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Owing Christopher Columbus a Mission to Mars: Narrative Strategies in the Introductory Speeches of American Space Policies and the Sociotechnical Imaginary of Conquering Space

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"Technologies are produced by institutions and people with stakes and interests - political, social, historical, and cultural. This is neither inherently good nor inherently bad; it simply is."

Gabriele Hecht in *The Radiance of France*

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1. Introduction

"There is no harm in repeating good things."
Plato (428/427 - 348/347 BC), philosopher

Rockets do not just appear out of nowhere, ready to lift off into space. So, what has to happen for a rocket to leave the earth's atmosphere? Sure, its engines need to ignite, generating thrust, enormous and yet meticulously controlled. Beforehand, millions of technical components will have to be assembled, able to withstand great physical forces. Software will have to be developed. Thousands of people will have worked days, weeks, months, often years in order to make the boosters catapult not only satellites and materials but also animals and humans into space. Behind every rocket launch lies an enormous organisational and financial effort, that, over time, has led to some of the greatest technological extravaganzas in human history. People were sent to the moon, landed on it, jumped around, and flew back. Probes have been crushed by the atmospheres of Venus, Saturn, and Jupiter, while others have landed on both Mars and several moons of planets other than earth. Probes even landed on asteroids and comets. Some returned successfully, importing dust from outer space.

Obviously, all these technical feats cost large amounts of money. Money, which in most cases came from taxpayers. Over the years, some of that money was spent on failed missions, as not every mission was (and will be) a success; two of the five American built space shuttles disintegrated, *Challenger* in 1986 on its way to space, *Columbia* in 2003 on its way back. Each disaster cost the life of seven human beings, and - without putting human lives and money into comparison - literally burned up billions of tax dollars. And still, or, as we will see, perhaps even *because* of that, spaceflight still achieves to fascinate people in an oddly intangible yet commonly accepted way.

The investments in the pioneering research and the practical execution of spaceflight only came about through governmental efforts[1], and for decades it was, with a few exceptions, the preserve of the USA and the USSR (respectively Russia). The duel for filling the vacuum began some years after WWII, marking a time in which the relationship between science, society and politics changed dramatically and permanently. Science fought for its intellectual independence, but ultimately the lines between these realms became increasingly blurred (see Barker, in Jasanoff & Kim, 2015). This blurring of boundaries included those of spaceflight. Contrasting its very much privately inspired and funded origins (see Kirby, 2010), president Eisenhower founded the US' National Aeronautics and Space Agency (NASA) in 1957. From that point on, as is every scientific and technological development, spaceflight was deeply

[1] We have seen in the recent past the very refreshing development of private companies enriching the branch with new groundbreaking innovations, too. However, greater undertakings such as sustaining the International Space station are still left to state agencies. Additionally, private companies are yet to have proven their capability of reaching deep space with more than an electric car (see chapter 2.2.).

embedded in society, becoming an active part of the social and the political, far from being an independently working system.

Lacking independence, NASA's work needed external approval, including that of the American population. They did not only have to see the Saturn V lifting off to the moon, they had to see something *in* it. Something more than just a rocket standing about 110m tall. The technology needed a story, a narrative background, which would constitute a comprehensible right to exist. Rockets, in the eyes of everyone involved, had to become more than just the millions of components assembled by some scientists and engineers: they had to stand for something bigger. In principle, it is this narrative backbone that the study at hand aims to unpack and investigate. The question arises: Where and how to study these narratives? Acknowledging the peculiar entanglements of spaceflight and American politics, and especially the role the president[2] plays, I will turn towards some of the most central moments of decision making in spaceflight. Spaceflight in the US for the most part depends on the national space policy, which, simplifying it somewhat, aligns itself with the interests and plans of the president. Once the policy framework has been decided upon, a framework upon which NASA must act accordingly, it is often presented to the public in the form of a presidential speech. These talks introducing American space policies do not only present some kind of vestigial to-do list but also play a central role in the narrative embedding of rocketry in society. In that, they particularly provide storylines for how the policy and its ideas matter in the future, offering conceptualisations about aspects of spaceflight technology and/in the American society.

In my aforementioned descriptions and the entire work I draw on the conceptual framework of *co-production*, which assumes that neither the systems I mentioned - science, technology, society, politics, and the like - nor what is produced in and through them, is intrinsically autarkic. Instead, co-production proposes to perceive all these realms as mutually influencing one another in a reciprocal process, together producing what *is* (see Jasanoff, 2004, or Hecht, 2009). This co-production becomes effective at various sites and expressed in various ways. However, one may ask, if reality is as messy as proposed here, how come that specific "technological trajectories diverge across polities and periods" (Jasanoff, 2015a, p. 5), resulting in some technologies and technology-related ideals being tremendously durable, while others quickly vanish off the face of the earth? Tracing exactly these questions for *specific* technologies and approaches, is what *sociotechnical imaginaries*, at the same time reasons and outcomes of co-production, enable us to do. With the help of this concept, I aim at investigating how the specific imaginary of *conquering space* via technologies of rocketry has been stable for many decades in the American context and how this set of technologies is tied to a "subjective self-understanding [of] a shared social and moral order" (ibid.). A sociotechnical imaginary is often tied to a single country,

[2] I want and need to remark, that, in the following, I will always speak of the American presidents in the male form. That is simply because, although statistically highly unlikely, until now all presidents of the United States of America have been male.

though it does not have to be, as some imaginaries are considered to have impact even on a global scale. Felt, however, points out the "central role technological choice can play in the formation of national identities" (Felt, 2015, p. 103), and following that line, my focus lies solely on the United States of America. My main research question hence reads: "*How did US presidents in talks introducing new space policies contribute to the construction of the sociotechnical imaginary of 'conquering space'?"*

Figure 1: Astronaut Mark C. Lee during an extravehicular activity in 1994. NASA, 2009.

While sociotechnical imaginaries are my main conceptual lens, I also draw upon other resources provided by different realms, among them American studies, enriched with aspects of cultural studies and nation making, and even some glimpses into popular culture. Finally, the lens of American studies also served me as a proper jacking point to the field of postcolonial studies. This diverse theoretical foundation allowed me to problematise the talk's narrative constructions and their sociotechnical, sociocultural, and sociopolitical implications, pondering what the sociotechnical imaginary of conquering space is laden with in the American context. What I will hence show in the following chapters, is how the talks in a very consistent manner used very similar narrative strategies to make sense of the risky and expensive effort of (manned) spaceflight. Although spanning over fifty years, the five talks I was able to meaningfully include in the study, provide a textbook example of the evocation of an *imagined community* (see Anderson, 2006, and chapter 4.2.). This imagined, homogeneous community of Americans is ascribed with certain values and traits, most of them being dictated by the centuries-old tenet of an *American exceptionalism* (see chapter 2.5.). In the talks, this characterisation gains plausibility through the strong inclusion of historical accounts, which strive to invoke cultural continuity in order to make the culture and its supposed traits explainable and traceable in space and time. National mythology, I found, aids greatly in grounding identity as well as desired futures. Thus, the sociotechnical imaginary of conquering space is drenched in Americanism, the 'desirable future' that is promoted is one of historically justified national domination and logical international hierarchy. I worked on revealing the needed messy process of remembering, assessing the status quo, and envisioning what ideas are best to follow - thought work, that is influenced by diverse past, current and imagined future individuals, collectives, and circumstances in science, technology, society and politics.

As hinted at, in general, this is a study that locates itself within the field of science, technology and society (STS), a field that enables one - just not to say *makes* one - to conduct interdisciplinary studies. Hence, some things lie out of the scope of this study. Most importantly,

… I will *not* go much into reasonings of, in general, how sensible spaceflight and especially explorative spaceflight was, is, and will be in the future. I will also avoid any (automatically personal) assessment of specific missions or activities of any actor, both within NASA and the government.

… I will *not* assess the value, reasonableness and historical validity of any (American) myth or narrative taken up in the speeches. This study is exclusively about finding out how they are used in presidential speeches in American spaceflight and why so.

… I will *not* study the general public perception and societal uptake of the speeches that I will analyse, or 'the' public take on spaceflight. This study is almost exclusively about the talks themselves and not about what reactions they provoked in the long run.

Nonetheless, I believe this study to matter for several scientific fields, yet specifically to the field of science, technology and society (STS) in which literature on spaceflight is existent, yet barely abundant. Additionally, it rather focuses on technologies in spaceflight than conceiving of spaceflight *as technology*, or "super technology' (see Kay, 1994). In the social studies, there are studies on probes and robots in space, on spaceflight catastrophes, and some about historical analyses. It is examined 'How to See like a Rover' (Vertesi, 2015), yet questions of its sociocultural backing are often left unanswered. When it comes to contemplating the general Whys and societal Hows of spaceflight coming about, scholarly contributions tend to stem exclusively from the natural and engineering sciences. I set out to tackle these questions from the point of social sciences. I want to find out not how American spaceflight is *done*, but how it is *thought* and *imagined*. In the end, thus, I want to show that a lot more than plain construction and natural work has to happen before rockets leave our thin, thin atmosphere. Spaceflight is just as interesting from a sociocultural point of view as it is from a sober technological perspective.

