund announced "AI for Climate and Nature Grand Challenge" a 100-million-dollar program to which people or organizations can submit their ideas and acquire grants. The fund is directed at solutions in the field of sustainable proteins, biodiversity conservation, and power grid optimization, but also offers wild cards. In a flashy video (2024) with an upbeat soundtrack, Sánchez introduces the challenge and explains the rationale behind it. The fund wants people to submit ideas to find out how they can "harness the power of AI to protect our planet". The video combines footage of Sánchez with imagery of the Earth from space, cows, trees, electricity grids and researchers at work. She says: "these are complicated urgent issues, and we believe modern AI can really help, but we need to figure out how". Sánchez ends on a positive note: "we can have a future without compromise". This is yet another expression of the techno-optimist approach so common in tech discourse: the BEF wants to crowdsource solutions to seek out AI applications that can bring about the best future possible. As I have shown throughout this dissertation, there is a returning narratological structure within tech discourse in which the climate crisis is addressed as a gamified challenge. In addition, the example shows how new technologies and hyped

concepts such as AI are quickly taken up by the philanthropic funds related to the North American tech sector.

Finally, I want to point out the way in which philanthropy by the BEF is imagined as a family operation. All three funds are presented as family organizations, where partners work alongside each other to realize the projects that they care about. In the video (2022) that I discussed above, we see Bezos and Sánchez closely working together. The video is designed to illustrate that the couple dedicates their time and money to revive the "American Dream" as an attainable future for citizens across the globe. Like Mark Zuckerberg and Priscilla Chan, Lauren Sánchez presents the fact that she is a mother as a reason for her passion about sustainability. In the "Let's Stand Together to Protect Our World" video (2023), Sánchez shares: "I care about this because I am a mother and I want to leave this planet a better place for my kids and their kids. What we do in the next decade determines whether we live in a radically different world or we create a more sustainable future". Sánchez, like Musk did in his keynote for Space X, imagines the future along two potential paths, with one being the preferred one. Sánchez' statement helps to simplify the climate crisis, as well as the work of the fund, as a matter of choosing the right over the wrong solution.

By linking the right future path to motherhood, Sánchez' performance, and tech-for-good discourse in general, constructs a narrative of "care" that values caring for each other and for nature. Whereas I have previously addressed the patriarchal elements of tech-on-climate discourse, tech-for-good discourse promotes a more feminine caring spirit. Musk and Bezos are often presented as strong leaders who will lead humanity into a better future, but tech-for-good discourse balances the masculine mentality with a feminine caring side. The BEF presents philanthropy as a family affair, combining stereotypical feminine notions of care with the more aggressive, masculine notions of entrepreneurship. Together, the materials propose the idea that collaborative efforts, technological innovations and a calculated approach to charity can achieve systemic changes. The fund illustrates how whole-systems thinking and the ecosystem metaphor continue to play a role in the worldview of Silicon Valley, and the ways in which it promotes its unique qualities. The underlying idea is that without these companies, the climate crisis would remain a mystery to humanity. However, the fund rarely makes its efforts and approach transparent or tangible, which strongly undermines the positive effect its donations might have had otherwise.

4.3 Making Data-Informed Decisions: The Gates Foundation

The Bill & Melinda Gates Foundation, or Gates Foundation (from here on: GF), was founded in 2000, but emerged out of two previous foundations: the William H. Gates Foundation founded by Gates senior in 1994 and the Gates Library Foundation founded by Bill and Melinda French Gates in 1997 (renamed as the Gates Learning Foundation) ("Our story"). Following Bill and Melinda's divorce in 2021, Melinda French Gates has officially resigned from the fund as of June 2024. Bill Gates now functions as the sole chair of the foundation with Mark Suzman as its CEO. A blogpost on the website states Melinda will focus her

efforts on women's rights, while the GF will keep its broad focus on health, education, poverty and hunger (2024).[83]

In the founding letter on the website of the GF, Bill and Melinda explain how they used Microsoft stocks to finance the fund. They have also received significant donations from their friend and billionaire Warren Buffett. Buffett and Gates together created "the Giving Pledge", with which they urge other billionaires (including Musk and Zuckerberg) to donate some of their wealth to charity. The collaboration between these billionaires, who also have their own funds, illustrates the networked structure of the philanthropic sector. My analysis focuses on the GF, which, according to its "About" page, has spent 54 billion US dollars since 2000, of which 7 billion in 2022. Through these large investments, differentiated as grants and strategic investments, the GF is a significant and impactful donor that has the ability to shape the industries and sectors it invests in.

The founding letter by Bill and Melinda describes the motivation behind the GF, which is to create equal opportunities for all, and especially to help prevent child deaths. The motivation to help children resonates with the family values of the couple, as they explain in the letter. They became aware of the issue through a newspaper article, but "as new parents it hit us especially hard". Bill and Melinda decide to notify Bill sr., with a quote that is highlighted on the webpage: "Dad, maybe we can do something about this". With a dramatic touch, they write that "those eight words changed the rest of our lives" ("Our story"). These words are highlighted on the website, next to an image of the couple (fig. 53). The letter ends with the names of Bill and Melinda in a handwritten font, a personalized element also used by Mark Zuckerberg and Priscilla Chan (fig 54). All three funds thus share a founding story with a personal and family-oriented touch. In all three cases, family ideals are extended to the foundations, and eventually to the Earth as precarious "household".

On the "Our role" page of the GF, the website promotes the unique position of philanthropy in relation to public and private organizations, that according to Bill and Melinda, leave gaps only philanthropies can fill. The GF mentions four ways in which they drive progress: by spurring innovations, strengthening global cooperation, creating market incentives and generating high-quality data & evidence. These four points exemplify that the GF sees tech-oriented philanthropies as institutes that have the knowledge and money to stimulate innovation, can take risks, bring their business savviness to philanthropy, and create more insights through data. These benefits are in fact affirmed by all three foundations. The fourth point, generating "high-quality data & evidence," speaks to the ways in which the GF praises itself for being able to assess what cause is worthy of funding and what is not. The fund explicitly celebrates that the entrepreneurial background of its CEO brings a unique quality to the organization. For the GF, effective decision-making through calculation is not only a method, but also a goal. In the words of the GF: "Our methods are based on logic, driven by rigor, results, issues, and outcomes" ("Our role"). The GF website thus foregrounds a narrative that I have identified before: essential data about complex issues was missing at first but is now made available thanks to the GF. In their words: "The

83 Since 2015, Melinda French Gates has her own foundation named Pivotal Ventures.

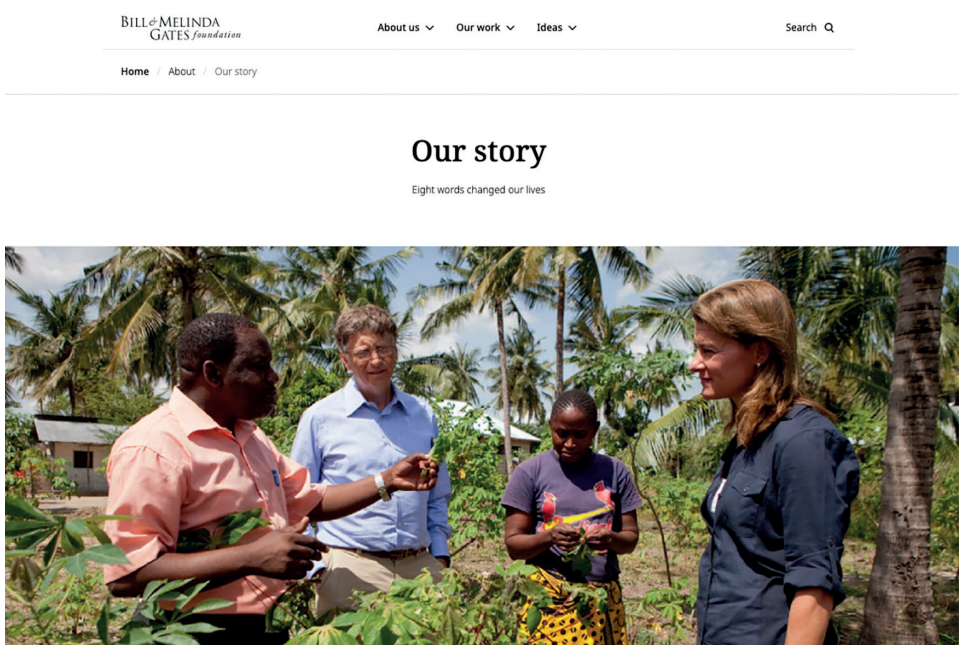


Figure 53: On the "Our story" page of the Gates Fund, the picture of Bill and Melinda and the title and tagline emphasize the familiar origin story of the fund. Screenshot by the author (September 2024).

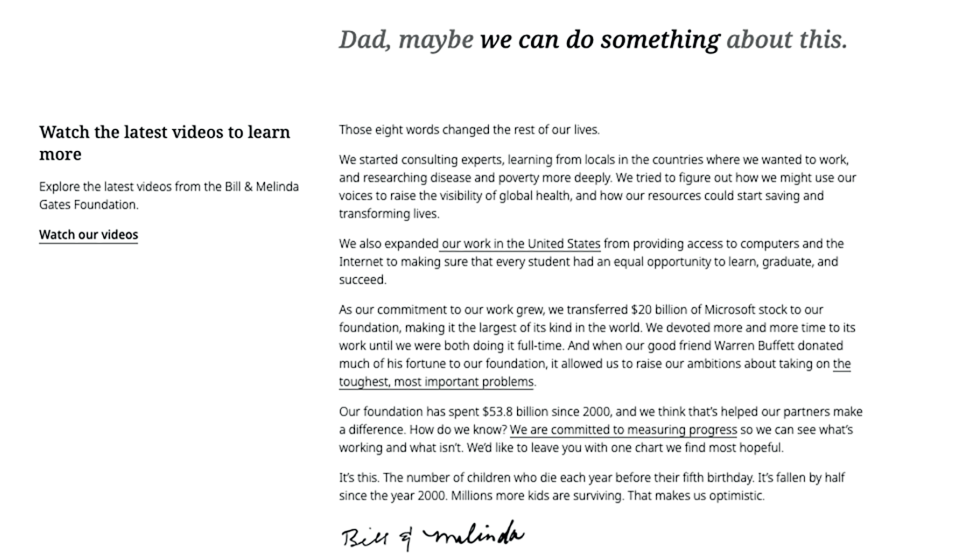


Figure 54: On the "Our story" page of the Gates Fund, a letter with handwritten details explains the motivation of Bill and Melinda to start the fund. Screenshot by the author (September 2024).

data just didn't exist, nor did a scientific way to collect it". The GF firmly expresses that only through logical, data-informed decisions, issues related to public health or the climate crisis can be solved. Again, the fund operates in line with the data-oriented modus operandi of Silicon Valley and platform capitalism.

The GF also emphasizes that a lot of issues can *only* be resolved through collaborative efforts. The argument that an organization cannot solve problems without others, but that others can neither solve problems without the help of the tech company, is a returning element in tech-on-climate discourse. In Chapter 1, I referred to this as a strategic way to shift responsibility and authority over issues and solutions. The GF website shares a favorable vision on the role of philanthropies in improving human lives, when compared to governments and corporations. The website states: "But there are gaps, spaces where some people don't get what they need to live healthy, productive lives". The implicit message is that governments cannot always do enough. Regarding Covid-19 vaccinations, Bill and Melinda write, "Governments tried to step in, but they weren't in a position to bring all the pieces – the funding, the partnerships, the logistics – together to make it work" ("Our role"). And corporations, they write, do not always have the financial incentive or security to invest. Through such examples, the GF Fund acknowledges the role of other actors, but also critiques these actors as somewhat inadequate. The conceptualization of governments as slow and inefficient is a particular North American frame that returns throughout the dissertation. As I have argued in previous chapters, governmental distrust is a central aspect of the neoliberal values that tech actors adhere to. Silicon Valley actors such as the GF strongly belief in a free-market economy and want to make independent choices about what they invest or do not invest in, and thus which causes are worthy of their support. As a product of the neoliberal economy of Silicon Valley, the GF understates the efforts of governments and the ways in which Gates and the fund benefit from the American political-economic system, while overstating its own potential and independence. This narrative is problematic in so far that it undermines the belief in democratic governments, suggesting a society modelled after Silicon Valley as a plausible and productive alternative.

The Gates Foundation is dedicated to a range of causes. While the climate crisis is mentioned on the website as a problem of interest, the GF states on a "FAQ"-page that although they "do not fund efforts specifically aimed at reducing carbon emissions, many of our global health and development grants directly address problems that climate change creates or exacerbates". Out of the three funds, the GF presents itself as most explicitly humanitarian, promoting its fund as an NGO by foregrounding social goals and activities in low-income countries. The website offers the most concrete information about the spendings of the fund and an explanation of their activities in different regions. However, the fund shares little information about the actual results of its funding. My analysis of the website shows the GF discloses the amounts of money spent, but only discusses results through blogs with examples of projects. As I noted in Chapter 1, in order to frame their actions as a diligent, effective approach, tech actors often fall back on blogposts that offer anecdotal evidence.

All three funds have embraced AI tools as solutions. In a blogpost from May 2023, CEO Mark Suzman of the Gates Foundation describes the many opportunities of AI, including AI solutions for the climate. He writes: "Earlier advances in technology have delivered uneven benefits in many parts of the world for a variety of reasons, but lack of access to innovation is the primary reason people in low-resource settings often do not see benefits in a timely, fair, and consistent fashion". In a rare moment of self-critique, in order to stress the benefits of the fund, Suzman claims that technological progress has not reached everyone equally, a problem for which Microsoft can partly be blamed. In an earlier blog from February 2021, titled "The Time to Adapt to Climate Change Is Now", Suzman writes about those most affected by climate change and the actions needed to help vulnerable populations dealing with the consequences of climate change, in line with GF's mission of equality. The blog (2021) also refers to Gates' book *How to Avoid a Climate Disaster* as a pathway for future actions that goes beyond decreasing carbon emissions.

In many ways, Gates' activities, including the GF, frame Gates as an optimistic expert in the climate crisis. Fittingly, the GF offers a newsletter titled "The Optimist", aptly characterizing the positive tone the GF and Gates want to disperse. More than in the case of Zuckerberg and Bezos, Gates' persona has largely been defined by his philanthropic efforts in recent years. He stepped down as Microsoft CEO in 2000 and left the board in 2020 (Bass 2020). As a result, he can dedicate his time to new endeavors and freely present himself as a humanitarian figure. He has manifested himself as a thoroughly optimistic and pragmatic thinker, who is seriously concerned about the climate crisis, but still operates as an entrepreneur.

Gates is active as a founder of the Breakthrough Energy organization, the adjacent Breakthrough Energy Ventures investment funds and the Breakthrough Energy Catalyst platform. Although presented as a philanthropic project, the Breakthrough Energy activities are closely tied to companies and align with their business interests. Gates arranges the collaboration with the European investment bank on behalf of this organization, demonstrating how he takes on yet another role as a lobbyist. The Dutch news platform *Follow the Money* (Wetzels and Fayed 2023) uncovered the political influence Gates has within the EU because of successful lobbying practices, for example enabling him to arrange meetings with European Commission president Ursula von der Leyen. Because of his connections, Gates secures funding for the Breakthrough Energy coalition, which the reporters critique as an investment vehicle that mixes charitable and profitable activities to the point that they can no longer be separated. The Breakthrough Energy coalition enriches the adjacent companies by securing a central position in the market of renewable energy.[84] These greentech advocates profit from Gates' reputation as a philanthropist. However, the Breakthrough Energy organization has ongoing ties to fossil fuels companies and other companies with

84 Wetzels and Fayed (2023) write that Gates' Breakthrough Energy Ventures is comprised of three funds. The money of these funds comes from Gates, but also CEOs such as Jeff Bezos, Richard Branson and Jack Ma (Alibaba), as well as oil industrialists. The activities of BE Catalyst are registered in the US as limited liability company (LLC), a construction that does not require transparency about the operations (as in the case of CZI).

a considerable negative climate impact, including General Motors and American Airlines. Microsoft is also listed as one of the investors in the Breakthrough Energy Catalyst fund, demonstrating the ongoing link between Gates and his former company (Wetzels and Fayed 2023). Through the Breakthrough Energy coalition and the Gates Foundation, Gates raises attention to the climate crisis but also promotes solutions (biofuels, carbon capture, nuclear energy) that are produced by the companies he invests in (Mooney 2023).

My analysis so far has shown that the Gates Foundation is a powerful philanthropic actor. The fund offers Gates the opportunity to position himself as a political and economic partner who needs to be taken seriously by governmental institutions. While the GF has long been presented as a shared effort with his wife Melinda, he now takes center stage in the promotional materials of the fund. Considering his efforts as a network entrepreneur, Gates balances the charitable characteristics of his philanthropism with the strategic characteristics of his economic and political activities. To further unpack these dimensions of Gates' persona, the next section offers a brief analysis of the book by Gates through which he manifests himself as climate visionary.

4. THE OPTIMISTIC ENTREPRENEUR: BILL GATES AS CLIMATE VISIONARY

In this section, I take a step back from the analysis of philanthropic organizations to come to a deeper understanding of the context in which these funds emerge. Although many tech individuals have written autobiographies about their road to fame, few have dedicated a full book to the way in which they think the climate crisis can be solved. In 2021, Bill Gates cemented his role as sustainability advocate through the publication of his non-fiction book with the telling title *How to Avoid a Climate Disaster: The Solutions We Have and the Breakthroughs We Need*. Gates' book is part of his recent efforts to transform his persona from computer nerd and tech entrepreneur into a humanitarian figure.[85]

The book, the Gates Fund, the Breakthrough Energy organization, the Giving Pledge and his online blog Gates Notes – these are all examples of Gates networked efforts to take part in global debates and lobby for the investments and innovations he deems feasible and desirable. His reach and impact, made possible by a large staff of employees and PR advisors, are significant and therefore give insight into the widespread cultural and economic power of Silicon Valley. Although Bill Gates is no longer officially part of Microsoft, he reportedly still holds a powerful position behind the scenes (even after allegations of misconduct) (Stewart 2024).[86] In this section I analyze Gates' book as a vision document, in which ideas, dreams, and fantasies regarding tech-for-good are described in

85 Another example is Stewart Brand, who published the book *Whole Earth Discipline: An Ecopragmatist Manifesto* (2009). Like Gates, Brand is convinced that "we are forced to enter an era of large-scale ecosystem engineering" (23).

86 On his website, Gates announces his new book *Source Code*, which is introduced as the first of three forthcoming memoirs (2024).

more detail. The analysis will demonstrate how Gates is a prominent promotor of green platform capitalism.

In *How to Avoid a Climate Disaster*, Gates explains the problem of the climate crisis and suggests what solutions and public-private alliances are needed to solve climate issues. In the introduction, Gates explains what potential catastrophe is ahead of us through a personal narrative about how he was confronted with the consequences of climate change. Although he is concerned, he notes that there is another future possible:

> I believe that things can change. We already have some of the tools we need, and as for those we don't yet have, everything I've learned about climate and technology makes me optimistic that we can invent them, deploy them, and, if we act fast enough, avoid a climate catastrophe. (Gates 2021, 4)

Gates thus takes the book as a moment to bring together his knowledge on climate change and his reasons for concern and optimism. Written in clear prose, the book is advertised as an "urgent, authoritative book" that offers a "practice and accessible" plan to avoid a climate catastrophe. He tells the reader what steps "we" need to take "now" to prevent a fast-approaching disaster. In my analytical terms, the book offers a climate approach centered on pragmatism. As I have stated in previous chapters, such a narrative describes an alarming future vision, but also a way to alter that future path if one listens to the authority – in this case, Gates. In the book, the climate crisis is positioned as a future event, not as something that is already materializing and causing harm across the planet. This is a strategy of ecomodernist discourse I have analyzed before, through which tech actors give false reassurance that a crisis can still be averted, and that the right technical investments will make it happen.

In the context of my study of "Platform Earth", I want to draw attention to the ideas presented around geoengineering. Geoengineering (or climate engineering) refers to large-scale manipulations to the environment, divided into two categories: solar radiation management and carbon dioxide removal. Geoengineering is often mentioned as a climate solution in tech-on-climate discourse, because, as a set of technological solutions, it aligns with Silicon Valley's climate approach of design thinking, engineering and innovation. In the chapter "Adapting to a warmer world", Gates discusses several forms of solar geoengineering, such as the option to brighten clouds by using a salt spray so that they scatter more light, eventually cooling the earth. According to Gates, this is relatively cheap and does not have permanent effects. He dismisses the critique of geoengineering as a giant experiment by writing: "we're already running a massive experiment on the planet by emitting huge amounts of greenhouse gases" (Gates 2021, 177). In my view, this is a poor comparison, but also not a convincing justification of geoengineering. Yet, Gates rather focuses on the potential positive and not the potential damaging effects. Although it is not the only approach we should take (he rather invests in mitigation and adaptation), he still believes it should be seriously considered:

> Right now, it's hard to imagine getting countries around the world to agree to artificially set the planet's temperature. But geoengineering is the only known way that we could hope to lower the earth's temperature within years or even decades without crippling the economy. There may come a day when we don't have a choice. Best to prepare for that day now. (178)

Gates acknowledges political difficulties, but he hopes governments come around to seeing what he already knows: that the option to "set" the planet's temperature is an option too good to ignore. In an analysis of geoengineering discourse, Tina Sikka (2012) has identified "exceptionalism" and the use of fatalist "tipping-points" as key discursive constructs that are used to advocate for geoengineering solutions. Gates uses these strategies to emphasize that geoengineering solutions are exceptionally good, because they buy us time while benefiting the economy. His profit-driven motivation is clear: it is the best solution if you do not want to "cripple" the economy.

The simplified ways in which Gates discusses geoengineering makes it possible for him to brush over the many risks and complexities associated with it. In the above quote, he basically claims there are no permanent effects. The fact that Gates minimizes risks and dismisses the critiques by saying that we are already taking risks, demonstrates his strong belief in the potentials of engineering, technology and future solutions that erase the problems of earlier tech solutions. He presents himself as a rationalist and pragmatist who is against doomsday environmentalism, but simultaneously uses rhetorical techniques that play into fear and fatalism. Gates ends his book by saying:

> I'm an optimist because I know what technology can accomplish and because I know what people can accomplish. I'm profoundly inspired by all the passion I see, especially among young people, for solving this problem. If we keep our eye on the big goal—getting to zero—and we make serious plans to achieve that goal, we can avoid a disaster. We can keep the climate bearable for everyone, help hundreds of millions of poor people make the most of their lives, and preserve the planet for generations to come. (226)

This quote demonstrates how Gates adopts the language of sustainability discourse, which is why it is important to scrutinize whether his efforts do justice to the complexity of the climate crisis and the problems of social justice that climate change is intertwined with. The book mixes widely accepted ideas, such as the need to cut carbon emissions rapidly and invest in renewable energy, with more risky endeavors, in a narrative that ignores certain solutions and often does not take political dimensions of these problems into account.

I maintain that it is important to understand the consequences of the use of rhetorical framings that, sometimes explicitly and other times implicitly, tweak the problem of the climate crisis into one that can be solved by the Silicon Valley playbook of solutions. I understand this rhetorical framing as a narrative of "exceptionalism" (Sikka 2012), a discursive contract that prioritizes the ideas, products and solutions generated by one group, in this case Silicon Valley actors, over others. The framing of exceptionalism occurs alongside a reconceptualization of what the climate crisis precisely entails. Environmental crises that

occur because of rising temperatures and new weather extremes, such as the loss of biodiversity, are not discussed as part of what Gates sees as the forthcoming climate disaster.

Similarly, the apolitical nature of tech-for-good and tech-on-climate discourse allows these actors to discuss controversial solutions only in terms of their feasibility, thereby ignoring the more ethical concerns critics have raised (e.g. Hamilton 2013; Chaturvedi and Doyle 2015; Oomen 2019). In fact, many researchers have warned that it is unsure what the long-term effects of geoengineering might be, and that these solutions might negatively impact the efforts to decrease emissions by other means (Oomen 2019). A group of critical researchers has published a manifesto against experimenting with solar geoengineering, calling for an international non-use agreement (Biermann et al. 2021).

The analysis of Gates' book shows how his philanthropic, corporate and political enterprises are interconnected parts of his networked efforts to become an active and influential actor in climate crisis debates. Gates' charitable passion projects provide a benign dimension to his persona, employing their non-corporate context to advance the political and economic interests of their originator.

5. PATRIARCHAL PHILANTHROPY AND THE CLOUD EMPIRE

Now that I have offered a discourse analysis of the Chan Zuckerberg Initiative, Bezos Earth Fund, and Gates Foundation as well as Gates' book, I share my three main critiques on tech-for-good discourse and the ways in which it forwards Silicon Valley's environmentalism. In three sections, I discuss 1) philanthropism as an expression of ecomodern masculinity, 2) the perpetuation of the nature-culture binary and 3) the dashboard vision of the Cloud Empire.

5.1 Ecomodern Masculinity and the Patriarchal Philanthropist

Let me first return to the critical perspectives on philanthropy so as to offer a counter-narrative to the promotional stories of tech-for-good discourse. As explained in section 2, philanthropy is a lucrative way for wealthy individuals to reduce the amount of taxes they have to pay and simultaneously promote themselves as caring individuals. Moreover, and perhaps more importantly, philanthropies are a way to gain political influence and forward a worldview about how the lives of individuals can and must be improved. My first critique is focused on how philanthropy allows the three billionaires I discuss in this chapter to expand their political influence and establish themselves as actors that need to be taken seriously.

Journalist Tim Schwab has published a book about Bill Gates as philanthropist titled *The Bill Gates Problem: Reckoning with the Myth of the Good Billionaire* (2023). Schwab is highly critical of the effectivity of his activities, the consequences of tax avoidance, and his lack of transparency. He argues that not all the money given to the fund ends up at charitable causes, but at many other venues:

> Rather, Gates donates money from his private wealth to his private foundation. He then assembles a small group of consultants and experts at the foundation's half-billion-dollar corporate headquarters to decide what problems are worth his time, attention, and money—and what solutions should be pursued. Then the Gates Foundation floods money into universities, think tanks, newsrooms, and advocacy groups, giving them both a check and checklist of things to do. Suddenly, Gates has created an echo chamber of advocates pushing the political discourse toward his ideas. (Schwab 2023, 26)

Following Schwab's critique on the political value of philanthropy, it becomes clear why philanthropy is not only or merely a benign enterprise, but a lucrative sector for tech entrepreneurs. As representatives of a business network, these entrepreneurs benefit from a self-controlled political discourse which allows them to promote their ideas of what problems need to be addressed, what the best solutions are, and who, therefore, deserves to receive funding. These choices are not only based on personal interests and engagements, but also driven by corporate interests, and thus, as Schwab writes about Gates, "always in line with his private-sector, corporate-led, patent-forward vision for how the global economy should work" (26). Tech-for-good discourse, I argue, conflates corporate visions and moral standpoints consequently framing Gates, Zuckerberg and Bezos as enlightened, socially engaged and even benign individuals.

The corporate vision that these individuals propagate has a pronounced gendered dimension. While I have touched upon the gendered dimensions of tech-on-climate crisis in Chapter 1, the philanthropic foundations frame Zuckerberg, Bezos and Gates as particular personas, drawing on masculine and particularly paternal qualities. This is visible in the family-centered approach of the three funds, which all foreground tech billionaires and their (ex-)spouses as families that want to "do good". Such a caring, family-oriented persona relates to what Ben Little and Alison Winch (2021) have conceptualized as the patriarchal identity of celebrity tech founders. Through their philanthropic organizations, Zuckerberg, Bezos and Gates blend their corporate "businessmen" identity with that of a caring family man, a person who excels at doing business, but also realizes that he is in the position and has the moral duty to "give back". In this process, he is supported by his equally caring wife, and motivated by his offspring, or younger generations in general.