2. State of the Art

The state of the art will now introduce the central bodies of work that I aim to contribute to with my study. The materials section (chapter 5) contains an extensive part on the roles each president played for spaceflight. That part may be considered as an actual part of the state of the art as well. However, since I directly draw my empirical material from this historical perspective, it was more reasonable to include the historical context of spaceflight in the materials section.

2.1. Nations and Cultures of Technology

"Society is unity in diversity."

George Herbert Mead (1863-1931), philosopher, sociologist and psychologist

Many scholars in the science and technology studies have engaged with the complex entanglements of what we take to be culture, nature, society, and the role science and technology play in (continuously re-)defining it. In general, the concept of co-construction or co-production is shared by many scholars. It claims that eventually all these rather blurry concepts mutually shape each other instead of one shaping, or even controlling, another (see for instance Jasanoff, 2004, or Epstein, 2008). Science shapes society just as society shapes science, producing what *is*, and hence the technology that is part of our reality. Understanding this conceptual premise coined by Jasanoff (2004) and Jasanoff and Kim (2015, see also chapter 4.1.) constitutes a crucial context of the rest of this section, which will now explore some aspects of the mutual co-production of science, technology, cultures, and nations (all being closely tied to the sensitising concepts, see sections 4.1. and 4.2.).

The Oxford Online Dictionary defines 'nation' as the following: "A large body of people united by common descent, history, culture, or language, inhabiting a particular state or territory" ("Nation", 2019). Anderson (2006) speaks of the "contingency and ineluctability of our particular genetic heritage" (2006, p. 10), which can be understood not only in a biological, but also in a cultural sense; part of it being for example our mother-tongue. We 'inherit' it, barely being able to change it. Hence, a connection does not exist because you carry the same passport around with you, but it is because you share some rather unmeasurable, invisible things - a culture. Although, what seems logical on first glance then reveals a paradox: How 'common' can people's attributes be, when we speak of a 'large body' of people? How much 'unity' can be at hand, when there are millions of individuals? The larger this body gets, inherently, the more diverse the population becomes, and today there are two nations inhabited by more than one billion people, and a few with hundreds of millions of people. And still, if you meet a fellow countryman or -woman in some far away country, you will probably feel some kind of indistinct connection, knowing, that you share at least some things with one another.

A major source for me is one presented by Šabanović (2014). In her study on 'social' robots, she examined how actors working within social robotics would constantly invoke a specific notion of what ought to be a specific and distinct Japanese culture. Generally, Šabanović states that the scientists she worked with situated their work within a 'local cultural frame', with the goal to render the newly developed social robots *native* to this constantly constructed cultural frame. Referring to Caporael (1997) she calls this the 'repeated assembly of a cultural model', a term I will continue using for exactly those processes of actively constructing and demarcating a specific culture and by that reasoning and justifying certain activities, as for instance capabilities in specific scientific/technological realms. This reassembly is being done by different means. Generally, actors will need to define a certain reference,

that is, they assemble the very cultural model by "specifically relating the applications and interactive capabilities of [a technology] to practices, beliefs, and social norms they consider to be culturally normative", and thereby "repeatedly assemble cultural models of [...] technology's role in society" (Šabanović, 2014, p. 345). However, these models may differ from actor to actor. Šabanović explains, that the local cultural frames do not stay stable over time but are rather mutative and fluid than absolute and definite perceptions of a culture situated in space and time. Although similar cultural sources may be drawn from during different assemblies, the overall process is recursive, thus enabling models to "dynamically change and adapt to fit contemporary circumstances" (ibid, p. 346).

Another pivotal attribute of such a cultural model is that of *'cultural continuity'*, an inner logic of the model that ensures a certain trajectory, a direction in which the culture is developing and has, seemingly, always developed into. Šabanović speaks of the attempt to create a feeling that things *will have been*, enabling actors to "create a cultural logic supportive of current sociotechnical developments" (Šabanović, 2014, p. 344), which effectively act as an "interpretive filter, through which the world is meaningfully perceived and can be acted upon" (ibid., p. 345). To give this continuity and inner logic to a cultural mode, it needs to be filled with content that has to be reconstructed or created by, for instance, scientists or politicians. Šabanović observed how people would "incorporate and adapt traditional themes and cultural values into advancements in robotic technology", so that they, in their stories and argumentations, could "provide epistemological grounding and social justification for robotics" (ibid., p. 359). This observation again suggests that scientists, and thus all other actors constructing cultural models, are very much situated in terms of history, geography, culture, and the social. This situatedness itself can at times be very useful for actors in rendering their opinions and work use- and even rightful. Through careful acts of situating specific technologies or technological developments, actors are very much able to explain and stress the social as well as scientific importance of the work they do. Hereby, science and technology, often perceived as separate from culture and society, become part of an argumentation that includes both; the human and the non-human. Specific scientific progress and societal support are both constructed rightful as the science/technology is made fit into the local cultural frame (Šabanović, 2014, p. 395).

Thus, it is through these performances that artifacts or sets of technologies become cultural performers themselves, and hence also both, reason and evidence, origin and materialisation, of a specific set of values constructed as 'true' and 'original' to the very culture they are produced and or developed in. This section has shown that people, especially those equipped with a certain authority and concomitant decisive power, may assemble cultural models through means of creating a narrative of cultural continuity that logically results in certain technological developments. The models do their work by providing interpretive filters and creating as well as situating knowledge. The models crafted are then presented among others in public and persuasive moments.

2.2. Spaceflight and Pop Culture

"This is Ground Control to Major Tom
You've really made the grade
And the papers want to know whose shirts you wear
Now it's time to leave the capsule if you dare"
- David Bowie in *Space Oddity* (1969)

Spaceflight has found its way into many different cultural spheres. However, I here want to explore some aspects of spaceflight's role in (specifically Western and US American) pop culture. When Jasanoff claimed that "[t]echnological innovation often follows on the heels of science fiction" (2015a, p. 1), they were among others in fact writing about spaceflight. They noticed how popular writers like H.G. Wells, Fred Wilcox, and Fred Hoyle had been writing about interplanetary traveling decades before the first human had even touched the Earth's moon, let alone other planets. Consequently, they find that "[n]ational sociotechnical imaginaries may permeate into popular culture, finding expression in the mass media and in nonofficial genres" (ibid., p. 27). Today, spaceflight still is an inherent part of science fiction and the wider pop culture. Yet, as implied, spaceflight is not only a part of it, but it arguably came into existence only through science fiction and pop culture. Almost a century ago, in the 1920s and 1930s, people rather located spaceflight and rocketry purely within the realm of science fiction than in actual science, so that "rocket science became conflated with pure kitsch" (Smith, 2014, p. 328). But as Kirby shows, rocket scientists from all over the world would not refrain from their work in (successfully) advancing their research, even if this urged them to make popular movies a means to promote rocketry (see Kirby, 2010, but also Smith, 2014, p. 229). Eventually, "[t]he rocket ship became the ultimate iconic symbol of 1950s science fiction, the moment of its blast-off encapsulating the ideals of the Space Age and providing a suitably melodramatic climax for 'cosmic breakout' stories" (Stableford, 2006, p. 447). And, still 70 years later, "who now can imagine outer space without some reference to science fiction?" (Redfield, 2002, p. 812).

As the fictional stories somehow sparked real spaceflight, real spaceflight in turn kept and keeps sparking inspiration for ever new fictional stories, which perhaps becomes most notable in, again, pop culture. From the time on spaceflight became 'real', countless songs and movies were released that revolved around spaceflight. In 1964, even before the first moon landing Frank Sinatra asked to *Fly Me to the Moon*. In 1972, Elton John was a *Rocket Man* and seven years later, The Police was *Walking on the Moon*. In 2010 then, the Stone Temple Pilots for example sang of the *First Kiss on Mars*. Additionally, movies like *2001: A Space Odyssey, Apollo 13* or rather recent works like *Gravity* and *Interstellar*, are movies about (manned) spaceflight, becoming screened around the globe. Only months before this thesis was finished, the bibliographical drama *First Man* came into the theatres, telling the story of Neil Armstrong's personal way to the moon. Moreover, these movies have not only been major box office successes. Just the first four exemplary movies received 26 Oscar nominations, winning

eleven of them. What is not to be taken as a sign of definite cinematic quality, it vividly shows how these stories and popular imaginations about space, spaceflight, and astronauts that they transport, have made it into the general cultural consciousness. Today, it is not at all uncommon for spaceflight to actually be *consumed* by large parts of society in diverting kinds of ways. Furthermore, even actual, non-fictitious spaceflight is increasingly becoming part of pop culture. In 2015, for instance, astronaut James Hadfield sang David Bowie's *Space Oddity* on the ISS; the 'first music video filmed in space' rapidly spread in Social Media (Rare Earth, 2013). 2018 held another peak in the marriage of spaceflight and pop culture, when private spaceflight company SpaceX launched a heavy weight rocket into space for a test flight, carrying an electric car with an astronaut dummy in it. The car's radio was playing David Bowie's Space Oddity in endless loop, the livestream and video of it became viral, too (SpaceX, 2018a and SpaceX, 2018b).