While Little and Winch (2021) describe the notion of the corporate household in relation to Bezos and Amazon, I argue that in relation to the climate crisis, the Earth is presented as a household that needs to be taken care of. In the grand narrative the three philanthropies create, they are the ones that have the money, influence and willpower to ensure a better future for everyone on Earth. Little and Winch (2021) describe a typology of CEOs such as geek masculine figures (Musk), cowboys or settlers (Bezos), fathers of the corporate household (Zuckerberg) and liberalists (Google's Page and Brin). While Gates is omitted from their study, he embodies (and is elsewhere theorized as) a new category: the charitable, caring philanthropist who wants to save the world. At the same time, I notice in my research that all typologies seem to melt into one philanthropist persona. Their calculating, pioneering, caring, and engineering qualities come together in the figure of the

philanthropist, who searches for the solutions to the climate crisis in a liberal economic system. Needless to say that he himself is positioned to play a central role.[87]

The roles of the patriarch, the nerd, the cowboy and the caretaker (all a variation on the tech genius) help to understand the narratives that tech-for-good discourse creates. Analyzing these figures in terms of persona, allows for a performative analysis of their engagement in public debates. In his discussion of Richard Branson as an elite bourgeois subject who presents himself as green capitalist, Scott Prudham (2009) describes green capitalism as a "drama" with political consequences. In narratives that promote green capitalism as the only solution to the climate crisis, the need arises to show capitalism and environmentalism as compatible:

> Seen in this way, green capitalism has interwoven material-semiotic dimensions (Haraway, 1997), one central facet of which is the 'performance' of the entrepreneurial subject as environmental crusader. Performances such as Branson's not only stage the political and cultural fusion of capitalism and environmentalism as green capitalism; they also act to augment the economic foundations of bourgeois power by making the entrepreneur a central figure in climate policy, and, by extension, environmentalism. (Prudham 2009, 1596)

Through this theatrical lens, we can understand the public appearances of tech billionaires as performances in which they act as environmental crusaders. Their performative roles have very material effects and political consequences: these roles allow them to enter the global stage of the green economy and promote their economic interests. My analysis confirms Prudham's observation that green capitalism enables entrepreneurs to legitimate and greenwash their businesses. I claim that the cultural dimension of green platform capitalism, as forwarded through the production of tech-for-good materials, strengthens the position of tech figures in political and economic spheres. By foregrounding the unique qualities of their funds and their success stories, tech billionaires are starring in a tale in which they "win" the battle of the climate crisis. This narrative not only preconfigures what kind of figure can help to "solve" the climate crisis, it also frames the climate crisis as an event in the future that can still be avoided. In my chapter on spacefaring and seasteading, I introduced Bezos and Musk as cosmic cowboys who dream of engineering new futures, mastering our environment, and building new societies from the ground up. With their fantastical, long-term projects, they demonstrate a form of "ecomodern masculinity" that shows how being green can also be "cool" and make worldbuilding dreams come true (Dockstader and Bell 2020). Tech-for-good discourse shows another aspect of ecomodern masculine qualities by facing what is going wrong in "the world" and speaking up about how this can best be "fixed". The cosmic cowboys are reinvented as carbon cowboys, foregrounding their benign, paternal and caring values.

87 Some have written about the ruthlessness with which these figures have grown their businesses and wealth. Journalist Tim Schwab sketches a critical profile of Gates, using testimonies to reconstruct how he treated his friend and Microsoft co-founder Paul Allen, but also his employees and his competitors. Schwab: "What this episode shows is that if there is a genius to Gates, it is not as an innovator or inventor or technologist. Rather, it's as a businessman; it's in his ability to understand the business dimensions of technology and innovation, to network and negotiate, and to stop at nothing until he controls the way it all works" (2023, 17).

5.2 Reframing the Climate Crisis and "Nature"

Despite its green appearance, the ecomodernist narrative and its celebration of design thinking and engineering repeats the modernist human-nature binary; the idea that humans have the ability to rule over nature and can "tame" it. Joanna Zylinska (2018, 15) critiques this narrative in her book *The End of Man: A Feminist Counterapocalypse* for its "messianic-apocalyptic undertones and its masculinist-solutionist ambitions". She writes:

> This thinking is underpinned by Man's somewhat confusing relationship to "Nature," which has to be explicitly overcome as the state of bestiality and wildness above which (the White) Man can rise yet remain implied as a justification for this hierarchy between races and "tribes". (Zylinska 2018, 33-34)

Preventing or overcoming an apocalyptic event constructs a narrative in which a white male arises as the hero who can rule over nature. This theorization of the human-nature relation constitutes a particular subject, but also an understanding of what "nature" is. Such critiques are indebted to the work of earlier ecofeminists such as Val Plumwood (1993). She addresses the masculine notion of mastery as a binary of reason versus nature, which prioritizes certain forms of knowledge over others, and thus a certain kind of climate action. The belief in man's mastering qualities and the celebration of the characteristics of the tech CEO create a situation in which "his" new technologies are prioritized over less "innovative" solutions. This prioritization is a key element in Big Tech philanthropy (Solomon 2017). While the ecomodern masculine individual might appear as a sustainable actor, he is, in fact, mostly concerned with defending, legitimizing or obscuring current capitalist models and the unequal living conditions it creates (Hultman and Pulé 2018; Dockstader and Bell 2020).

These critiques highlight how philanthropy provides a new lens to understand the ways in which Silicon Valley obtains and exercises "soft", discursive power. Soft power allows tech actors to promote and expand their platform infrastructures, tools and solutions. Philanthropic activities provide the representatives of Silicon Valley with political legitimacy and a powerful voice and position in economic and policy networks to promote datafied climate solutions and geoengineering projects. But the relation between the philanthropy and adjacent tech company is, I argue, discussed in paradoxical terms: sometimes the philanthropists refer to their businesses to justify and underscore the savviness of their philanthropy and "couple" the two. In other instances, the connections between their charitable efforts and their business interests are carefully obscured and thus "decoupled".

Despite this paradox, tech-for-good discourse contains many references to the savviness and entrepreneurial qualities of tech individuals to promote their philanthropic projects. With a numbers-driven approach and a focus on new technological solutions,

Bezos, Gates and Zuckerberg use their "geeky" persona and entrepreneurial legacy to claim they can calculate what the most effective approach is to solve complex problems. These qualities are highlighted to legitimate the investments of the funds and promote the idea that these figures deserve to take up central positions in sectors like health and education. The three organizations thus operate in line with the ideal of "effective altruism", believing that philanthropic spendings can and should be meticulously calculated and rationalized. Effective altruism offers legitimation to the philanthropists and their judgement on what causes deserve their support or not. Their business credit and moral stance give them the "right" to help solve problems, without, as Anand Giridharadas (2018) argues, acknowledging that they themselves have contributed to environmental decline and social inequality, nor confronting the biases they might have.

The crucial point I want to make here is that there is not a clearcut line between philanthropy and commercial practices, even though they are sometimes discursively decoupled. In fact, philanthropic funds, especially those run by tech billionaires, are a significant financial source of geoengineering projects (Hamilton 2013; Surprise and Sapinski 2023; Temple 2024). Philanthropy, especially if it finances and promotes technological solutions, is a natural extension of the tech sector's business model. It offers an opportunity to promote their techno-fixes, but also the worldview that underlines their business model: a technocratic, ecomodernist view on societal issues, including the climate crisis.

As mentioned before, these initiatives are often undemocratic. They take the process of decision-making, but also activities such as the development of medicines, out of the public sector and into the private sphere. Similar critiques have been expressed in relation to digital platforms, penetrating public sectors such as health care and education and promising that a platformized health sector or news industry would be an improvement for all (Van Dijck et al. 2018). I therefore view these philanthropies as particular nodes in a social and corporate network of individuals and businesses which promotes processes of platformization. Such is the goal of the project "Platform Earth": to advance the idea that world problems can best be managed and fixed by the infrastructures and services of platforms and their owners. Forms of geoengineering (or: climate engineering), as propagated through the investments of the three organizations, perhaps best represent how Silicon Valley ideals align with certain climate solutions. As Jeroen Oomen (2019, 9) writes about climate engineering: "Couched in the anthropocenic notion of responsibility and stewardship, then, is an implicit project of reframing the ethics of control as an ethics of care and repair—without changing either the global epistemology or the technocratic application". His critique aptly draws attention to how tech-on-climate discourse harnesses strategic terms such as stewardship, caring, and repairing to provide moral justification to the technocratic climate agenda.

The green philanthropic narrative demonstrates the workings of Silicon Valley's ecomodernism: the wish to accelerate progress is not only legitimated from a moral point of view, but also financially and politically. It promises progress for all, but does so with a specific, self-serving understanding of what progress is and how it can be achieved. My analysis of philanthropic projects gives insight into the logic behind these expansionist

dreams. As I have argued, tech-for-good discourse makes explicit how tech billionaires envision a better world and their own role in reaching that goal. This worldview contains not only a strongly gendered perspective on progress and sustainability but also an imperialistic and postcolonial one, thus perpetuating the issues of philanthropy as it has existed in the US since the 1900s.

5.3 The Cloud Empire and the Dashboard Perspective

Building on my analysis, I propose to theorize philanthropies as projects that discursively, politically and economically advance the interests of green platform capitalism. While these philanthropies are not directly related to platform companies such as Meta, Amazon and Microsoft, they do present a structure and infrastructure, I argue, to sustain and expand a "Cloud Empire". I adopt the term "Cloud Empire" from the work of Couldry and Mejias (2019), who draw a link between historical forms of colonialism and the exploitative activities of tech companies and the appropriation of human activities and interaction. They write:

> Unlike earlier forms of imperialism, the Cloud Empire is not founded on a particular state's overt military and political desire for control of territories. Instead, it operates more informally, seeking to make all of life available to capitalization through data not by brute force but by sustaining the expansion of exploitable spaces. (Couldry and Mejias 2019, 38)

I understand the philanthropic projects of Silicon Valley actors as activities through which they create new exploitable spaces by dictating certain ways of working, or certain solutions. They do so by positioning themselves as central, resourceful actors in different domains of life and public sectors. This is by no means only a discursive project: the ideological underpinnings of tech-for-good materialize through the investments of tech companies and are thus intrinsically linked to the physical ramifications of green platform capitalism and the claims it lays on land, resources, energy and more. Indeed, new colonizing efforts intersect with traditional forms: processes of land grab and the colonization of territories still occur, now as part of a green tech agenda. In my view, the projects of green tech philanthropy offer a way to make the expansion of the Cloud Empire appear benign and non-intrusive.

The term "Cloud Empire" draws attention to the complicated and at times paradoxical relations between the techno-philanthropic organizations, companies in Silicon Valley, and governments and NGOs worldwide. While platforms and tech moguls sometimes present themselves as state-like actors with the entrepreneurial skills of private companies, they also position themselves as the opposite of governments and NGOs, emphasizing the unique qualities of their foundations. On the website of the Gates Foundation, for example, philanthropy is presented as a solution for issues that cannot be solved by either governments or corporations. The fund creates a juxtaposition between the incapability of these institutions and the potential of their own foundation, while omitting non-governmental organizations or civil society groups from the discussion.

Several authors, most notably Mariana Mazzucato, have pointed out that compa-

nies often disavow the crucial role that investments and efforts by the state play in realizing innovations (Mazzucato 2013; O'Mara 2019). At the same time, platform theorists have argued that tech companies tend to take on certain tasks of governmental organizations, utilizing the authority of state-like actors without safeguarding public values (Bratton 2015; Van Dijck et al. 2018). With the reconceptualization of what a state-like actor could be, also comes a new understanding of the citizen as a platform user or customer. As Couldry and Mejias (2019) write, the Cloud Empire envisions a specific type of individual, whose online activities are captured as data points, capitalized, and made profitable (see also Zuboff 2019). With philanthropy, the reach of Silicon Valley and its subjectification of the individual as user, but also as person in "need" of help, extends into new communities. Such an extension also intensifies existing, inequal power relations between the sector and its end users.

While the philanthropic projects seem to acknowledge the local specificities of the problems they engage with and strengthen the "coupling" between Silicon Valley and the rest of the world, this seems be more of a rhetorical strategy than an actual concern. In an article in *Wired*, Felix Salmon (2018) argues that tech philanthropism is not like any other form of charity, and the tech philanthropist not like other donator or celebrity activist. The investing efforts of tech companies are shaped by a particular underlying view of the world, as well as of humanity, in a time of crisis. As Salmon (2018) writes, the subject as understood by Silicon Valley is a simplified subject:

> You need to reduce us to some kind of algorithm that can anticipate and monetize our collective behavior. Viewed from the Googleplex, or One Hacker Way, humanity is a bit like an ant colony: a complex yet predictable emergent organism. If you can hook that organism on your technology, if you can get it to behave the way you want it to behave, then your reward will be wealth and power on an almost unimaginable scale. (n.p.)

A gods-eye view on the planet, or on nature, thus goes hand in hand with a gods-eye view on the human. It informs a hierarchy, and a confident message that Silicon Valley knows what is best for us and for the environment, and what the future should be like. These are the key elements of the worldview of "Platform Earth". Tech companies frame their solution as a helping hand to a vulnerable planet, but this framing only works if the planet is conceptualized as the playground of Silicon Valley. I argue that this process is a form of platformization, as it justifies and solidifies tech companies and their economic rationale by reinventing it as climate friendly.

The view of the world as a playground, a testing bed of design thinking, also relates to the metaphor of the ecosystem: a simplified understanding of human-nonhuman relations that can supposedly be managed if we build an extensive enough "data dashboard" that sees the world and its inhabitants as data points. I propose that the dashboard is another key metaphor to understand the vision on the relation between humanity, technology and Silicon Valley as it is produced in tech-for-good discourse. With the "dashboard" metaphor, I refer not only to initiatives such as the Systems Change Lab by the Bezos Earth

Fund, but to a mode of thinking that underpins these initiatives. I am inspired here by the work of Shannon Mattern. In her book *A City Is Not a Computer: Other Urban Intelligences* (2021), Mattern discusses how computational models of urbanism, for example used in technology-driven smart city projects, prioritize datafied forms of knowledge over others, while reducing city inhabitants to users or customers. She describes how dashboards are enticing objects that promise to make complex situations visible, tangible and comprehensible, but create a partial, reductive and distorted "mode of looking and thinking" (27). Mattern (2021, 41) therefore defines the dashboard as "an epistemological and methodological apparatus" that comes with a preconfigured set of variables, forms of quantified input, methods of operationalization and "ways of rendering that data representable, contextualizable, and intelligible". Such forms of dashboard governance provide a sanitized view, a form of situated literacy that overlooks those elements not legible through the dashboard logic, or that present an undesirable variable.[88] While Mattern criticizes the instrumental, monetizable view of the city the dashboard creates, I want to extend her critique to a planetary scale and the myth of "Platform Earth".

From "engineering" solutions to the calculation of their effectiveness: tech-for-good discourse envisions planetary-scale issues as solvable with the right data. This worldview resonates throughout the philanthropic projects. Notions of dashboard governance – despite the illusion of the "boots on the ground" approach in the promotional materials – produce a detached vision of the planet as an operating system and rely on a limited form of ecosystem thinking that I have critiqued in earlier chapters. The philanthropic projects thus express what Mél Hogan (2018) refers to as the ecosystemic dream of Big Tech, giving way to an instrumental approach to nature that simplifies the environment and the complex entanglements between humans and nonhumans. Tech-for-good discourse thus reveals new forms of mythmaking that reproduce the myth of "Platform Earth".

My analysis of tech-for-good discourse, in the light of literature on philanthropy, shows the contemporary ramifications of this discursive use of the term ecosystem. Fleur Johns (2023), for example, details how the logics of digital media now also influence how activism and humanitarianism are organized and how humanitarian issues are debated and mediated. Johns' research focuses on the legal and political implications of this development, noticing that problems and concerns are presented and communicated in datafied forms, resulting in new blind spots, a different relation to legal frameworks and a changing landscape of partners and power dynamics. With Mattern's critique on dashboard governance in mind, we can see how these legal, political and social dimensions are strongly related to the epistemological consequences of equating data with knowledge. As Sun-ha Hong writes in *Technologies of Speculation: The Limits of Knowledge in a Data-Driven Society* (2020), datafication has changed and continues to change what counts as knowledge, how knowledge is produced, what subjects can know and how they make sense of information.

88 The dashboard and control or operations room have a longer history in the military-industrial context. A well-known example that Mattern (2021, 36-37) also refers to is the futuristically designed (but not operational) control room constructed in Chile as part of Project Cybersyn.

Technologies, Hong argues, "affect the underlying conditions for producing, validating, and accessing knowledge and modifying the rules of the game of how we know and what we can be expected to know" (2020, 2). This is especially important in relation to the climate crisis. With its simplified explanations of problems and solutions, tech-on-climate discourse shapes what we know about the climate crisis and how its problems are perceived and discussed. As many postcolonial scholars have argued, hegemonic power structures require us to carefully unwrap what forms of knowledge are taken seriously and what future goals are aspired, and who benefits from these prioritizations.

6. CONCLUSION: SILICON VALLEY AT THE FRONTIER OF A GREEN TRANSITION

At the end of this chapter, I want to return to the book by Bishop and Green (2008) on philanthrocapitalism. Focusing on the positive elements of what this form of giving can bring about, they end their book with a story from the (now) near future:

> 'IT IS OCTOBER 25, 2025. In the library of Lord Branson's luxurious eco-friendly space mansion, beneath a hologram of Andrew Carnegie, Bill Gates is celebrating his birthday with his closest friends. The views are spectacular. From above, planet Earth has never looked better—and, Gates thinks to himself, back on the ground things are looking pretty good, too.
> (Bishop and Green 2008, 267)

One can imagine that Branson, Gates, but also Bezos, Zuckerberg or Musk, would happily agree to this bucolic future image, that, however, will most probably not happen in 2025 or any near future.

In this fourth and final chapter of the dissertation, I have analyzed tech-for-good discourse in relation to scholarly work on philanthropy that presents a critical perspective on philanthrocapitalism. Building on these theories, the aim of the chapter has been to show how and why the philanthropic projects of tech billionaires present an indispensable part of their business activities. Tech-for-good discourse, I claim, provides an illuminating insight into the future-oriented visions of Silicon Valley actors, and the ways in which they imagine ideal societies, improved forms of living and a world that can overcome crises, including climate change. As such, this discourse provided new insights into how the myth of "Platform Earth" about the benevolence of Silicon Valley is expressed through the networked, philanthropic efforts of tech actors.

In this conclusion I return to the question that guided this chapter, asking how Silicon Valley billionaires position themselves in environmental and geopolitical debates through their tech-for-good discourse. Through a close analysis of promotional materials by the Chan Zuckerberg Initiative, the Bezos Earth Fund, the Gates Foundation and an analysis of Gates' climate book, I have discussed the ways in which philanthropy allows tech billionaires to express their concerns about societal issues related to education, health and

the climate crisis. In these materials, Zuckerberg, Bezos and Gates may not boast about the success of their tech companies, but they do refer to their corporate success and their entrepreneurial backgrounds to promote themselves as figures best equipped to "fix" societal issues. In other words: these figures position themselves as caring, paternal characters to legitimate their interference in sectors and fields that they are not familiar with. By presenting themselves as visionaries and experts, philanthropy enables them to position themselves as geopolitical actors who deserve to be taken seriously in the political arena. Philanthropic efforts, I argue, form an essential part of how Silicon Valley actors exercise networked forms of power. These efforts take the form of mythmaking, which allows tech entrepreneurs to further promote themselves and their businesses as key agents in a green transition, while simultaneously claiming the opposite: that they undertake philanthropy not to protect their corporate interests, but purely because of their personal and familial values.

Through a range of examples, the chapter illustrates that in the worldview of tech billionaires, the market presents the ultimate model through which the world should be organized, as it is the only model capable of solving complex issues. Tech-for-good discourse presents an apolitical understanding of societal issues, and pictures governments and NGOs as organizations not capable (at least not without the help of tech) to effectively address issues and act fast enough. Although Gates and his foundation have made much more significant donations than Bezos or Zuckerberg, it was not my goal to compare the effectivity of their funding (although critics that I cite have argued that the impact is debatable). Instead, my aim was to draw attention to other ways in which these philanthropies affect the discursive, political, infrastructural and societal power of these individuals and the phenomenon of Silicon Valley that they represent. By presenting themselves as charitable individuals, Bezos, Zuckerberg and Gates include a new, benevolent dimension to their public persona.

There is an important overlap between tech-for-good and tech-on-climate discourse: both present a narratological structure in which a problem is identified, for which a pragmatic solution is offered by a caring company or figure. Whoever critiques these efforts is seen as a cynical counterpart to progress. My analysis of tech-for-good discourse has pointed to the sometimes glaring, sometimes hidden differences between the solutions proposed and the problems at stake. While the discourse seems to actively engage with real-world causes, it cannot fully hide the limitations of approaching wicked problems with its Silicon Valley toolkit of solutions. The analysis has therefore demonstrated the limitations of the dashboard vision and the myriad proposals of techno-fixes. These limitations include the fact that the funds only focus on a selection of solutions the billionaires are willing to advertise and invest in, and do not always have the right, local expertise to implement these solutions. Reforestation projects, for example, are a popular form of climate action, but not without risks. The Bezos Earth Fund has been criticized for operating without having the right expertise on what kind of trees can and should be planted where to prevent the "wrong" kind of trees from harming local ecosystems (Calma 2021b).

As Sean Johnston (2020, 208) writes in his work on techno-fixes, these solutions do not consider "existing systems, social infrastructure, and human constraints" and neglect

"potential harms and externalities" and the perspective of experts or citizens. Whereas tech-for-good discourse appears as a form of engagement that "couples" Silicon Valley with the rest of the world, it in fact perpetuates the processes of decoupling key to "selling" the ecomodernist vision that humanity can thrive, and economies can grow without harming the ecosystems we are a part of. The dashboard serves as an apt metaphor for this form of decoupling: by visualizing planetary problems and ideal solutions it presents a desirable and comprehensive outlook on complex crises, but it does so from a control room that "shields" its operators from the consequences of the ongoing climate crisis, or their inapt solutions.

In addition to the critiques on CEO activism and tech philanthropy I have addressed in this chapter, I have homed in on the problematic ways in which tech-for-good discourse further advances the worldview of "Platform Earth". In the dreams to fix the planet and force technological breakthroughs, I observed some core elements of the ecomodernist ideology. The world is seen as a Cloud Empire, which can be steered from the cockpit and dashboard of Silicon Valley, thereby selecting what forms of knowledge and what solutions deserve to be amplified and stimulated. The Earth can, with the right help and tools, be fixed, or even turned into something better than it has ever been, but only if we welcome the mediating layer of tech infrastructures. This is what the Ecomodernist Manifesto's writers (Asafu-Adjaye et al. 2015) mean when they speak of the "great Anthropocene". A planet that is inherently altered because of human activities is for them not a sad event, it is instead the proof of progress. For ecomodernists, geoengineering solutions are therefore not a risky last resort, but the epitome of innovation and entrepreneurship. As TJ Demos (2018) writes on geoengineering and conflictual futurisms:

> Driven by an endless quest for bliss, immortality, and divinity,' *anthropos*, in this narrative, figures as ultimate self-creator, for whom no challenge – climate change, agricultural failure, artificial intelligence, planetary hunger, even death and extinction – will be beyond technological overcoming, especially when matched to Silicon Valley capital. (11)

For Silicon Valley as "self-creator", the climate crisis is not so much a crisis as it is an opportunity to showcase the abilities and stress the need of Silicon Valley capital. Tech-for-good discourse is therefore an arena in which tech billionaires perform the role of "carbon cowboys", directing attention, financial means and the efforts of many towards a certain set of solutions, such as forms of geoengineering. The investments in climate technologies are not unique to tech philanthropies, but tech capital and billionaire philanthropists (such as Bill Gates) play an important role in this new "green" sector (Surprise and Sapinski 2023). As these philanthropies advertise that geoengineering can "buy us time", they shape public and political debates about the climate crisis, yet again pushing transformative, socio-economic changes to the future.

Although philanthropy is one of the many activities tech billionaires engage in, a critical focus on these figures and funds has shown the merits of employing a networked perspective on these figures. My analysis of tech-for-good discourse has demonstrated the extent to which these figures are invested in finding climate solutions that do not jeopardize their businesses. The precise ways in which they operate remain hard to uncover due to the complex organizational constellations and a lack of transparency. One example that exemplifies the new coalitions that are formed around "green" tech solutions is the project "Frontier Climate", a joint initiative ("advance market commitment") by Meta, Alphabet, McKinsey and other American companies – with a name that forecasts Silicon Valley's new "frontier" – directing a billion dollar of funding into carbon capture projects (Frontier Climate 2024). Such projects demonstrate the dispersed yet elaborate efforts of Silicon Valley actors to invest in solutions that allow them to compensate their climate impact. At the same time, these projects strengthen the position of these actors in climate economies. In addition, initiatives such as "Frontier Climate" allow companies such as Alphabet to promote themselves as essential, sustainable partners to other companies that, for example, use the cloud services of these platform companies. At the same time, all their initiatives reflect the underlying wish to continue business-as-usual.

In conclusion, I understand tech philanthropists foremost as fighters for a public image rather than a better world. Notwithstanding their perhaps sincere aims to use their money for public good, I propose to critically assess the ways in which they choose to do so and scrutinize the differences between what they *say* and *show* versus what they *actually achieve*. Tech philanthropy and the production of vision documents such as Gates' climate book, are two interconnected ways in which "Platform Earth" as a particularly American "frontier" project, is sustained and expanded. The representatives of Silicon Valley are positioned as essential actors offering humanity the necessary progress that technological innovations can "unlock", thereby promoting an optimistic perspective on the climate crisis. This perspective perpetuates the transhumanist myth of the user-subject as a ruler of nature who can innovate and accelerate its way out of crises.

Beyond Platform Earth: Reckoning with the Machine in the Garden

I wish there were some magic invention that could steer the conversation in a more productive direction. Of course, no such device exists. Instead, it's up to each of us.

- Bill Gates, *How to Avoid a Climate Disaster*, 2021, 225

The machine's sudden entrance into the garden presents a problem that ultimately belongs not to art but to politics.

- Leo Marx, *The Machine in the Garden*, 1964, 365

1. A SUMMER ON PLATFORM EARTH

On July 5th 2024, venture capitalists Marc Andreessen and Ben Horowitz declare that the 21st century has the potential to be glorious for the United States, because its strong technological sector, free market economy and military apparatus will make this the "Second American Century". Their blogpost (2024) reads as a policy brief to the US government, calling for a more favorable political stance towards start-ups (termed Little Tech), a reconfiguration of the military and manufacturing sector around AI and automation, and investments in "nuclear power for unlimited clean energy production". On July 14th (a day after the attack on Donald Trump), Elon Musk – currently the richest individual in the world – publicly endorses Trump as presidential candidate in the 2024 elections (Mac et al. 2024). The public support for the Republicans by some tech entrepreneurs, including Musk, is mostly prompted by deregulatory approaches towards their billion-dollar companies, labor rights and the climate crisis (Nilsen 2024). While some entrepreneurs still publicly support the Democratic campaign, the increased support for the Republican party symbolizes the growing political divide in Silicon Valley, once known as a liberal bastion (Mac et al. 2024).

In the same month, on July 21st and 22nd 2024, amidst a summer of heatwaves and forest fires, the world hits a record of the highest average global temperature for two days in a row (Taylor 2024). While the severity of the climate crisis is widely recognized, these updates form new evidence that structural changes necessary for upholding the Paris climate agreements have been put off for too long. Limiting warming to 1.5°C as a long-term average may no longer be feasible. A few days later, on July 26th, *The Guardian* reports that Google, Meta, and OpenAI are doubling down on their investments and developments of AI products. Tools and large language models such as Gemini (Google), Llama (Meta) and Chat & Search GPT (OpenAI) have been made publicly available at a fast pace, becoming integrated into many tools and work processes (Milmo and Hern 2024). Corporate sustainability reports demonstrate the increase in water and energy use caused by these services, but the actors claim this will change in the future, emphasizing the need for more renewable energy and stressing the potential of AI to accelerate sustainability (Hodgson 2024).

These diverse headlines from July 2024 may seem like a somewhat unrelated collection of events, but it has been the goal of this dissertation to show how climate and tech developments are in fact intertwined. The news updates offer a kaleidoscopic vision of the ways in which the US tech sector is reconfiguring itself in relation to current geopolitical, economic and ecological developments. The sector is promoting itself as an innovative network that can strengthen the hegemony of the United States, whether as a military force or (green) economic leader. These developments demonstrate the difficulty but also the importance of understanding cultural shifts within the Silicon Valley community.