But there is something particularly curious in the cultural representation of space travellers. Especially the movies share something that I want to go shortly into, as it is the one thing that this section eventually is all about. In its pop cultural uptake, the astronaut as such tends to always be the hero. Often, they are specifically American heroes (see image 1). Space is the ultimate arena to express untold courage. At the same time, most of today's spacemen and -women are scientists, just as most in popular movies like the aforementioned. Yet, as implied, it gets interesting when taking a closer look at how these scientists are framed. Often, in film producers "invest the evil of science in the personality of the scientist" (Toumey, 1992, p. 411). Very rarely does this happen with spacefaring protagonists. They only seldom fall into the category of the "Mad Scientist". In addition, the movies' narratives also are not very often "a way of shouting 'Beware of Science!'" (ibid., p. 412), as it is the case for some other fields of science, especially artificial intelligence (see Fisher, 2002). Space seems to be a place for brave heroes, not genius villains. The lyrics I started this section with thus has two interesting layers; on the one hand, it points at astronauts being public figures for eventually just doing their job ("And the papers want to know whose shirts you wear"). On the other hand, and funnily enough, the same subtle critique of heroisation of public figures takes place in a song that ranked high in international music charts, hence taking part in that very heroisation, hence confirming it.

Figure 2: Final scene of the movie Interstellar. *A colony is founded, with the American flag blowing in the wind. Nolan & Thomas/Obst, 2014.*

Why is all this interesting for my study? First, it shows how spaceflight regularly gets not only recognised, but actively represented in, and for, what may be termed the 'public'. Now, Jasanoff famously wrote that "the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we chose to live in" (2004, p. 2). Spaceflight as a set of "Super Technologies" (Kay, 1994) seems to be represented in a specific way, differently than other large technological systems; namely as a space and place for heroes. That framing may directly feed into the construction of what I am primarily concerned with, namely the sociotechnical imaginary of conquering space. Furthermore, I am interested in looking if, and particularly *how*, presidents contribute to and make use of the heroisation of astronauts and glorification of spaceflight in their speeches.

2.3. Spaceflight as Cultural Performer

"For one priceless moment in the whole history of man,
all the people on this Earth are truly one."
Richard Nixon, 37th president of the US on the 1969 moon landing

In the previous section, I have briefly explored spaceflight's value for pop culture. Yet, spaceflight is far more than a resource for pop culture. Often, particularly spaceflight is perceived as great collective endeavour, and referring to it becomes a means to experience this collective or community (see Anderson, 2006, section 4.2.). Although in the end, spaceflight still is 'just' another

technoscientific complex, the collective experience and attachment is much more apparent in spaceflight than it is for example for genetic research or oil production. Especially during the Space Race (see also chapter 2.4. and 5), spaceflight did not only inspire the arts (see chapter above), but it also was an immensely personal, political and emotional matter, and a way of national identity making, too. Launching rockets was a means to prove that identity, and at the same time demarcating it from other cultures and their (inferior) values (see chapter 2.5.1.). For the United States, winning the Space Race to the moon was not simply about some astronauts reaching the moon, but it was much more about the US as a collective, a determined community, to win over the supposedly evil and hostile collective of 'the' Russians (see McCurdy, 2011, p. 61ff, and Anderson, 2006).

"We have vowed that we shall not see [space] governed by a hostile flag of conquest, but by a banner of freedom and peace" declared President John F. Kennedy in 1961 when he publicly promoted Americas undertakings for a manned journey to the moon (see section 7.1). In the end nothing more than technological capabilities of those involved in it, spaceflight was nevertheless a national and hence cultural statement, and particularly in the 1960s but also in the time after "[s]pace technology was to become the vehicle for national and international prestige" (Vaughan, 1996, p. 18). It sure was not the only, but one important resource to perceive the country and its culture to be on the right and *righteous* path. Additionally, through having a very limited number of human representatives, spaceflight was an endeavour that people could identify with very easily (see Hersch, 2012); Mindell for example described the astronauts of the Mercury programme as "walking embodiments of American individualism, military might, and middle-class values" (2009, p. 68). And still today, as Mahler states, "[i]mages of shuttle launches and earthrise over the rim of the moon are iconic representations of American strength, technological capacity, and the future of humankind" (Mahler, 2016, p. 711). It is thus not particularly surprising for NASA to publish papers like the one that is entitled "Seeking a Human Spaceflight Program Worthy of a Great Nation" (Review of U.S. Human Spaceflight Plans Committee/NASA, 2009). Spaceflight is one indicator for the perceived technological dominance and a deducted cultural superiority.

The national, or cultural, collective that is evoked through spaceflight perhaps becomes even more tangible in moments of crisis. NASA has lost two space shuttles, *Challenger* in 1986, *Columbia* in 2003, and each time seven astronauts lost their lives. But especially the Challenger disaster has stayed in the American collective, also, but not exclusively, because the first civilian, a teacher, who was supposed to travel into space on the Challenger. This circumstance is said to have given the mission a "special aura" (Vaughan, 1996, p. 1). "Collectively, the country grieved" (ibid., p. XI), when the shuttle disintegrated only 73 seconds after the launch. In the aftermath president Ronald Reagan even postponed the annual State of the Union address due to the accident. He started off the address one week after the intended date, which should have been the evening of the Challenger launch, with an emotional remark regarding Challenger, again strongly conceptualising astronauts as general national heroes:

> *"We pause together to mourn and honor the valor of our seven Challenger heroes. And I hope that we are now ready to do what they would want us to do: Go forward, America, and reach for the stars. We will never forget those brave seven, but we shall go forward."* (ReaganFoundation, 2009)

Next to the image of the fallen heroes, he also called on a national theme. The death of seven astronauts is rendered not only a disaster for NASA, or for the US government, but it is actively transformed into a national disaster. This transformation began already on the day the Challenger exploded: "This is truly a *national* loss" (Garber/NASA History Office, 2004, my emphasis) said Reagan live on television on the day that the Challenger disintegrated. Since a regular teacher was supposed to travel into space, the mission was supposed to become "a major statement about the reliability of space travel and the achievement of the administration (and the country) responsible" (Vaughan, 1996, p. 12), or in other words, an embodiment of American cultural strength.

As politics are done by human beings, the varying cultural value was also something that affected the daily work of politicians involved in spaceflight - including American presidents. One of his former consultants recalled how Nixon convinced him of a new space policy by persuading him on a walk in nature that space "was something that could change the whole way that we lived, change our nation. He convinced me" (Logsdon, 1998). Section 2.4. will now go deeper into how, driven by its cultural value, spaceflight could turn not only turn into a political issue, but into an explicit political instrument.

2.4. Spaceflight as Political Instrument

> *"Outer space, including the moon and other celestial bodies,*
> *is not subject to national appropriation by claim of*
> *sovereignty, by means of use or occupation,*
> *or by any other means."*
> Outer Space Treaty, Article II

In the previous chapter, I laid out how spaceflight over the years developed into a cultural resource for inspiration and the building of - often even national - identities, or as Šabanović (2014) termed it, cultural models. Spaceflight's inherent cultural value, created over the decades through careful work by a variety of public and political institutions/actors, contributes a considerable political relevance to spaceflight and automatically renders spaceflight a political issue. Of course, these relations are reciprocal; cultural interest may emerge from political issues, just as cultural issues emerge from political interests). This relevance has such a big potential that I will in fact conceive of spaceflight as an elaborate and strategically employed *political instrument*. This section thus aims to provide context for and to highlight the relevance of the material that I will analyse, by examining how rockets and stations in space were and are used to do politics down on earth.

Probably the most notable and vivid circumstance of spaceflight being turned into a more or less pure political issue was the so-called Space Race between the US and the Soviet Union during the Cold War. Many central breakthroughs and developments in spaceflight still stem from that time – from the first rocket, to the first animal and human in space, the first human on the moon and the first reusable spacecraft, the US built Space Shuttle. The latter would eventually stay in use until 2011, some 20 years after the Cold War was finally ended. However, such breakthroughs cost an enormous amount of money. One historical account from a pivotal time in spaceflight might point out how spaceflight had become not only a culturally driven but also a politically relevant and emotionally laden endeavour. Against the backdrop of the 'Sputnik Crisis' and the Soviet's success of sending Yuri Gagarin into space, in the 1960s a congressman asked NASA engineers in a congressional hearing regarding the feasibility of a manned flight to the Earth's moon:

> *"I would like to make it clear for the record that I personally—and I am not a technical man, I am speaking just as a Congressman, trying to do what I can for the country—that I would favor any such program, regardless of the cost, that would put us definitely in the race to reach the Moon first"* (as cited in Seamans Jr., 2007, p. 16).