Writing this Conclusion in the summer of 2024, the news updates illustrate the ongoing intersection between the climate crisis and platformization, and the way in which this intersection plays out in the contemporary political landscape of the US. These developments are also felt in Europe. On August 23rd, only days after the European Union's "AI Act" entered into force (as of August 1st of 2024), Meta CEO Mark Zuckerberg and Spotify CEO Daniel Ek publish an opinion piece in *The Economist* to criticize the EU's regulatory approach (European Commission 2024a; Zuckerberg and Ek 2024). The CEOs (2024) state that Europe will miss out on a "once-in-a-generation opportunity": "Because the one thing Europe doesn't have, unless it wants to risk falling further behind, is time". The piece fits in a long tradition of tech actors lobbying for the importance of unbounded innovation, critiquing the "risk-averse" approach of the EU as a threat to economic growth. If the climate crisis were on the minds of these CEOs (they do not mention it), AI would surely present an opportunity, not a dilemma. From another perspective, the AI Act is criticized for a lack of regulations regarding climate reporting and the mitigation of climate impacts (Alder et al. 2024).

In my dissertation *Platform Earth*, I have sought an answer to the question: *How do North American tech companies and actors associated with Silicon Valley position themselves in the climate crisis through their tech-on-climate discourse, and what are the historical and ideological underpinnings of their environmental worldview?* In answer to that question, I have mapped how Silicon Valley actors have taken an active position in response to critiques of their environmental impact across different discursive genres. My analyses show how tech actors have created and are still creating promotional materials, products and PR moments through which they carve out a position for themselves as "green" entrepreneurs. One central point of my analysis is that these actors not only *defend* their own impact but actively *promote* their platforms, technologies, infrastructures, modes of operation and future plans as essential tools in the "fight" against the climate crisis.

I have coined the term "Platform Earth" to refer to the myth produced by Silicon Valley actors that their activities are essential for "solving" the climate crisis. I also use "Platform Earth" to refer to the processes of mythmaking that underpin this myth and to the ways in which it materializes through climate debates and the expansion of platform capitalism. "Platform Earth" symbolizes the shared modus operandi of Silicon Valley through which actors *naturalize* platform capitalism and *platformize* the climate crisis. I claim Silicon Valley's green approach needs to be carefully studied, as it normalizes platform capitalism and prioritizes datafied forms of climate knowledge and solutions, thereby foregrounding

and implementing platform infrastructures as cornerstones within a global green and digital transformation. Although the development of climate solutions is not a core business of these companies and actors, they embrace it to legitimize and further expand the role of digital platforms in today's societies. In other words: they claim that a platform society *is* a green society, thus promoting an economic agenda of green growth.

Although the proposed solutions and plans vary in terms of topics and goals, I study these as elements within an overarching yet dispersed environmental approach. The materials I analyzed are part of what I call "tech-on-climate discourse": an ever-expanding archive of promotional materials in which tech actors reflect on the climate crisis. I approach these discursive materials as elements within the cartography of "Platform Earth", mapping the different representations of nature-tech relations forwarded to sell the eco-modernist myth that Silicon Valley is unequivocally good for the planet.

I have analyzed promotional materials from different genres of tech-on-climate discourse by using methods of visual, textual and historical analysis. These methods of critical discourse analysis allowed me to study the process of corporate mythmaking, paying special attention to narratological structures, greenspeak and visual strategies, together forming a green agenda, or a playbook of solutions, in line with Big Tech's environmental ideology. The playbook of solutions offered by tech actors exists of three elements which operate on different levels:

- sociocultural: defending and minimizing their own climate impact through carefully chosen forms of greenspeak and visual designs in their materials that illustrate sustainability has become part of their "company culture";
- technical-infrastructural: promoting themselves to their users and stakeholders as knowledge brokers by offering "dashboard services" and as producers of essential green technologies and infrastructures;
- political-economic: advocating for themselves as sustainable, innovative and essential climate partners and investors engaging in economic and political partnerships around climate technologies.

These three processes interrelate, demonstrating the need to study the promotional efforts of tech actors in close relation to their economic and political activities. Together, they help to understand how "greenwashing" works, understood as an approach that promotes change but in fact defends the continuation of business as usual. Throughout the conclusion, I will elaborate on the contents and consequences of Silicon Valley's green playbook.

In what follows, I explain how the four chapters have approached the research question from different perspectives, and I offer a critique of Silicon Valley's ecomodernist ideology. Then, I reflect on the approach of my dissertation. I close with a discussion on how to move beyond the imagined tech-nature relations and proposed climate futures in the discourses of tech actors.

2. MYTHS, STRATEGIES, NARRATIVES, IDEOLOGIES

Over the course of four chapters, the dissertation approaches tech-on-climate discourse from different perspectives. Each chapter presents a close visual and textual analysis of a selection of case studies I have researched to understand how Silicon Valley actors can be seen as "mythmakers". I have analyzed:

1. contemporary narratives developed in the promotional materials of Apple, Amazon, Microsoft and Google;
2. the historical and ideological origins of these narratives in the second half of the 20th century in the United States;
3. the worldview as it emerges in escapist discourse that proposes exit projects such as seasteading and spacefaring as long-term climate solution;
4. the worldview as it emerges in tech-for-good discourse produced by the personal philanthropies of Bezos, Zuckerberg and Gates.

Chapter 1 "Dreams of Decoupling" starts with the central myth of this dissertation that Silicon Valley is good for the planet and demonstrates how tech companies present themselves as climate actors that can help solve the climate crisis. The chapter discusses the emergence of tech-on-climate discourse in response to growing critical coverage by academics, journalists and NGOs about the environmental impact of the tech sector. I distinguish four categories of materials: webpages, commercials, reports and interactive tools and projects. These categories partially overlap, together forming a more or less coherent discourse that is specific to Silicon Valley.

Through my discourse analysis, I show how the multi-modal and ever-expanding corpus of tech-on-climate discourse by Amazon, Apple, Google and Microsoft is structured through a range of framing strategies. The chapter highlights four textual strategies: temporal differentiation, material differentiation, ambiguous authorization and ambiguous accountability. These four strategies allow the companies to position themselves as problem-solvers and visionaries, without necessarily tackling the more structural problems of Silicon Valley's environmental impact. The chapter explains the green approaches that companies propose as a form of pragmatism, which constructs a rational and entrepreneurial relation to nature and breaks down the problem of climate change into a range of smaller problems that they can fix. I also highlight three visual framing strategies: the depiction of unspoiled, upgraded and extracted nature. These framings centralize pristine landscapes, energy sites and green symbols, while other forms of materiality are obscured. The visual identity of green campaigns creates, I argue, inaccurate understandings of the materiality of platform companies and their effect on the environment. Together, the strategies of mythmaking I observe help companies to cast certain solutions and future paths as more desirable, valuable, attainable and profitable than others, and, through mechanisms of coupling and decoupling, smooth over potential contradictions in the presented narratives.

Chapter 2 "Fixing the Whole Earth" traces the historical and ideological underpin-

nings of the pragmatic approach and ecomodernist ideology I observe in Chapter 1. In this chapter I problematize the mythical discussion of history in today's tech-on-climate discourse and trace the importance of the "ecosystem" metaphor in transformative periods of US history in the 20th century. These periods include: cybernetics and the information age (1940-1960s); Stewart Brand and the *Whole Earth Catalog* (1960s); environmentalism and the *Limits to Growth report* (1970s); the emergence of ecological modernization (1980s); and the popularization of the internet (1990s).

Through a historical analysis of key moments and figures between the 1940s and the 1990s the chapter demonstrates that the contemporary worldview of "Platform Earth" reflects long-standing desires for connectivity, freedom, and progress, which come together in the imagined synthesis of technology and nature. The chapter's genealogical approach traces the notion of "whole-systems thinking" and the metaphor of the ecosystem from its origins in the military-industrial complex and the fields of cybernetics and ecology, to the *Whole Earth* community and the *Limits to Growth* report. From the 1980s onwards, whole-systems thinking has gradually produced, I argue, a managerial, instrumental perspective on nature as part of neoliberal approaches to environmentalism. Silicon Valley actors engage in forms of whole-systems thinking that, despite a declared love of nature and "web-of-life" rhetoric, dreams of understanding and managing the "Whole Earth" while decoupling humans from complex earth systems. The contemporary myth of a green Silicon Valley reflects longstanding fantasies of freedom and control, turning a mythical narration of the culture's history into a reason for its success. I conclude that within today's platform society, cybernetic-ecosystemic ideals are still shaping platform infrastructures, perpetuating the logic of extractivism on which their operations rely.

In Chapter 3 "California Forever", I return to contemporary tech-on-climate discourse, zooming in on projects that expand Silicon Valley into new futures and spaces. I conceptualize these "exit projects" as long-term plans to materialize the dream of "Platform Earth" by building new communities from the ground up. The chapter discusses the urban project "California Forever", as well as the more radical seasteading and spacefaring movements. In these plans, I observe the myth that humanity can break with its extractive, earth-bound past and "start over". An analysis of seasteading and spacefaring reveals how Silicon Valley as a cultural and political force is shaping discussions of long-term futures and societal ideals while creating economic opportunities on the short term.

The chapter approaches figures like Peter Thiel (Seasteading Institute), Jeff Bezos (Blue Origin) and Elon Musk (SpaceX) as celebrities and "network" entrepreneurs, whose plans to build seasteads, space colonies or Mars settlements provide them with an opportunity to position themselves as future-facing actors in global debates on societal issues. These planetary-scale (re)design projects reflect dreams of transformation and territorialization that fit a sustained North American tradition of imperialist and expansive projects aiming to break new "frontiers". My discourse analysis demonstrates that exit projects provide a particular aesthetic and value to the mythical persona of the celebrity entrepreneur, mixing pragmatic, trustworthy entrepreneurial qualities with the risk-taking, imaginative qualities of the "cosmic cowboy". Although the long-term futures envisioned

by this escapist discourse are highly unrealistic, they have real impact. I scrutinize the ways in which fact and fiction blend together in these science-fictional projects, allowing them to tap into wider felt fears and hopes about the potentials of technology in relation to ecological crisis. The territorial proposals aim to design new societies after the model of successful companies and their digital platforms and therefore expose how these tech billionaires see the future and their own role in it. The escapist and worldbuilding discourse reveals how Silicon Valley's ecomodernist ideology expresses a worldview that combines a rational, managerial, and transhumanist view of Earth with a singular and individualistic understanding of the human subject.

To further understand the role of tech figures as network entrepreneurs, Chapter 4 "Platform Earth as Political Horizon" turns to philanthropical projects by Mark Zuckerberg, Jeff Bezos, Bill Gates, and their (former) partners. The chapter zooms in on the myth that these actors are personally concerned with humanitarian issues, including the climate crisis, and can implement solutions that no one else can offer. The chapter studies the projects and visions of the Chan Zuckerberg Initiative, Bezos Earth Fund and Gates Foundation as part of "tech-for-good discourse", another subgenre of tech-on-climate discourse. The funds offer these individuals opportunities to lay out their visions on global prosperity in relation to health, education and the climate crisis, but also stress the benefits of technologies such as AI products. By presenting themselves as visionaries, the entrepreneurs try to persuade the public that they bring unique qualities to their funds and philanthropy in general, based on their self-acclaimed credentials as design thinkers and innovators. Their strategy is, I argue, to further promote the tech sector as a key economic agent in a green transition, while simultaneously claiming that these individuals undertake philanthropy purely because of their personal and familial values. Although the philanthropies do engage with real-world causes, the lofty goals and missions of the funds reveal a primary interest in redesigning the field of philanthropy according to the calculative principles of effective altruism.

Whereas tech-for-good discourse appears as a form of engagement that "couples" Silicon Valley with the rest of the world, I claim it in fact perpetuates the decoupled ecomodernist vision that humanity can thrive and economies can grow without harming the ecosystems we are a part of. I propose that the *dashboard* – one of the solutions of the Bezos Earth Fund – serves as an apt metaphor for this form of decoupling: it presents a desirable and comprehensive outlook on complex crises but is operated from a control room that "shields" its operators from the consequences of the ongoing climate crisis. Tech-for-good discourse not only lays out a particular vision on how the planet and everyday life can be improved, but also points to actual investments and partnerships through which these actors promote their economic interests. These connected interests are perhaps most visible in the case of Bill Gates, whose role as a philanthropist overlaps with his position as tech entrepreneur and investor in climate technologies. The representatives of Silicon Valley act, I argue, as "carbon cowboys" who are taking up active positions in discussions on geoengineering, carbon capture and storage, nuclear energy and more. Their mythmaking efforts allow them to reposition themselves as benevolent climate actors, while they, in fact, protect and expand their financial stakes in climate technologies. Mapping these

forms of advocacy helps to understand the changing focus and tactics of the Silicon Valley network as it reorients itself amidst a growing "green" economy. Before I further discuss the implications of my findings, the next section reflects on the approach of the dissertation.

3. THE SILICON VALLEY PLAYBOOK OF GREEN SOLUTIONS

The methodological approach of *Platform Earth* is designed to critically study greenwashing efforts by Silicon Valley actors as forms of mythmaking. Building on existing work on tech discourse and green PR, the research offers a first, broad overview of tech-on-climate discourse produced by tech actors, understood as nodes in the powerful network of Silicon Valley. Inspired by Roland Barthes, I approach tech-on-climate discourse as a collection of texts that convey myths about the sustainability of green capitalism. This narratological project and worldview produced by Silicon Valley agents are what I refer to as "Platform Earth".

The methodological contribution of the dissertation is that it operationalizes the notion of mythmaking in relation to tech-on-climate discourse. I theorize promotional materials in relation to "green myths" (Smith 1998) and "corporate dreams" (Rahm et al. 2020) that produce favorable stories about the relation between the American tech sector, human prosperity and the climate crisis. My analysis of case studies from tech-on-climate discourse is equally concerned with language and visualizations, both central elements in the construction of a sustainable identity that provides moral justification to Silicon Valley. I therefore propose a four-dimensional approach which includes an analysis of narratological structures, green techspeak, visual identity and the worldview of tech companies. The approach of the dissertation is grounded in media and culture studies and theorizes the network of Silicon Valley as a significant cultural producer. Their promotional materials set out visions and scenarios of what makes tech services desirable and essential, visions that in turn materialize in company products and infrastructures. The chapters and their focus on genres of tech-on-climate discourse thus help to map the overall agenda of the tech actors and their "playbook" of green solutions.

While Big Tech companies are long recognized for their global power in the tech sector and exceedingly in sectors such as public governance, education or health (Van Dijck et al. 2018; Sharon and Gellert 2023), the climate crisis serves as a lens to understand new ways in which platform power is exercised. Following the work of Luc Boltanski and Eve Chiapello (2005) and Jesse Goldstein (2018), I have zoomed in on the "green spirit" of platform capitalism, developed in response to critiques. The green spirit captures how the tech capitalist model, built around a system of planetary-scale computation, transforms itself in the light of climate change and "produces" a new kind of nature (Moore 2015). The development of green myths in line with this spirit enables the companies to tell hopeful stories about, for example, how using Amazon Web Services, measuring your carbon footprint with a Google tool, or buying a new Apple smartwatch can be a significant form of environmental action.

I argue that the strategies of mythmaking in tech-on-climate discourse contain

three core elements. First, the discourse offers a language of technological *determinism*, that presents technological solutions as the best kind of solution and technological progress as a given. Tech-on-climate discourse actively sustains the idea that these solutions are the best, and those who do not agree are presented as being "against" progress. Second, through stories of *authorization* and *exceptionalism*, Big Tech actors position themselves as experts with a track record of successful innovations, pushing the dominance of Silicon Valley further, while using it as proof of its exceptional qualities. Third, Silicon Valley is updating its *democratizing* discourse to present itself as a climate fighter who represents the interests of a unified humanity. Just as the Facebook platform was designed to create a global community according to its promotional discourse, now tech actors claim their infrastructures can create a global network that would benefit the planet. This is why the discursive efforts of Silicon Valley are not merely PR efforts: they are vision documents that unveil a cultural perspective on the potential of technology and exemplify how these actors exercise their soft power to advance platformization and a platformized perspective on the climate crisis.

My discursive analysis not only produces an overview of strategies, but it also shows precisely what kind of ideology is legitimated through corporate discourse. With the term "Platform Earth", I bring together new ways of seeing, new forms of knowing, new relations and engagements platform companies envision and promote. I understand Silicon Valley's worldview as a genre of ecomodernist ideology, of which the important elements are a *monetization* and *instrumentalization* of nature, combined with a *naturalization* of technology. These elements are made convincing in a narrative that employs a platformized "dashboard" perspective on nature-tech relations, in which many dependencies, consequences and harms remain unaddressed. I claim that tech-on-climate discourse and the project of "Platform Earth" promote a specific genre of ecomodernist ideology: a worldview that offers a datafied and managerial conceptualization of nature-tech relations, of what the climate crisis entails, what solutions there are to combat it, and what future societies this ideally helps to create. In this worldview, benefits are exaggerated while risks are downplayed, companies are eager to take the credit but share or externalize the blame, and the climate crisis is approached as merely an information crisis or an energy crisis.

While these findings answer the main research question and its sub-questions, they in fact also lead to a new question that indicates the urgency of my research: how does the worldview of "Platform Earth" circulate beyond tech-on-climate discourse? Firstly, the ideas and ideals presented in tech-on-climate discourse travel beyond Silicon Valley because of the network efforts of tech entrepreneurs, who harness their cultural power to shape political climate debates. When Bill Gates (2021) writes that he wishes he could magically steer the climate conversation in the "right" direction, it tells us something about what solutions he would like to discuss and finance. Secondly, Silicon Valley actors are continuously creating enchanting stories of green futures that are echoed elsewhere, which normalizes their position. They thus co-shape how the public, their users, investors, (non-)governmental organizations and others come to understand climate change and environmentalism, and to what extent technologies can help us see, know, measure,

understand, act upon or prevent the climate crisis. The notion of "whole-systems thinking" and the "dashboard" metaphor present two examples of concepts that have traveled across discourses and communities, thereby normalizing simplified understandings of natural ecosystems and technological innovations. In relation to AI, Jascha Bareis and Christian Katzenbach (2022) for example claim that AI is "talked into being" because governments adapt and echo the commercial discourse of tech companies. Foregrounding the concept of myths they critically write that:

> the narratives of successful myths massively reduce complexity and decouple developments from their social contexts and power structures. In consequence, myths push human and institutional agency to the background by imagining an unconstrained as-if world of possibilities. (Bareis and Katzenbach 2022, 860)

Research that is concerned with tech discourses needs to scrutinize such "as-if worlds" created by tech companies, whose conceptions might "travel" into other discourses and debates. Despite the development of regulations such as the aforementioned AI Act, Europe also echoes the narratives of tech actors. The techno-optimistic approach finds its way into documents such as the European Commission's Strategic Foresight report (2023, 24) that lists AI as a "sustainability-enabling emerging" technology. Benedetta Brevini (2022) describes how the EU celebrates the potential of AI for the environment, claiming that the unstoppable rise of AI and its potential for people and planet should be harnessed. The EU thus acknowledges environmental risks but nevertheless echoes the hype created by Silicon Valley actors (see also Hacker 2024).[89]

The push of AI products and the consequential rise in the environmental impact of the tech industry demonstrate how Silicon Valley still prioritizes its economic interests over its environmental concerns. The actors are willing to adjust their pledges or goals, in order to safeguard their economic stakes, but not the other way around. It is vital to realize this prioritization of values, as it exposes how the green spirit of platform capitalism strategically moves between promoting a green agenda and guarding the boundaries of their ability to become a greener industry. This strategy is an example of the cultural dimension of platformization, understood as "the reorganisation of cultural practices and imaginations around platforms" (Poell et al. 2019, 6).

The question about the wider impact of Silicon Valley's environmental ideology relates to larger discussions about epistemology and the ways in which science, the production of knowledge, academic structures and capitalism are intertwined. These dependencies are complex and need further study, which falls outside the scope of this dissertation (see for example Edwards 2010; Goldstein and Nost 2022). Commercially produced services of tech companies shape the ways in which (climate) information is collected,

89 The report (European Commission 2023, 32) states as its goal to create "a healthy planet and thriving environment; economic growth that is decoupled from resource use and environmental degradation; and an assurance that no person or place will be left behind", in which relative decoupling is part of the solution.

analyzed and interpreted (Halpern 2014; Hong 2020). Kate Crawford (2021, 221) speaks of the "epistemological violence" required to make the world legible for computational systems. I claim that it is critical to recognize the consequences of Silicon Valley operating as a knowledge broker, by controlling access to information, or prioritizing datafied information and shaping what counts as knowledge. By making tools for data collection and analysis freely available, tech companies can for example position their services as a mediating layer between researchers and the study of the environment. Meanwhile, other perspectives and voices remain unheard. In my critical approach to the construction of myths, it has become clear that corporate expressions about knowledge, information, and environmental realities serve a specific goal. They construct a myth that, as Barthes (1957) has argued so eloquently, is meant to justify a certain situation, but not explain it.

4. THE MACHINE AND THE GARDEN: BEYOND THE TECH-NATURE BINARY

In the Introduction of my dissertation, I explained how the concept "Platform Earth" brings together the discursive representation of technology and nature in tech-on-climate discourse. In this section, I further reflect on how tech actors strategically mediate tech-nature relations and discuss the consequences of these pairings. In 1964, Leo Marx wrote his seminal work *The Machine in the Garden: Technology and the Pastoral Ideal in America*, offering an analysis of American literature. Marx was especially interested in how the nostalgic representation of nature was interrupted by the appearance of machines and technology, such as a train going through a peaceful meadow. The garden and the machine, Marx explains, represent culture versus nature, disruption versus harmony, and the messiness of industrialization versus the serenity of the meadow. Marx' work, and many others with him, point to the binary ways in which the concepts of nature and technology have been represented. "Platform Earth" and its genre of ecomodernist ideology, I argue, is set out to show how the machine entering the garden of today signifies a hopeful, bright future: a nature 2.0, or, a "great Anthropocene" (Asafu-Adjaye et al. 2015).

One aim of the research has been to critically study the tech-nature binaries as they emerge in ecomodernist discourse. While Silicon Valley's ecomodernism adopts a language of ecosystemic care and resilience, my analysis shows that it in fact upholds a tech-nature (or nature-culture) binary by celebrating the ability of Silicon Valley, as an elite group of humanity, to function independently from natural ecosystems. These actors and their technologies can therefore steer, upgrade and use nature however they see fit. In my view, this narrative contains a simplified view of human-nature relations, created from the metaphorical cockpit of Silicon Valley. Jason Moore (2015) has extensively addressed the limitations of the nature-culture binary in his critique on the capitalization of nature as "cheap nature". He proposes an alternative approach:

> If we begin instead with a guiding thread of the double internality—that human organizations internalize and are internalized by the web of life—then we may identify the dominant "bundles" of human and extra-human nature in successive historical systems. The bundles reflect the choices of civilizations in deciding what is—and what is not—valuable. (Moore 2015, 294)

Thinking in terms of bundles and their dominancy helps to categorize the limited ways in which "Platform Earth" conceptualizes human-non-human relations: seeing natural resources as input for their operations, or landscapes as backgrounds for their infrastructures, while holding on to a pastoral ideal of saved nature. However, "Platform Earth" is not only about extractivist practices and "cheap nature". Its methods have become more nuanced in response to critiques: nature is not *only* a resource anymore, although the dominant bundles are still about recreation, production, optimization and monetization. Using Marx' terms: tech-on-climate discourse reconciliates the machine and the garden, presenting them as mutual beneficiaries. But within this discourse, potential forms of friction or dilemmas, that will also emerge in a greener economy, are not dealt with; a platform system that is powered by green energy but continuously expands, extracts, and stays intertwined with fossil-fueled capitalism is still not good for the planet (Brevini 2022; Brevini and Doctor 2024).

Following Marx's quote at the start of this chapter, I submit that the problem of the machine in the garden is indeed also a political issue that requires political decision-making and regulation. For future research, I propose to carefully track how platform capitalism further tries to embed itself in societies by propagating that a digital transition is a green transition, and vice versa. To counter the ways in which these actors promote a cultural imagination of this twin transition, it is vital that alternative imaginations and actions come to the fore that work to realize *actually* beneficiary bundles. These alternatives for example explore how futures imagined around "degrowth" could present a more viable and sustainable alternative compared to green growth (Caradonna et al. 2015; King et al. 2023). An example of such an initiative is the call to "rewild the internet", which takes lessons from ecology about rewilding land and regenerative agriculture as a model for a redesign of the internet (Farrell and Berjon 2024). Such alternatives require us to reckon with the limitations of the worldview of "Platform Earth" and assess the risks and benefits of the platformization of nature, while studying the new interplays of power, nature and economy that are part of the "Cloud Empire". The spirit of platform capitalism will continue to develop in response to the critiques it receives. Therefore, in the last section, I want to ask: where is the machine heading?

5. THE FIGHT OVER CLIMATE FUTURES

All the plans I have analyzed and discussed in *Platform Earth* show how Silicon Valley, in different ways and with different viewpoints, advances itself: as a sustainable partner for institutions, a trustworthy company towards its investors, a producer of climate-friendly products, an actor best capable of managing land, infrastructures, and resources, or even as an escape from Earth. Throughout my dissertation I have traced this process of legitimation, critiquing how these actors disavow and undermine other political actors and their power, ignore alternative visions and set aside the future problems that their pro-growth narrative will result in. Their efforts of terraforming clearly favor a certain type of human: one that resembles the Silicon Valley entrepreneur and thus aligns with and benefits from their white, masculinist, and colonial perspective. The green future visions created in tech-on-climate discourse are a means for tech actors to legitimate their existence in the present and to build a convincing story about their evolution, in positive terms, as a long line of improvements and progress, where the newest techno-fix always solves the problem of the previous fix, sustaining "California forever". However, I argue their discourse gives false reassurance, and their solutions offer nothing more than "cruel optimism" (Berlant 2011) presenting no real path forward.

I hope that my work illuminates how North American tech companies, figures and digital platforms have started "using" the climate crisis to advance platformization. Silicon Valley benefits from the complexity and urgency of the climate crisis by presenting a playbook of solutions that mixes potentially viable solutions with speculative and fictional plans and delirious dreams about how one can please Mother Nature by buying new products. When reading these campaigns, plans and actions, it is important to keep the goal of platform capitalism in mind: advancing platformization into new sectors and building the foundations for a certain (re)organization of society around platform infrastructures. These actors are not ignoring the critiques they receive but instead adapt as far as necessary to diffuse critiques, or to develop a different approach that fits into the Silicon Valley playbook of solutions. Jesse Goldstein aptly critiques these efforts:

> Planetary improvement's injunction to "save the planet" is fundamentally an extension of this longstanding colonial imperative to develop upon and profit from a productive landscape considered misused and abused. The implied expectations for what an improved—or in this case greened and cleaned—landscape is to look like emerge from the unquestionable modernizing imperative of the improvers themselves, who take it for granted that their way of living in and upon the world is not only good and right, but even more so, that it is precisely this way of life, this planet for these people, which needs to be saved, sustained, and expanded in the first place. (2018, 35)

My analyses indeed confirm the colonial and exploitative perspective of green capitalism. I therefore want to end this research with a call to think critically about the promises made about technologies in solving sustainability issues. Of course, we do need technology to

design more ecological societies, but an uncritical and unregulated acceptance of a large variety of technologies may well achieve the opposite. My research shows that tech-on-climate discourse is founded on several assumptions and misconceptions. One of those is that "the crisis" can still be avoided and that a selection of marginal changes will be enough to achieve this. Tech actors proclaim that tech-fixes, such as risky forms of geo-engineering, can buy us time, which suggests that economic and societal transformations can be postponed, or even put off. Another misconception I observed, for example in a commercial by Blue Origin, but recently repeated by Andreessen and Horowitz (a16z) as well as Sam Altman (OpenAI), is that we can create an abundance of renewable energy to fuel the platform economy to unlimited ends (Andreessen 2023; Dastin 2024). Such arguments are common in tech-on-climate discourse, again claiming we can achieve a greener future without making uncomfortable decisions and changes. It is vital that researchers and investigative journalists continue to question the assumptions about the effectiveness of solutions, thus moving beyond tech hypes and critically assessing its promises. An imperative part of such research is uncovering the diverse activities of tech actors, scrutinizing their networks of power.