Yet, obviously, having in mind mentioned 'Sputnik Crisis' he was asking the question not solely for himself, but at least to a certain extent also on behalf of many other American citizens. President Kennedy, too, had the same simple initial position. Asking his Vice president and advisors to assess a moonshot's feasibility, in the end he was the one to decide if it was at all a sensible thing to do (more on the procedures of the president and his advisory entities in chapter 5). As the congressional question implies, the most central point at that time was not to simply reach the moon, but to reach it *first*. Eventually, a committee reporting directly to president Kennedy in 1961 stated, that "a crash program aimed at placing a man into an orbit at the earliest possible time cannot be justified solely on scientific or technological grounds" (as cited in McCurdy, 2011, p. 65). In a 1961 memorandum to then president John F. Kennedy, Kennedy's Vice president Lyndon B. Johnson came to similar conclusion regarding the actual use of what would eventually become project Apollo:

> *"Major successes, such as orbiting a man as the Soviets have just done, lend national prestige even though the scientific, commercial or military value of the undertaking may by ordinary standards be marginal or economically unjustified."* (US Gov., 1961, p. 8)

Thus, the justification of American spaceflight was from its early days driven by primarily rather emotional factors. Its meaningfulness, following Johnson's memorandum, was best measured by 'extraordinary' standards. It was not (primarily) hard scientific facts, technological breakthroughs or financial gain to be generated after the investment, but primarily soft factors like prestige that were able to drive the necessary efforts. Politicians realised the symbolic political potential inherent to spaceflight thanks to its cultural potential and perception. Especially during the Cold War, spaceflight was a political

muscle flexing, laden with cultural expectations as well as national hopes and dreams. However, it was primarily a means to exert and demonstrate technological or scientific abilities, and thus power, dominance, and national superiority.

Figure 3: Parade for and with the Apollo 11 crewmen after their trip to the moon. NASA, 1969.

Nevertheless, one should also acknowledge how spaceflight was just as well used for political approximation, even during the Cold War. For a few days a Soviet and an American vehicle in space were docked together, and even though the crews conducted some experiments together, "[t]his was above all a political statement, a concrete manifestation of the new climate of détente" (Krige, Long Callahan & Maharaj, 2013, p. 14). However, when the Cold War came to an end, spaceflight was also affected by the globally changing political conditions. McCurdy registered that "[w]hen the Cold War ended, so did much of the rationale for the ambitious program of lunar and planetary exploration that fear had motivated" (McCurdy, 2011, p. 61), making clear the interdependence of national politics and spaceflight activities. Although there had indeed been some cooperation before, in particular the ISS shows how cooperation gained some new momentum in the 1990s and 2000s. Once again, spaceflight did two things at the same time; it reflected the current political climate, as well as it embodied political developments. The ISS vividly reveals that, as it is a perfect alternative programme as to how and with what intentions spaceflight was used in the Cold War. Eventually having cost well over 100 billion US$, it may be seen as an attempt and a symbol to lessen international competitiveness and foster cooperation in space, but also on earth.

This chapter aimed at sensitising one to the idea of spaceflight as a political instrument. It can indeed only be one instrument in the 'orchestra' of national politics, yet it has the potential to fill a quite considerable role in it. This is yet another insight that adds to the construction of research questions with sufficient depth and will be further worked on in the material section, where I will put individual presidents into relation with spaceflight affairs.

2.5. Of Being Singular and Superior: American Exceptionalism

"Nothing in the history of American nationalism is more impressive than the speed and the lavishness with which Americans provided themselves with a usable past: history, legends, symbols, paintings, sculpture, monuments, shrines, holy days, ballads, patriotic songs, heroes, and – with some difficulty – villains."

Commager, 1967, p. 13.

The own history is very much necessary in order to embody an identity, and thus matters greatly in creating and shaping one's own future. A nation's self-supply of an own history happens at various sites, and certainly, the state's political arena is one of them. Now, history is not exactly a neutral passing on of facts, and especially one's own history is always actively created, constructed, at times creatively composed, and it is no different with the history of an entire nation. "[V]ibrant societies share common narratives of who they are, where they have come from, and where they are headed" (Jasanoff, 2015a, p. 6), and over the years narratives using historical events and explaining developments may turn into great and widely shared (national) myths. Paul (2014) identified and analysed seven central American myths all of which feed into and are fed on one central aspect of US American self-conceptualisation: American exceptionalism, the "idea that America is a singular, superior, or even God-favored nation within the international system" (Gilmore, Sheets and Rowling, 2016, p. 506), a master narrative by nature (see Jasanoff, 2015a, p. 20).

French scholar Alexis de Tocqueville using the adjective "exceptional" in the 1830s when describing the American democracy is often seen as the foundational moment of what American exceptionalism is today. Back then it was a mere description, of the young countries political system, to be precise. And even though this mere description stemmed from a non-American, over time it developed into a shared self-understanding of the entire nation, invoking uniqueness and inherent predestination. Rapidly, the term had become the general mode of self-representation, that it still is. Gilmore (2014) states it to have three central *themes*. First, that the US is a *singular* exception among all countries, in virtually any given context. This specific idea still stems from the founding days of the US, when it became independent, allegedly starting from scratch, and was from that point on supposedly qualitatively different from any other country. Second theme is that of being *superior*, including the implication that all other countries are *in*ferior to the US, again more or less regardless of the context at hand. Third, is the partly religiously driven theme that the US is *destined* by nature, chosen (by a divine

entity) to play a special role in the international community of states. However, American exceptionalism is not just some spiritual idea, floating above, detached from everyday life. Instead, it gets practically applied in many situations, it serves as a shared mental point of departure, as common denominator of who one is and what one therefore ought to do as an American. Being exceptional as a nation *by nature* ideologically guides and plausibly steers matters, both private and public, individual and collective. "In its dominant and recurring themes as well as in its overall rhetorical structure, American exceptionalism informs and structures American self-representations", carefully building up a "framework of national solidarity and belonging" (Paul, 2014, p. 17). However, American exceptionalism itself is in fact rather intangible, being described as a "fuzzy conglomerate of very different ingredients" (Paul, 2014, p. 15). Yet, keeping in mind the three overarching *themes* I mentioned above, Paul identified three different *types* of Exceptionalism that may be studied separately from each other: a religious exceptionalism, a political exceptionalism, and an economic exceptionalism. Of those three, the study at hand will be exclusively concerned with the *political exceptionalism*, later analysing aspects of its "narrative framing, iconic visualization, and ritualistic enactment" (Paul, 2014, p. 16) in the context of presidential activities in American spaceflight.

A number of scholars have shown how major speeches of American presidents regularly become a site where American exceptionalism becomes nourished and institutionally reproduced. The imagination of the US being exceptional and greater than other countries by nature has been around for over one century, as for example already the third US American president, Thomas Jefferson, described the still rather young US to be "the world's best hope" (as cited in Gilmore, Sheets and Rowling, 2016, p. 507). Ideas of this kind, the scholars found, are often used in US-political contexts, but precisely become apparent in addresses and communication from the presidents of the United States (ibid., as well as Gilmore, 2014, and Neumann & Coe, 2012). "American exceptionalism has become an increasingly powerful and relevant concept in presidential speeches to the American public since the end of the Cold War" (Gilmore, Sheets and Rowling, 2016, p. 516). This circumstance has led to a small, but still existent discourse about the different usage of US exceptionalist ideas by the US presidents over time (see among others Gilmore, Sheets and Rowling, 2016 and Monten, 2005). Gilmore eventually concluded "that U.S. presidents are well aware of the power involved in invoking American exceptionalism and they are creative in how they choose to invoke it" (2014, p. 2431). As will become obvious later on, this study will also add to this existing body of literature investigating the relationship between American exceptionalism and practical political work of American presidents.

2.5.1. Exceptionalisms Building Blocks: American Myths

"A tale is born from an image, and the image extends
and creates a network of meanings
that are always equivocal."
Italo Calvino (1923-1985), author and journalist

The underlying exceptionalist idea about the US affects what and how parts of national history are getting re-told, re-presented and hence incorporated in the nation's composition of its own history. To make them valuable, credible *and* flexible in discursive arrangements, notions as strong as that of a nation being singular and superior require certain historical grounding, that is provided by 'historical figures, incidents, interactions, and achievements', which out of the many possible choices have to be selected very carefully. In the case of US American exceptionalism, in applied form some of these narratives are described by Paul as "The Myths that Made America" (2014, her book of the same title). Myths are powerful, not only, but particularly because they work as "means of providing coherence" (Paul, 2014, p. 27). They, 'objectivate' developments or events, letting them appear as inherently logical, they may provide a sense of purpose to in fact mind-boggingly causeless happenings, making them more seamlessly fit into a 'usable past', as Commager termed it (see above). These attributes render myths a key component of national or cultural, yet in any case *collective*, memory, and an important ontological resource to give individuals a feeling of belonging to a certain, distinctive collective with a shared, logical past (see also 'imagined communities', chapter 4.2. and Stewart, 2007, p. 2). This is true even though different myths shared by one collective may not be able to stand a closer historical analysis and, can even contradict one another, while at the same time becoming somewhat immune to criticism. Schueller and Watts (2003), for example, point out the rather chaotic and messy founding process of the United States, starkly opposing the inner telos and comprehensible trajectory that today's common mythic narratives ascribe the process with. At this point though, I want to note that the aim of this study is not about pointing out contradictions and historical misconceptions, but much more to examine the usage of such myths in political work in the realm of American spaceflight and to unpack some of the more tacit dimensions of myths "regulat[ing] the 'political unconscious'" (Paul, 2014, p. 31). I have mentioned Paul's seven 'Myths that made America', and I want to very briefly go into two of them; the myth that developed around Christopher Columbus and that of the American West. Both will be of relevance later on in the analysis.

The myth around Columbus is a central one in the American consciousness, regardless of Columbus' discovery of the Americas being centuries before the US declaration of independence, and Columbus himself never having set a foot on later US territory. When the relatively young US began to construct a national identity also through means of constructing a common history to refer to, Columbus was a useful figure to be incorporated. The myth itself became centered around the term and the general idea of the 'discovery', as Columbus became "a patron and ancestor of those Americans who were

demanding their independence from England and who later became citizens of the new republic" (Paul, 2014, p. 53). Furthermore, when documenting his visits in the 15th and 16th century, "Columbus constructs his subject position as an extension and an expression of the Spanish royal authority" (Paul, 2014, p. 47), not actually grounding authority on anything, but simply *assuming* it. The first encounter of Europeans and residents of the Caribbean was in his eyes not a process of two cultures becoming acquainted with another, but the logical beginning of the "rightful conquest of the Americas" (ibid., p. 48). Columbus' "daring, perseverance, and intrepidity were championed as necessary ingredients to the transcontinental endeavour" and he "became the very embodiment of an American pathfinder" (Groseclose, as cited in Paul, 2014, p. 57), a '*homo americanus'*. The narrative of Columbus as heroic adventurer became heavily contested over time, leading to today's "multiple 'Columbuses', both heroic and shameful" (Paul, 2014, p. 76). Yet, the myth of Columbus the great discoverer eventually endured through time, became a cornerstone of American of the American mythology, and stayed in the collective American memory. Until today, October 14 marks the nation-wide annual celebration of Columbus Day.

Second myth of interest for this study is that of 'the West', in principle concerned with the American expansion westwards roughly beginning in the late 18th century. In this myth, however, the 'West' is more than specific *place*, but rather as a "transformative space [that] has often been considered as a *pars pro toto* for the nation" (Paul, 2014, p. 312), where from "the discovery, conquest, and settlement of the West [became a] dominant theme of American history" (Slotkin, 2001, 472). More to be seen as a general way of living, moving West in American contexts is often put somewhat synonymous with an almost archaic, and simple, frugal or rural life; farmers and cowboys are among the most used archetypes of characters in the West, idealised as *the* commendable citizen to their country. Until today, following Paul, the farmer in the US still stands for hard work and dedication, a close and 'intact' relationship with nature, and for an indistinct egalitarianism. Since the West "is constructed as a site of individual and collective quests for land and dominance" (Paul, 2014, p. 314), one very central concept or theme of this specific myth is that of the *frontier*, which is to be broken by Americans, through *and because of* their inherent Americanness. A central image in American mythology until present day, 'breaking frontiers' automatically implies expanding in some way, quickly revealing the West's close connection to the overarching *American expansionalism*. Paul recommends distinguishing between two (overlapping) versions of expansionalism within the myth of the West; one focused on actual *expansionism*, depicting the West as a site of conflict and fight, and one focused on *agrarianism*, constructing the West as primarily fruitful and peaceful land (the so called 'virgin land'). Especially the second one tends to appear as increasingly nostalgic and romantic, making of the West a "pastoral idyll, a democratic space, and [...] a land of opportunity" (Paul, 2014, p. 319).

Part of this myth around the westward expansion and the term of the frontier is what has become known as *manifest destiny*. Similar to the term 'exceptionalism', it was mentioned first, quite inconspicuously, in a simple 1845 journal column:

> *"The American claim is by right of our manifest destiny to overspread and to possess the whole of the continent which Providence has given us for the development of the great experiment of liberty and federative self government entrusted to us"* (O'Sullivan as cited in Paul, 2014, p. 322).

From the inconspicuous column, the expression quickly found its way into congressional debates and later into a persistent nation's consciousness, surpassing its original meaning, after a time idiomatically describing the perceived obligation of the United States to expand over all the Americas (Johannsen, 1997, p. 7ff.). However, within this US American myth, the expansionist also meets challenges, "at the frontier the environment is at first too strong for the man. He must accept the conditions which it furnishes, or perish" (Turner as cited in Paul, p. 324). Thus, the myth does not necessarily claim that expanding does not entail challenges within the new land, but it is just as well a story of possible setbacks, negotiation, and adaption. Failure and resistance rather confirms rather than limits expansionist and exceptionalist thinking.

To conclude, American exceptionalism and the narratives or myths that constitute it are deeply intertwined with what may be described as 'Americanness', it is an essential part of American culture, American self-understanding, and active self-representation. What I have presented here, however, certainly is just a part of 'the' American identity, although a part that is arguably fundamental. I will draw on this with the goal in mind to find out how this part of an identity interplays specifically with the technoscientific developments. Or, differently put, I will show how American exceptionalism is expressed in technoscientific and technopolitical argumentations and decisions, that is, in America's technopolitical identity.

Especially when it comes to the US proclamating its own exceptionality and *singularity*, we can identify a subtle, yet unambiguous, act of active *Othering*. Othering is for example defined by Griffith Williams and Korn as "the process by which one group reproduces and reinforces distinctions, dominance, and subordination against those without power" (2017, p. 22). Othering in the context of national states is also very much apparent in (post)colonial ways of thought and structuring, which I will now take a closer look at in the following chapter.

2.6. From Colonialism via Postcolonialism to Neocolonialism

"There will never be a really free and enlightened State until the State comes to recognize the individual as a higher and independent power, from which all its own power and authority are derived and treats him accordingly."
Henry David Thoreau in *Civic Disobedience*

In the following section we will take a final step back and throw the spotlight on another, last strand of literature, namely that of (post-)colonialist thinking. Clearly, postcolonialism could not exist without colonialism. Colonialism may most generally be understood as "the conquest and subsequent control of another country, [involving] both the subjugation of that country's native peoples and the administration of its government, economy and produce" (Hiddleston, 2009, p. 2), a process that often becomes accompanied by an elitist, essentialist ideology that stresses the "cultural supremacy" (ibid.) of the colonising nation/culture (note here the resemblance between these notions and that within American mythology). Further disassembling it, Loomba differentiates between 'administrative' and 'settler colonisation'. In 'administrative colonialism', only a very limited number of people the colonising party actually physically move into the new colony, which is in these cases almost completely "controlled [only] through a military, administrative and economic apparatus" (Loomba, 2015, p. 23). 'Settling colonialism', however, exists in many different forms, and, other than in administrative colonialism, mostly implies considerable movement of people from the colonising population into the colony. People move from one place to another to stay there, even if the place is already inhabited by some other population. Thus, colonialism is not to be confused with imperialism, which is rather a form of state dominance than a state's undertakings in conquering land. Following Loomba, more exact definitions of colonialism are hardly possible, as especially cases of settler colonialism tend to be highly situated and best described individually.

Hiddleston (2009) states postcolonialism to have had its starting days in the 1950s or 1960s, although Loomba only identifies Said's work *Orientalism* (1978) with its aim to "re-order the study of colonialism" (see Loomba, 2015, p. 60) as one of the first central works within postcolonialism as an own field. Said grounded his thinking for example also on Foucault's early work (cf. ibid.). However, postcolonialism always was and still is an ambiguous, hard to define, scholarly tradition. Hiddleston simply calls it a "broad and constantly changing movement, [...] generally [to] be understood as the multiple political, economic, cultural and philosophical responses to colonialism from its inauguration to the present day" (Hiddleston, 2009, p. 1). Fittingly to that rather imprecise definition, Loomba even states it to be so "heterogeneous and diffuse that it is impossible to satisfactorily describe what its study might entail" (2015, p. 5). Further examination of debates about and also within postcolonialism would go far beyond the present study, yet I will still use this general idea of both, colonialism and postcolonialism, as one of the theoretical lenses to apply on the material that I will introduce later. Jazeel (2016, p. 19), however, points out the importance of 'representations' for postcolonial ways of thinking.

He explains, that on the one hand, postcolonial approaches ask how actors represent some*thing* or some*one* in form of textual presentation. On the other hand, and even more importantly for this study, this lens sensitises one for how 'representing' becomes an ex- or implicit act of 'speaking for', and eventually acting for, someone, or for another collective. It invokes hierarchy. Other than the term might imply, postcolonialism does not imply that colonialism has been overcome, but rather, that although it *should* have been overcome by now, and officially *is*, certain power structures have endured over time. As a consequence, postcolonialism at its very core becomes a way to "tackle questions like whose and which narratives are able to come into representation, and who speaks for those typically occluded from histories still largely written by the powerful" (ibid., p. 19). Eventually, this thinking also lets emerge "a sense that notions of cultural purity and authenticity are themselves but myths" (Jazeel, 2016, p. 18). This understanding links back to specific American mythology, which has very much been about representing and embodying a certain authenticity and purity, making postcolonialist thinking a fitting additional lens to tackle such themes.