Based on my extensive analysis of mythmaking in tech-on-climate discourse and the emergence of the "Platform Earth" worldview, I claim that Silicon Valley's plan for a green digital transition needs to be critically approached rather than hailed as a possible solution. This requires a scrutinization of how the myths of Platform Earth become adopted in global environmental discourses, thereby taking into account that the intersection of environmental and digital developments will play out differently in various local contexts.[90] I have shown that the tech actors of the case studies in this dissertation embrace the climate crisis, sometimes subtly sometimes bluntly, as a new economic opportunity. This requires a critical view beyond the green rhetoric of companies, a view that is sometimes obstructed by a lack of transparency about the environmental impact of the platform society. While tech discourse speaks of accelerating a green transition and making nature resilient, what is actually made resilient is a business model that puts a claim on the future to sustain its economy in the present. In the appropriation of terms such as "resilience", "smart", "green" or "future", we find Barthes' claim that myths are always forms of "language-robbery" (1964, 131). "Platform Earth" resonates with a wider felt, ecomodernist belief in green growth, made possible by "decoupling" mechanisms, as the only viable economic model, thereby diverting attention away from the potential of other (degrowth) perspectives. I

90 It is important to consider the differences between local contexts, for example the US versus Europe. Van Dijck et al. write (2018, 6): "it is essential not only to understand the platform society's guiding mechanisms but also to link these to an ideological model in which (European) governments acknowledge their differences with the (US) values inscribed in the architecture of a global platform ecosystem. Platform societies, after all, are not insulated from geopolitical influences; the dynamics of various colluding ecosystems prompt us to look beyond the level of national battles". But we also need perspectives that look beyond the US and Europe. New "Silicon Valleys" are emerging in the Global South, around supply chains of cheap resources, for example in Latin America (Fleischmann et al. 2022). Importantly, a recent UN Trade & Development report (2024) reaffirms that developing countries largely pay the price for the global digital transition, bearing the environmental costs of increased digitization.

agree with Fletcher and Rammelt (2017) that decoupling presents a dangerous fantasy that proclaims the neoliberal economic order is the only system that can fix the problems of climate change. It therefore proposes an unproductive form of sustainable development, which is in fact a "grand effort to deny the reality of environmental limits, to prove that sustainability is in fact compatible with indefinite economic growth" (Fletcher and Rammelt 2017, 453). I argue that tech-on-climate discourse and Silicon Valley's environmentalism promotes, materializes and reinforces these efforts. In fact, I have hoped to show how the myth of "Platform Earth" positions the infrastructures of Silicon Valley as a necessary, mediating layer between humanity and planet Earth.

I claim that we need to understand the interests that tech actors protect when positioning themselves in climate crisis debates by sharing their plans and visions and advocating for more innovation and less regulation. Many authors have pointed to the risks that arise when platforms come to provide infrastructures that many people depend on, for personal or professional use. Although the technological determinist discourse of "Big Tech" promotes more platformization, it is good to remember that the integration of their technologies in everyday life, and in our economies, is not a given. With my research, I hope to contribute to the critical body of work that critically considers the benefits and risks of new products, services and partnerships pushed by Silicon Valley. With every cycle of innovation, products are again and again imbued with promises about how they would improve a user's life, playing into the desires and fears of consumers. Especially in relation to the climate crisis, it is crucial to recognize how tech actors overstate the benefits and downplay the risks of their products, while navigating between the responsibilities they want and those they refuse to take.

The future of technology is open-ended: actors beyond Silicon Valley are imagining and working towards alternative future paths. Critical and hopeful forms of "futuring" that take the climate crisis into account do however require a particular form of environmental media literacy.[91] It is my hope that this dissertation offers an example of what such a literacy might look like, potentially motivating others to analyze the future discursive efforts of tech actors and continue the scrutinization of their singular visions and economic and political ideals. If we let the actors of Silicon Valley freely develop their version of the American dream, selling "Platform Earth" as an ideal climate future, we will miss out on potentially safer, more equal and sustainable futures.

91 Benedetta Brevini (2022, 108) also calls for a "green tech literacy" and the need for educational programs and policy initiatives. This literacy consists of asking questions about what tools can be developed, with what purpose, critically debating the values that guide their design, their benefits and disadvantages and their environmental costs. My use of the term "futuring" is inspired by Maarten Hajer and Peter Pelzer (2018), who define techniques of futuring as a practice of bringing different actors together around sustainability actions and orientations. Such initiatives can help to develop environmental media literacy and bring its visions into practice.

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APPENDIX

Appendix 1: Case Studies Chapter 1

Nr.	Company	Year	Title	Type of source	URL (last accessed August 2024)
1.	Amazon	2019-2024	Amazon Sustainability	Website (company)	Current version: https://sustainability.aboutamazon.com/ & Archived versions: http://web.archive.org/web/20240000000000*/https://sustainability.aboutamazon.com/
2.	Amazon	2024	Amazon Sustainability: Approach	Website (company)	https://sustainability.aboutamazon.com/approach
3.	Amazon	2024	Amazon Sustainability: Progress	Website (company)	https://sustainability.about-amazon.com/progress
4.	Amazon	2024	Amazon Second Chance	Website (company)	https://www.amazon.com/amsc
5.	Amazon	2024	Amazon Sustainability: Impact Areas: Waste	Website (company)	https://sustainability.aboutamazon.com/waste
6.	Amazon	2024	Amazon AWS: Our Values	Website (company)	https://aws.amazon.com/about-aws/our-values/
7.	Amazon	2023	2022 Sustainability Report: Building a Better Future Together	Document (report)	https://sustainability.about-amazon.com/reporting
8.	Amazon	2019	The Climate Pledge	Website (independent)	Current version: https://www.theclimatepledge.com/ & Archived version with timeline: http://web.archive.org/web/20210730003950/https://www.theclimatepledge.com/
9.	Amazon	2022	Climate Pledge Friendly Certifications	Video	https://www.youtube.com/watch?v=dhbIBQL3BXY
10.	Amazon	2022	Amazon Sustainability Data Initiative (ASDI) | Amazon Web Services	Video	https://www.youtube.com/watch?v=c4Nd8ydxVpI

Nr.	Company	Year	Title	Type of source	URL (last accessed August 2024)
11.	Amazon	2022	How AWS Will Return More Water Than It Uses by 2030 | Amazon Web Services	Video	https://www.youtube.com/watch?v=zfVwuqAbfCQ
12.	Amazon	2020	AWS: The Future of Energy	Video	https://www.youtube.com/watch?v=9k-LBQG5Q6E
13.	Microsoft	2020-2024	Microsoft Sustainability	Website (company)	Current version: https://www.microsoft.com/en/sustainability/ & Archived versions: https://web.archive.org/web/20240000000000*/microsoft.com/sustainability
14.	Microsoft	2024	Microsoft Research: AI for Good Lab	Website (company)	https://www.microsoft.com/en-us/research/group/ai-for-good-research-lab/
15.	Microsoft	2020	The Planetary Computer	Website & tool	https://planetarycomputer.microsoft.com/
16.	Microsoft	2024	AI for Good: Microsoft's Vision for a Brighter Future	Video	https://www.youtube.com/watch?v=lSzR_0RLs3o
17.	Microsoft	2020	Explainer: What is a Planetary Computer?	Video	https://www.youtube.com/watch?v=eOgluw-JTUU
18.	Microsoft	2023	2022 Environmental Sustainability Report: Enabling Sustainability for Our Company, Our Customers, and the World	Document (report)	https://www.microsoft.com/en-us/corporate-responsibility/reports-hub#coreui-feature-kcr9ngo
19.	Microsoft	2023	Accelerating Sustainability with AI: A Playbook	Document (report)	https://blogs.microsoft.com/on-the-issues/2023/11/16/accelerating-sustainability-ai-playbook/
20.	Microsoft	2024	AI for Good: Applications in Sustainability, Humanitarian Action and Health	Document (book)	https://www.microsoft.com/en-us/research/group/ai-for-good-research-lab/ai-for-good-book/

Nr.	Company	Year	Title	Type of source	URL (last accessed August 2024)
21.	Apple	2004-2024	Apple Environment	Website (company)	Current version: https://www.apple.com/environment/ & Archived versions: https://web.archive.org/web/20240000000000*/apple.com/environment
22.	Apple	2023	2030 Status | Mother Nature | Apple	Video	https://www.youtube.com/watch?v=QNv9PRDIhes
23.	Apple	2020	A Climate Change Promise from Apple	Video	https://www.youtube.com/watch?v=ANOgCY6NlGs
24.	Apple	2021	Every Product Carbon Neutral by 2030 | Apple	Video	https://www.youtube.com/watch?v=66XwG1CLHuU
25.	Apple	2014	Apple Better	Video	https://www.youtube.com/watch?v=YOw6kLgucY4
26.	Apple	2007	A Greener Apple (letter by Steve Jobs)	Document (letter)	https://www.computerworld.com/article/1654358/steve-jobs-promises-greener-apple.html (Keizer 2007)
27.	Apple	2023	Environmental Progress Report	Document (report)	https://www.apple.com/environment/
28.	Google	2018-2024	Google Sustainability	Website (company)	Current version: https://sustainability.google/ & Archived versions: https://web.archive.org/web/20240000000000*/sustainability.google
29.	Google	2023	Google Environmental Report	Document (report)	https://sustainability.google/reports/
30.	Google	2020	Google's Third Decade of Climate Action	Video	https://www.youtube.com/watch?v=sNPas3AYtqw
31.	Google	2021	Google Sustainability | A Carbon-Free Future	Video	https://www.youtube.com/watch?v=rOZaxdPYP7U
32.	Google	2021	Your Plan Your Planet	Tool	https://yourplanyourplanet.sustainability.google/

Nr.	Company	Year	Title	Type of source	URL (last accessed August 2024)
33.	Google	2024	Google's Environmental Insights Explorer	Tool	https://insights.sustainability.google/
34.	Google	2024	Searching for Sustainability with Google	Tool	https://sustainability.google/trends/intl/en_in/

Appendix 2: Case Studies Chapter 3

Nr.	Movement	Year	Title	Type of source	URL (last accessed August 2024)
1.	Homesteading	2024	East Solano Plan: Homepage & Video	Website & Video	https://eastsolanoplan.com/
2.	Homesteading	2024	East Solano Plan: Videos	Website & Videos	https://eastsolanoplan.com/videos
3.	Homesteading	2024	East Solano Plan: Frequently Asked Questions	Website	https://eastsolanoplan.com/faq
4.	Homesteading	2024	East Solano Plan: Your Life Here	Website	https://eastsolanoplan.com/your-life-here
5.	Homesteading	2024	East Solano Plan: Debunking Myths about the New Community	Website	https://eastsolanoplan.com/myths
6.	Seasteading	2024	The Seasteading Institute: Homepage	Website	https://www.seasteading.org/
7.	Seasteading	2024	The Seasteading Institute: Active Projects	Website	https://www.seasteading.org/active-projects/
8.	Seasteading	2024	The Seasteading Institute: Floating City Project	Website	https://www.seasteading.org/floating-city-project/
9.	Seasteading	2024	The Seasteading Institute: FAQ	Website	https://www.seasteading.org/faq/

Nr.	Movement	Year	Title	Type of source	URL (last accessed August 2024)
10.	Seasteading	2024	The Seasteading Institute: The Eight Great Moral Imperatives	Website	https://www.seasteading.org/the-eight-great-moral-imperatives/
11.	Seasteading	2024	The Seasteading Institute: What's in Our Way? (Joe Quirk)	Website (blogpost)	https://www.seasteading.org/whats-in-our-way/
12.	Seasteading	2012	Seasteading: Competitive Governments on the Ocean (Patri Friedman & Brad Taylor)	Document (paper in *Kyklos*)	https://doi.org/10.1111/j.1467-6435.2012.00535.x
13.	Seasteading	2017	Seasteading: How Floating Nations Will Restore the Environment, Enrich the Poor, Cure the Sick, and Liberate Humanity from Politicians (Joe Quirk & Patri Friedman)	Document (book)	https://www.seasteading.org/book/
14.	Seasteading / Homesteading	2022	Free Private Cities (Titus Gebel, paper updated in 2023)	Document (paper)	https://free-cities.org/free-private-cities-white-paper/
15.	Seasteading / Homesteading	2022	Free Cities Foundation: Homepage	Website	https://free-cities.org/
16.	Seasteading	2011	Welcome to The Seasteading Institute	Video (commercial)	https://youtu.be/BLr-GoZrH9Sk
17.	Seasteading	2020	Seasteading! Eco-Restorative?	Video (commercial)	https://www.youtube.com/watch?v=uQ7wmkHo8u4
18.	Seasteading	2009	Peter Thiel - The Seasteading Institute Conference	Video (keynote)	https://vimeo.com/7577391
19.	Seasteading	2020	Seasteading In a Post Covid 19 World - Joe Quirk	Video (keynote)	https://www.youtube.com/watch?v=jbSGTbgj7aI

Nr.	Movement	Year	Title	Type of source	URL (last accessed August 2024)
20.	Spacefaring	2024	Blue Origin: About Blue Origin	Website	https://www.blueorigin.com/about-blue
21.	Spacefaring	2024	Blue Origin: Sustainability	Website	https://www.blueorigin.com/sustainability
22.	Spacefaring	2024	Blue Origin: Book Your Flight	Website	https://www.blueorigin.com/new-shepard/reserve-a-seat
23.	Spacefaring	2019	Blue Origin: For the Benefit of Earth (Jeff Bezos)	Video (keynote)	https://www.youtube.com/watch?v=GQ98hGUe6FM
24.	Spacefaring	2019	Blue Origin's Mission	Video (commercial)	https://youtu.be/1YOL-89kY8Og
25.	Spacefaring	2023	Blue Origin: For the Benefit of Earth: Blue Origin's Sustainability Story	Video (commercial)	https://www.youtube.com/watch?v=91KTUAXuzqc
26.	Spacefaring	2024	Space X: Mission	Website	https://www.spacex.com/mission/
27.	Spacefaring	2024	SpaceX: Human spaceflight	Website	https://www.spacex.com/humanspaceflight/
28.	Spacefaring	2024	SpaceX: Rideshare	Website	https://www.spacex.com/rideshare/
29.	Spacefaring	2016	SpaceX: Making Humans a Multiplanetary Species (Elon Musk)	Video (keynote)	https://www.youtube.com/watch?v=H7Uyfqi_TE8
30.	Spacefaring	2023	SpaceX: Starship Mission to Mars	Video (commercial)	https://www.youtube.com/watch?v=921VbEMAw-wY&t=292s