One can now think of colonialism as historical and conceptual basis, and postcolonialisms goal to primarily acknowledge the narratives of those who have been and still get suppressed. In addition, I want to introduce a last term, namely that of neocolonialism. It is very closely tied to postcolonialism, but has been described as still "lingering ideologies of cultural patronage of the sort that originally backed up and fuelled actual colonial powers" (Hiddleston, 2009, p. 5). Accordingly, former "naked colonialism" (Watts, 2009, p. 360) with its oftentimes unabashed oppression was replaced by rather invisible processes through which old, colonial power structures are still being sustained and reinforced. Conditions of exploitation can hence last, yet often under the protective cloak of freedom and emancipation; what was once exerted by military means, may now be achieved differently, but just as systemically. Namely, following neocolonialism, colonialist structures are carefully maintained on several levels - economic, ideological, political, and cultural (cf. ibid.) - although in this study ideological neocolonialism will be the only aspect I will (and can) examine. Even though Watts (2009) claims neocolonialism to have fallen out of scholarly fashion around the 1980s, I want show that in certain ways, neocolonialist thinking kept being an essential part of political practice from the 1960s until today.

But yet, why are these concepts useful in the context of spaceflight in general? Especially the idea of 'settler colonialism' is arguably very much applicable in the realm of modern spaceflight. Celestial bodies other than earth (moon, Mars etc.) may be conceived of as potentially colonisable territory. In fact, with the earth-orbiting International Space Station (ISS) and the lonesome American flag planted on the moon, parts of these territories have already been somewhat colonised, although not 'legally', but much more ideologically and symbolically. From a post- and also neocolonial perspective, it is worth noting that from its early days through the 21st century, it is only a very limited number of nations/cultures that want to and can pursue this most modern wave of colonialism, as which spaceflight may be conceptualised. This vividly becomes clear as until present day, spaceflight has always been done under the flag of specific nation states, never under a common flag or no flag at all.

Figure 4: Astronaut Mike Hopkins during an extravehicular activity at the ISS on December 24th 2013, with his US patch clearly visible. NASA, 2013.

To quickly summarise this section, notions of all of the three concepts, colonialism, postcolonialism as well as neocolonialism, will be identified in the material, posing questions like how do - if - these concepts become taken up? And how are they connected especially to specific ways of Americanness and American myths? Previously discussed aspects of American Studies and above points about different colonialist ideas will be most interesting to connect and trace in the material.

3. Research Questions

"Simplicity is prerequisite for reliability."
Edsger Dijkstra (1930-2002), software engineer and science essayist

Having introduced the theoretical fundament of the thesis, the following will be my main research question:

> *How did US presidents in talks introducing new space policies contribute to the construction of the sociotechnical imaginary of 'conquering space'?*

It will be supported by four sub-questions, accompanied by short explanations:

a. *How is the American nation and culture, a specific 'Americanness' conceptualised?*
   As we will see, many sociotechnical imaginaries are tied to nation states. It is hence fruitful to pay close attention to how the nation as reference is being constructed.
b. *How are specific collectives evoked in the talks?*
   Since I address issues of nations and collective identities, questions of collectives and their construction will aid answering the main question as well.
c. *What role does technology/spaceflight play in defining the US?*
   The study focuses on the US. In that, I am particularly interested in how (spaceflight) technology is rendered into both reasons and outcomes of the American identity.
d. *How is the US' role in the world depicted in the speeches?*
   Finally, I want to put the answers of the other questions into a bigger framework, as I will try to carve out how, through the self-conceptualisations, the US becomes located in global cultural and political contexts.
e. *Time/Trajectory/Future-Making*
   How are 'future worlds' as techniques of future-making composed, and how are trajectories in space and time constructed?

I want to find out what kind of world is created in the talks, and in what condition it is. I will explore social and political prerequisites and reasonings for spaceflight, that is technological innovation. Anderson stresses that in common narratives, worlds will have to be described or created in "careful, *general* detail" (2006, p. 32), starkly resembling what has been pointed out about the characteristics of (national) narratives and especially (national) myths. They as well have to be simplifying and generally yet sufficiently detailed and capturing. My set of research questions aims at understanding how these contradictions are circumnavigated by the American presidents.

4. Sensitising Concepts

4.1. Tech and Time: Sociotechnical Imaginaries

"Neither a person nor a nation can exist without some higher idea."
Fyodor Dostoevsky (1821-1881) in *A Writer's Diary*

Fujimura (2003, p. 176) registers that a central practice researcher in every discipline have to do, is exercising the act of imagining possible futures. This holds true for each and every one of us, too, since we incessantly plan and imagine the upcoming minutes, hours, days, weeks, and even years. Those previsional imaginations, such as humans possibly walking on the face of Mars someday in the future, are thus thought not to be just mere imaginations, but to actually shape what will eventually become reality.

My main sensitising concept will be that of the *sociotechnical imaginary*, coined by scholars Jasanoff and Kim (2009), and commonly defined as "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology" (Jasanoff, 2015a, p. 4)[3]. However, this is not about any arbitrary idea about the social and/or technical. Only when an idea is "collective, durable, [and] capable of being performed" (ibid., p. 19), it may be a sociotechnical imaginary. The potential of being performed is always linked to specific collectives, often nation states and are thus deeply situated temporally as well as culturally. Yet, even within a nation state, there never is only one sociotechnical imaginary at hand at a time; different and even contradicting versions of 'desirable futures' co-exist, steadily competing and struggling for dominance and eventually technological implementation, that is, performance. Although imaginaries must be 'collectively held', power relations are still somewhat asymmetrical. Taking the example of spaceflight, respective imaginaries are not solely 'produced' within the White House or the NASA headquarters. Rather are those institutions merely a few of a number of sites where a sociotechnical imaginary gets constantly stabilised over time. Other institutions as well as private individuals support this process of stabilising the imaginary just as well as the government and NASA do. However, some key actors still play a more seminal role in promoting and performing it, which is why Jasanoff acknowledges "legislatures, courts, the media, or other institutions of power to [be able to] elevate some imagined futures above others, according them a dominant position for policy purposes" (Jasanoff, 2015a, p. 4). These actors can, want to, and in a way also need to push their agenda that is driven by their subjective assessment of what is a desirable path to follow in technology based on certain "visions of social progress" (ibid., p. 4). Thus, although necessarily being carried by collectives that are large enough, sociotechnical imaginaries still

[3] In the 2009 article, said scholars defined sociotechnical imaginaries as "collectively imagined forms of social life and social order reflected in the design and fulfilment of nation-specific scientific and/or technological projects" (Jasanoff & Kim, 2009, p. 120). While this definition is applicable on my material, too, I will work with the later and more widely accepted 2014 definition.

depend on and take shape to some extent through "agents who are capable of moving imaginaries from one sociopolitical setting to another" (ibid., p. 333). This makes clear how sociotechnical imaginaries are not only shaping how technology is perceived and lived by a society, but how "[t]he political and the technological cannot be clearly demarcated in any reasonable manner, technology always being an agent of political production" (Felt, 2015, p. 120).

Due to the topic, I am primarily interested in the political fabrication, enactment, and social embedding of such imaginaries. The means of imaginary's advocates to embed it in society vary widely. Societally important, however, is the aspect of time and history. As Jasanoff finds, especially in public performances, these special agents may be "pointing back at past cultural achievements and ahead to promising and attainable futures, or to futures to be shunned and avoided" (Jasanoff, 2015, p. 22), reminding audiences of "realities of the known, the made, the remembered, and the desired worlds in which we live" (ibid., p. 29). I conceive of politics as one place of the production of (national) imaginaries (see also Hecht, 2009), and, in my case, particularly the American president as one of the central agents to perform and integrate them in society. Hence, I consider the goal of my analysis to "reveal the naturalized logics of functioning, self-contained, and self-replicating social and political systems" (ibid., p. 25). Though, it is not surprising that enforcing a sociotechnical imaginary is not as simple as that.

A decisive factor in the unfolding of sociotechnical imaginaries are the respective 'national technopolitical identities', for instance "created and maintained through the (non-)uptake of certain technological developments" (Felt, 2015, p. 104). Felt, for example, investigated how the non-uptake of nuclear energy became tied to and fed into a specific kind of Austrianness, explaining that if a society eventually decides for or against a (certain way) of (not) using a new technology, this decision constitutes more than a decision for or against a technology. Taking a closer look, these choices reveal how through imaginations of possible futures with or without the technology, societies define their preferred ways of living. Influenced by some key actors, collectives decide for their individual 'desirable future'. This in mind, I investigate how coherence with Americanness as constructed and rehearsed in presidential speeches, is expressed through the technological system of spaceflight. But yet, following Hecht, NASA is something that she proposes to call a technopolitical regime, a term she uses for the complex of certain "institutions, the people who run them, their guiding myths and ideologies, the artifacts they produce, and the technopolitics they pursue" (2001, p. 258). And in the end, it is this very regime that has control over whether a sociotechnical imaginary finally becomes a sociotechnical reality. In all that, sociotechnical imaginaries are part of what came to be known as co-production. Very shortly mentioned earlier, co-production proposes that "natural and social orders [are] being produced together" by society, meaning that "co-production is shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it" (Jasanoff, 2004, p. 2). Sociotechnical imaginaries are a part of co-production, being "at once

products of and instruments of the co-production of science, technology, and society in modernity" (Jasanoff, 2015a, p. 19).

Finally, Jasanoff and Kim identify four stages of sociotechnical imaginaries: origins, embedding, resistance, and extension. Origins of sociotechnical imaginaries can vary from single persons to specific collectives. Following Jasanoff, 'loosely circulating' ideas or aspirations are taken up by these persons or collectives, and get concreted, substantiated, and perhaps even partly realised. As mentioned above, partial realisation often leads to fictive realisation ('science fiction'), which may in turn promote developments in reality again. These processes of ideas formerly unknown by the larger population becoming manifest and dreamable are the sociotechnical imaginaries origin. In the second phase, embedding, the technical progress and the ideas behind get embedded in greater social and hence societal contexts, primarily through the actual production of things and "processes of collective 'remembering' of events [...] in order to construct meaningful translations from pasts that were, to presents that are, to futures as people would like them to be" (Jasanoff, 2015b, p. 329). This melding and moulding of the conceptual and the material, which also enables an imaginary to become part of governmental practices, is the essence of embedding. Embedding is followed by possible "[m]oments of resistance, which threaten the disintegration of older settlements" (Jasanoff, 2015b, p. 329), when 'oppositional visions' are offered, often coming from non-regulatory circles. Fourth, and finally, an imaginary may experience extension, which "calls for a situated re-embedding in order for translated imaginaries to take root and flourish in new soil" (Jasanoff, 2015b, p. 333). In other words, predominantly, governments and international organisations integrate and normalise the imaginary, thereby expanding its range of influence.

At this point, however, I shall add that none of what I have compiled until now is to say, that spaceflight is an inherently useful and unquestionable endeavour, neither in science, nor in society. Acknowledging critical voices is also meaningful considering my main sensitising concepts. Anticipating what I will go into more detail in chapter 4.1., I follow Jasanoff in writing that, "[a]scribing a fixed ontological status to sociotechnical imaginaries, however, would rob them of their analytic value" (2015b, p. 339). Reducing it would simplify processes of societal developments and undo any possibility for 'projection or prediction' that the concept indeed affords, if conceived of in a flexible way. In other words, imaginaries and the technologies involved are nothing set in stone. Even though achieving the stabilisation of certain ideas over others in society, imaginaries and their expressions may still change and adapt due to internal and/or external influences.

Two final remarks for this chapter should be made. First, I consider the talks mainly as means of embedding. I have very briefly mentioned origins of spaceflight and the idea of conquering space before but analysing this was and will be the work of others (see Kirby, 2010, or Neufeld, 2010). As I termed it, the talks 'meld' conceptual and material by promoting the production of certain artifacts,

informing and, after all, allowing, the moulding of these artifacts, that is rockets. The second remark is tied to that: As is brought up above, a fully fledged sociotechnical imaginary must be 'collectively held'. However broadly the term 'collectively' is, the limitations of this study prevent me from closely examining how, if even, this is the case for 'conquering space'. I will not be able to confirm the existence and describe a clearly demarcated sociotechnical imaginary with all its facets, but only identify traces of what may be a fully-fledged imaginary. Sociotechnical imaginaries thus will simply be my core conceptual anchor, while viewing presidential speeches as one - indeed fairly relevant - of many sites where my imaginary of concern becomes evoked, rehearsed and hence stabilised.

4.2. Us and Them: Imagined Communities

"In truth, history does not belong to us, but rather we to history."
Gadamer as cited by Nenon (1995, p. 44)

Sociotechnical imaginaries are often tied to nation states, yet only look specifically at the role of technology in the creation of (potentially national) imaginaries. To work more grounded on the aspect of the nation as such, I will also consider Anderson's concept of the imagined community, which goes more deeply into sociological aspects of a state's population as a self-perceived *community*. He investigated why nations are able to evoke the kind of attachment at all that it does, tackling for instance contradictions between "[t]he 'political' power of nationalisms vs. their philosophical poverty and even incoherence" (2006, p. 5). 'The nation' he defines as 'cultural artifacts' consisting of "an imagined political community - and imagined as both inherently limited and sovereign" (ibid., p. 6). 'Imagined' here is meant in three different respects.

First, in the most practical sense; the community itself is only an imagined one, as from a certain size onwards, it becomes increasingly unlikely that all members actually *know* each other personally. The interpersonal affiliation is thus built on individual imagination. Still, certain attributes make people accepting strangers as member of their community, eventually letting arise communal 'fraternity'. This may "command such profound emotional legitimacy" (ibid., p. 4), that some people (would) die for the community s/he imagines belonging to. Second, nations are imagined as being *limited*, because nation states normally do not aim at making *every* human being to be 'their' state's citizen, to be part of 'their' distinct community. This characteristic of nations stands in stark contrast to other communities, such as religions, of which most do not consider themselves as inherently limited. Third, the community's sovereignty, its felt freedom, is fundamentally imagined, too; in principle, the idea of the state as organisation mostly is to make other institutional restrictions redundant, eventually allowing for actual pluralism.

With this community of purpose in mind, somewhat lending plausibility and reason to existence, Anderson notes, "[i]t is the magic of nationalism to turn chance into destiny" (2006, p. 12), with this

term perhaps unconsciously building a bridge to the manifest destiny (see chapter 2.5.1.). If this kind of imagination can successfully be achieved, and people draw on the same cultural resources, one can observe a group of people imagining belonging together who "recognize and value that commonality which they regard not as an outcome of certain social facts but *as their cause*" (Finlayson, p. 273, in Amenta, Nash & Scott, 2012, my emphasis). Anderson called these 'social facts' 'natural ties', through which "one senses what one might call 'the beauty of gemeinschaff [sic!]" (Anderson, 2006, p. 143). As oftentimes, there is no choice in this *gemeinschaft*, it gets rendered as disinterested as family bonds are, and equally worth to invest in. Acting for the purpose of 'national interest', Anderson explains, is hence taken to be similarly to helping a family member, as the nationality and its concomitant 'social facts' are naturalised.

In addition, I shall add that nationalism must not be taken synonymous to racism, as nationalism "thinks in terms of historical destinies", whereas racism "dreams of eternal contaminations" (Anderson, 2006, p. 149). In other words, while racism is inherently derogatory respectively valorising people by membership of an unchosen collective (Judaism for instance), nationalism by definition is not about *class*, but exclusively about belonging to a *nation*, that does not necessarily have a certain comparable social worth ascribed to it (cf. ibid.).

As is the case with sociotechnical imaginaries, the means and ways by which such communities come to be in people's minds, vary greatly. While drawing specifically on novels, Anderson showed "'national imagination' at work [...] that fuses the world inside the novel with the world outside" (2006, p. 30), a technique that may be connected to sociotechnical imaginaries and myths. Taking a step back, novels are but narratives; creative thought work aiming at conveying something to an audience. So are political speeches; they, too, express something about the 'outside world' through the creation of a specific, fabricated 'inside world' of the speech, which nourishes national imaginations and identities. Imagined communities will sensitise me towards the role of nation states within the politically driven complex of spaceflight and its idea of conquering space.

5. Material

5.1. Choosing material

"While you are experimenting, do not remain content with the surface of things."

Ivan Pavlov (1849-1936), physiologist

"[T]he imaginaries framework necessarily invites us to examine the origin of new scientific ideas and the social arrangements or rearrangements they help sustain" (Jasanoff, 2015b, p. 322). Thus, to follow through my idea to work with sociotechnical imaginaries, I will need to start the analysis in the early days of American spaceflight. To follow a stringent logic within the choice of material, I will

focus on certain speeches that not only have sufficient relevance but are also comparable well enough in their content *and* context.

The modus operandi of the US government's collaboration with NASA oftentimes creates moments in which one of those equally relevant and comparable speeches take place: the introduction of a new space policy, for which usually the American president himself takes responsibility. As I will discuss later, (self-)legitimation is a necessary central act in government work (see chapter 6.3.), and "[l]egitimation is principally a statement about a person issuing an instruction, making a demand, or stating or implying a wish" (Barker, 2001, p. 32). At the same time, not only the new policy itself, but also the talk some presidents have given to introduce the new policy, allows for "moving imaginaries from one sociopolitical setting to another" (Jasanoff, 2015b, p. 333), making the president one seminal 'translation agent'. It usually occurs after a president is elected and inaugurated, and, next to numerous other things, has the possibility - respectively responsibility - to steer the national spaceflight programme into certain directions. Before actively deciding on what to do, he has to assess and evaluate the current state of affairs, a process that is usually accompanied and supported intensively by several consultants and committees. The Vice President is usually heavily involved, too, as he is "traditionally the administration's representative for space policy" (Vaughan, 1996, p. 14). Nevertheless, depending on necessity and also personal interests and foci, the intensity in which the current programme is being worked on ultimately is open to the president. He can as well just leave the programs keep on running as arranged by his predecessor(s). The process around former president Barack Obama's policy might serve as a good example here.