Appendix 3: Case Studies Chapter 4

Nr.	Organization	Year	Title	Type of source	URL (last accessed August 2024)
1.	Chan Zuckerberg Initiative	2015	Letter to Max	Website	https://chanzuckerberg.com/about/letter-to-max/
2.	Chan Zuckerberg Initiative	2024	Grants & Ventures	Website	https://chanzuckerberg.com/grants-ventures/
3.	Chan Zuckerberg Initiative	2024	What We Do	Website	https://chanzuckerberg.com/about/our-approach/#-four-column
4.	Chan Zuckerberg Initiative	2024	Tech @ CZI: Reimagining Philanthropy with Technology	Website & Video	https://tech.chanzuckerberg.com/
5.	Chan Zuckerberg Initiative	2022	CZI Annual Letter: A Community of Builders	Website & Video	https://chanzuckerberg.com/about/annual-letter/year-2022/
6.	Chan Zuckerberg Initiative	2024	AI Will Help Scientists Crack the Code on Human Health and Disease – Here's How	Website (blogpost)	https://tech.chanzuckerberg.com/ai-powering-biomedical-science/
7.	Chan Zuckerberg Initiative	2023	Revolutionizing Climate Technology: 4 Innovative Approaches You Should Know About	Website (blogpost)	https://chanzuckerberg.com/blog/innovative-carbon-dioxide-removal-tech/
8.	Chan Zuckerberg Initiative	2022	Chan Zuckerberg Initiative Invests in Promising Climate Change Solutions	Website (blogpost)	https://chanzuckerberg.com/newsroom/chan-zuckerberg-initiative-invests-in-promising-climate-change-solutions/
9.	Chan Zuckerberg Initiative	2022	Tribal Nations Launch Collaboration to Address Climate Crisis	Website (blogpost)	https://chanzuckerberg.com/newsroom/tribal-nations-launch-climate-change-collaboration/
10.	Chan Zuckerberg Initiative	2024	Chan Zuckerberg Biohub Network	Website	https://www.czbiohub.org/

Nr.	Organization	Year	Title	Type of source	URL (last accessed August 2024)
11.	Bezos Earth Fund	2024	Who We Are	Website	https://www.bezosearthfund.org/who-we-are
12.	Bezos Earth Fund	2024	Our Journey	Website	https://www.bezosearthfund.org/our-journey
13.	Bezos Earth Fund	2024	Our Programs	Website	https://www.bezosearthfund.org/our-programs
14.	Bezos Earth Fund	2024	Our Approach	Website	https://www.bezosearthfund.org/our-approach
15.	Bezos Earth Fund	2022	Working for a World Where People & Nature Thrive	Video	https://www.youtube.com/watch?v=0TQvePDWrZw
16.	Bezos Earth Fund	2023	Let's Stand Together to Protect Our World | Bezos Earth Fund	Video	https://www.youtube.com/watch?v=rhqwpg0vgCA
17.	Bezos Earth Fund	2024	A Systems Approach	Website	https://www.bezosearthfund.org/systems-change
18.	Bezos Earth Fund	2024	Systems Change Lab (collaboration)	Website	https://systemschangelab.org/
19.	Bezos Earth Fund	2024	About Systems Change Lab	Website	https://systemschangelab.org/about
20.	Bezos Earth Fund	2022	Systems Change Lab: Tracking the Change We Need	Video	https://www.youtube.com/watch?v=YrHMhud4Pmo
21.	Bezos Earth Fund	2024	What Is Systems Change?	Website	https://systemschangelab.org/what-is-systems-change
22.	Bezos Earth Fund	2020	Our Programs: Land & Carbon Lab	Website	https://www.bezosearthfund.org/grants/land-carbon-lab
23.	Bezos Earth Fund	2024	Initiatives: AI For Climate and Nature	Website	https://www.bezosearthfund.org/ai-climate-nature
24.	Bezos Earth Fund	2024	AI For Climate and Nature: The Bezos Earth Fund Announces $100M Grand Challenge	Video	https://www.youtube.com/watch?v=n-yP3yU5Qu9Y&t=1s

Nr.	Organization	Year	Title	Type of source	URL (last accessed August 2024)
25.	Gates Foundation	2024	About: Our Story	Website	https://www.gatesfoundation.org/about/our-story
26.	Gates Foundation	2024	Statement from CEO Mark Suzman about Melinda French Gates	Website (blogpost)	https://www.gatesfoundation.org/ideas/media-center/press-releases/2024/05/melinda-french-gates
27.	Gates Foundation	2024	About	Website	https://www.gatesfoundation.org/about
28.	Gates Foundation	2024	About: Our Role	Website	https://www.gatesfoundation.org/about/our-role
29.	Gates Foundation	2023	The First Principles Guiding Our Work with AI (Mark Suzman)	Website	https://www.gatesfoundation.org/ideas/articles/artificial-intelligence-ai-development-principles
30.	Gates Foundation	2021	The Time to Adapt to Climate Change Is Now (Mark Suzman)	Website	https://www.gatesfoundation.org/ideas/articles/mark-suzman-climate-adaptation
31.	Bill Gates	2021	How to Avoid a Climate Disaster: The Solution We Have and the Breakthroughs We Need	Document (book)	https://www.gatesnotes.com/How-to-Avoid-a-Climate-Disaster-announcement
32.	Bill Gates	2024	Gates Notes	Website	https://www.gatesnotes.com/
33.	European Commission & Bill Gates (Breakthrough Energy)	2021	EU & Breakthrough Energy: A Partnership for Climate Innovation	Video	https://www.youtube.com/watch?v=8elv8N91Bm4

ENGLISH SUMMARY

Platform Earth explores how since the 2010s "Silicon Valley" has been reinventing itself as a green economy. The term "Silicon Valley" refers to the geographical region in California where the US tech culture is concentrated, but is also a metaphor for the North American tech sector as cultural phenomenon. Amidst growing concerns about climate change and in response to critiques on their environmental impact, tech actors such as Apple and Microsoft have developed elaborate ways to legitimize their operations. I refer to these legitimizing activities as "tech-on-climate discourse": the ongoing production of sustainability reports, websites, commercials, tools, and initiatives. Through their promotional activities, tech actors construct new narratives about the relation between technology and "nature". Together, they forward the myth of "Platform Earth": the fantasy that Silicon Valley's platform ecosystem is good for the planet and will prove essential for "solving" the climate crisis.

The dissertation maps how representatives of Silicon Valley propagate this myth and how it affects their position in public debates. I approach platform companies (Google, Amazon, Apple, Microsoft) and prominent tech figures (e.g. Jeff Bezos, Tim Cook, Elon Musk) as cultural producers and political actors. To understand how these actors engage in practices of mythmaking, I use methods of discursive and historical analysis to examine the narratives, green rhetoric, visual identity and underlying ideology of tech-on-climate discourse.

Across four chapters, I study the use of visual and textual framing strategies by Amazon, Apple, Google, and Microsoft and the paradoxes of their pragmatic approach (Ch. 1); the development of "whole-systems thinking" and ecomodernism in American tech and environmental movements between the 1940s and 1990s (Ch. 2); proposals for political and spatial exit projects such as homesteading, seasteading and spacefaring as climate response (Ch. 3); and the positioning of the CEO as a caring figure through the philanthropical endeavors of Jeff Bezos, Mark Zuckerberg and Bill Gates (Ch. 4). Altogether, the research offers a cultural-analytical lens on how Silicon Valley is "reinventing" itself as an advocate of green capitalism, reconfiguring its powerful political, economic, and cultural position amidst the unfolding climate crisis.

The dissertation argues that the ecological reconfiguration of Silicon Valley is underpinned by an ecomodernist ideology: a vision of the future focused on green growth, in which human progress is "decoupled" from environmental decline. Silicon Valley's ecomodernism propagates that the Earth and its ecosystems are best governed by platform infrastructures. This conviction leads to an instrumental valuation of nature, a unilateral, masculine understanding of the human subject, and an imperialistic vision of progress deeply rooted in the history of the United States. I critique the ecomodernist, transhuman narrative that "we" as a humanity can "upgrade" humans and nature and achieve a greener future without making uncomfortable decisions and sociopolitical changes. This is the myth of "Platform Earth": a strategic narrative that favors only certain lives, solutions and forms of knowledge and legitimizes the continuation of extractivism.

In sum, *Platform Earth* critiques the modus operandi of Silicon Valley as it *naturalizes* platform capitalism and *platformizes* the climate crisis. Through this logic, digital platforms are positioned as a mediating layer between humanity and planet Earth. I argue that we need to be critical of how these ideas become embedded in public debates about the green and digital transition. The research ends with a plea to explore other climate futures, not focused on techno-fixes and green growth.

NEDERLANDSE SAMENVATTING

In *Platform Earth* onderzoek ik hoe het technetwerk "Silicon Valley" zichzelf sinds de jaren 2010 opnieuw heeft uitgevonden als groene economie. De term "Silicon Valley" verwijst naar de geografische regio in Californië waar de techcultuur zich concentreert, maar is ook een metafoor voor de Noord-Amerikaanse technologiesector als cultureel fenomeen. Te midden van groeiende zorgen over klimaatverandering en in reactie op kritiek op hun klimaatimpact zoeken partijen zoals Apple en Microsoft naar manieren om hun activiteiten te legitimeren. Dat doen ze middels hun *tech-on-climate* discours: de voortdurende productie van duurzaamheidsrapporten, websites, reclames, tools en initiatieven. Via deze promotionele activiteiten construeren deze partijen nieuwe verhalen over de relatie tussen technologie en "de natuur". Samen dragen ze de mythe van "Platform Earth" uit: de fantasie dat Silicon Valley, als ecosysteem van digitale platforms, goed voor het milieu en essentieel voor het "oplossen" van de klimaatcrisis is.

Dit proefschrift brengt in kaart hoe vertegenwoordigers van Silicon Valley deze mythe verspreiden en hoe hierdoor hun positie in publieke debatten verandert. Ik benader platformbedrijven (Google, Amazon, Apple, Microsoft) en prominente figuren (bijv. Jeff Bezos, Tim Cook, Elon Musk) als culturele producenten en politieke actoren. Om te begrijpen hoe deze bedrijven en figuren zich bezighouden met mythevorming, gebruik ik discursieve en historische analysemethoden om de verhalen, groene retoriek, visuele identiteit en onderliggende ideologie van het *tech-on-climate* discours te ontleden.

In vier hoofdstukken bestudeer ik: het gebruik van visuele en tekstuele framing-strategieën door Amazon, Apple, Google en Microsoft en de paradoxen van hun pragmatische benadering (H1); de opkomst van systeemdenken (*whole-systems thinking*) en ecomodernisme in de Amerikaanse tech- en milieubewegingen tussen 1940 en 2000 (H2); voorstellen voor politieke en ruimtelijke exit-projecten die nieuwe samenlevingen op land, in zee of in de ruimte voorstellen als klimaatoplossing (H3); en de positionering van de CEO als zorgzame figuur door de filantropische inspanningen van Jeff Bezos, Mark Zuckerberg en Bill Gates (H4). Zo biedt het onderzoek een cultureel-analytisch perspectief op hoe Silicon Valley zichzelf "opnieuw uitvindt" als aanjager van groen kapitalisme en zo zijn machtige politieke, economische, en culturele positie opnieuw vormgeeft in het licht van de klimaatcrisis.

Ten grondslag aan deze ecologische herpositionering ligt een ecomodernistische ideologie: een toekomstvisie gericht op groene groei, waarin menselijke vooruitgang is "ontkoppeld" van de achteruitgang van het milieu. Het ecomodernisme van Silicon Valley propageert dat de aarde en haar ecosystemen het beste kunnen worden bestuurd door middel van platforminfrastructuren. Deze veronderstelling leidt tot een instrumentele waardering van de natuur, een eenzijdig, masculien mensbeeld en een imperialistische visie op vooruitgangsdenken dat diepgeworteld is in de geschiedenis van de Verenigde Staten. Ik bekritiseer het ecomodernistische, transhumanistische verhaal dat we als mensheid de mens en de natuur kunnen "upgraden" en een groenere toekomst kunnen bereiken zonder ongemakkelijke beslissingen te maken en sociaal-politieke verandering te bewerkstelligen.

Dit is de mythe van "Platform Earth": een strategisch verhaal dat alleen bepaalde levens, oplossingen en vormen van kennis waardeert en ondertussen de voortgaande exploitatie van anderen legitimeert.

Kortom, *Platform Earth* bekritiseert de modus operandi van Silicon Valley waarmee techbedrijven en -ondernemers platformkapitalisme *naturaliseren* en de klimaatcrisis *platformiseren*. Vanuit deze logica worden digitale platforms gepositioneerd als een bemiddelende laag tussen de mensheid en planeet Aarde. Ik betoog dat we kritisch moeten zijn op de manier waarop de visie van Silicon Valley tot uiting komt in publieke debatten over de groene en digitale transitie. Het onderzoek eindigt met een pleidooi om andere klimaattoekomsten te verkennen, die zich niet blindstaren op technologische "fixes" en groene groei.

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CURRICULUM VITAE

Rianne Riemens (Middelburg, 1994) is a media researcher with a special interest in media culture, digital platforms and sustainability. She completed a BA in Language and Culture Studies at Utrecht University and an RMA in Media Studies at the University of Amsterdam. After her graduation, she worked as a freelance writer and communicator for organizations including Waag Futurelab and SETUP. She was a junior researcher within the Algoritmisch Atelier project at Utrecht University, studying public values in relation to urban mobility platforms. In 2020, Rianne became a PhD candidate within the Platform Discourses project, supervised by prof. Anneke Smelik and dr. Niels Niessen. During this period, she co-organized several seminars and a conference on Big Tech & discourse, and taught courses and lectures on green platform studies, film and visual analysis, media and urbanism, and data culture. She is currently a postdoctoral researcher at Utrecht University in the research group “Greening the Digital Society”, within the Governing the Digital Society team led by prof. José van Dijck.

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