Inaugurated in January 2009, it was announced in May 2009 that the *Constellation* program, launched under Obama's predecessor, George W. Bush, was about to get reviewed rigorously. To this end, the Obama government brought into being the *Augustine Commission* which consisted of a number of branch experts and former astronauts. Released in October 2009, the commission's final report (Review of U.S. Human Spaceflight Plans Committee/NASA, 2009) assessed the old programme as not sustainable anymore, and, among other things, proposed three options on how to further pursue exploration beyond Low Earth Orbit (LEO). The Obama office, making use of their decisive power in these matters, used this report, yet did not exactly follow one of the three options. Some aspects were changed, as for example Obama initiated manned missions to near-earth asteroids rather than to the moon as Bush planned before. Obama announced his new policy publicly in a talk given in April 2010 (Remarks by the President, 2010). However, Obama's policy was then again overthrown by Donald Trump in 2017, who renewed the plans to land people on the moon and then on Mars (Remarks by President Trump, 2017). This back and forth, assessing and reassessing, scheduling and rescheduling, has been the usual process for decades now, and my analysis will be concerned with official advent of new US space policies.

Although imaginaries are 'collectively held' by definition, analysing talks of individuals still goes with the methodological requirements of sociotechnical imaginaries. Jasanoff explained that "individual dreams and aspirations take hold and acquire collective force only when key actors mobilize the resources for making their visions durable" (2015a, p. 25), and in American spaceflight the American president can, with a quite clear conscience, be considered a key actor. Analysing the 'dreams and aspirations' put forward in his most central space-related talk turned out to be an indeed rewarding approach.

Thus, I will now have to delve into the history of American spaceflight, and, more specifically, the activities regarding spaceflight of American presidents holding office since the foundation of NASA in 1957. During this short historical recapitulation, I will present those talks suitable for my analysis. It may be seen as part or extension of the state of the art, and aims at providing the talk's/material's historical contexts.

5.1.1. Dwight D. Eisenhower (1953–1961): Founding Civilian Spaceflight

It was president Eisenhower, who, by signing the National Aeronautics and Space Act on July 29th of 1958, eventually brought NASA as we know it today into existence. With this act, he attempted to legally separate between general research in space, and military activities, although both kept having points of contact.

Still, Eisenhower's enthusiasm for spaceflight was limited (see among others McCurdy, 2011, p. 60ff.), as he saw spaceflight from a relatively earth-oriented and pragmatic perspective. In a meeting in the 1950s discussing possible manned missions to the moon, estimating costs around $30 billion, Eisenhower is said to have asked the group "Can anybody tell me what is the best space program for $1 billion?" (as cited in Seamans, 2005, p. 5). Since there could not be identified a central speech or announcement concerning the foundation of NASA or other activities afterwards, Dwight D. Eisenhower cannot be considered in the analysis.

5.1.2. John F. Kennedy (1961–1963): Choosing to Go to the Moon

President Kennedy was far more open towards spaceflight activities as his predecessor, for he was the one eventually deciding to found and fund the Apollo programme that lead to the first (and, as for now, last) manned missions to the moon. Yet, it was not primarily his personal interest, but his idea of using spaceflight as political instrument, that lead him to make that decision. This gets very clear in a governmental document from 1961, the year the decision to go to the moon was taken. There, John F. Kennedy asks his Vice President to craft a general report (Webb & McNamara/Johnson, 1961) on the possibilities to operate such a moonshot mission. Next to pointing out technical and financial aspects, the report also went in some details about four principal reasons for projects in space, which are named to be the following:

a. scientific knowledge
b. commercial or chiefly civilian values
c. military value and
d. reasons of national prestige.

Figure 5: John F. Kennedy during his speech at Rice Stadium, Houston. NASA, 2006.

Considering what was discussed before, how spaceflight can and was used as a mere political instrument, Kennedy was the first president who not only acknowledged this, but also proactively made use of it. The report cited here and associated memoranda heavily stressed 'national prestige' as an aspect that arguably played a very crucial role in Kennedy deciding to substantially raise NASA's budgets to send men to the moon in the same decade (McCurdy, 2011, p. 108). This historic decision yet had to be approved by both the American congress and the American people. This is why Kennedy promoted his plans in two talks, one in congress, the other publicly, the second with only minor changes compared with the first. The second talk, which was given in Rice Stadium in Houston, Florida, in early autumn 1961 in front of over 40,000 people, will be the first talk I will consider in the analysis.

5.1.3. Lyndon B. Johnson (1963-1969): The Apollo Years

John F. Kennedy was assassinated on November 22nd, 1963, only two years after his inauguration, making Lyndon B. Johnson, Kennedy's Vice President, his automatic successor. In his tenure as American president, regarding spaceflight, Johnson in principle could just follow through the

plans he himself had worked out as John F. Kennedy's Vice President some years before. In that time, he had already shown his take on spaceflight as (socio)political instrument. Even against the backdrop of the Vietnam war, Johnson kept the budgets for NASA high enough to follow the goal of arriving on the moon still in the 60s. His confidence in spaceflight being able to raise not only national prestige, but also national pride and confidence in America and the government, kept him from making substantial cuts of the budget (see McCurdy, 2011, p 109f.). Nevertheless, Johnson never gave a visionary speech, as it was existing plans that kept being pursued. Hence, he will not be included in the analysis.

5.1.4. Richard Nixon (1969-1974): From Exploration to Reusability

Richard Nixon became president elect in November 1968, about a month before the first astronauts orbited the moon and about seven months before Neil Armstrong became the first human to walk on its surface. He was inaugurated in January 1969. Thus, especially after the first successful mission to the moon, it had to be decided what should follow after the Apollo programme, as until then NASA's entire purpose was to make possible and perform the missions to the moon.

For Nixon's tenure, it might be useful to shortly look into the entanglements of the president and the NASA administrator. Namely, when James Webb resigned as administrator in October 1969 he was succeeded by Thomas Paine, who had only had seven months of Federal government experience at that point. Immediately, Paine announced to ask the Senate to increase budgets anew, among others calling to build a permanent space station. When the republican Nixon was elected a month later, Paine, a democrat, resigned pro forma, as usually the president chooses someone with similar political views for the job of the NASA administrator. Surprisingly, Nixon refused Paine's resignation, making two quite different characters to work together. Paine, an ambitious, inexperienced idealist, was now confronted with Nixon, who "had never shown much interest in space" (Portree, 2001, p. 41). The following negotiations about NASA's future were tough and included plans by Paine for manned Mars missions as early as in the late 1970s as well as Nixon giving NASA a budget for the fiscal year 1970 that was still under the 'minimum acceptable' of what Paine had proposed. Finally, in March 1970, Richard Nixon gave a 'Statement About the Future of the United States Space Program' (President Nixon's 1972 Announcement on the Space Shuttle, 2009), a public announcement in which he presented his decisions regarding NASA's post-Apollo era. He effectively cut any expansionist plans Paine had fought for, and instead laid the foundations for the reusable space shuttle, which would ultimately be in use until 2011, and a first space station that could host astronauts for longer periods of time. The programme Nixon announced in the speech clearly stood in stark difference to what Kennedy had announced about a decade before. Portree (2001) states that "[u]nlike Kennedy's 1961 moon speech, Nixon's statement was broad and vague, with no specifics about NASA funding" (p. 49). This speech heralded a new era of a clear focus of LEO-research, abandoning Kennedy's explorative and arguably politically driven approach. As this decision and the associate announcement have had a long-lasting impact on American spaceflight, it will be the second speech that will be part of the analysis.

5.1.5. Gerald Ford (1974-1977): Following Nixon's Plans

Due to public pressure that was put on him in the 'Watergate-scandal', Richard Nixon resigned from the presidential office in August 1974, making Gerald Ford becoming the next in line of American presidents. Ford followed through the original tenure of Nixon, and, as the enormous and long-range programme of the Space Shuttle was already introduced by Nixon, did not attempt to add substantial changes to this policy. Hence, he also did not give a speech that would add significantly to this study.

5.1.6. Jimmy Carter (1977-1981): The Shuttle On Its Way

Ford regularly ran for president in 1976, yet lost the election to Jimmy Carter. Carter also 'inherited' what was initiated by Richard Nixon, that is the development of the Space Shuttle. Even though costs for the programme were bigger than expected, it was still followed through. Regarding possible more explorative plans, Portree finds, that "[i]n short, NASA was too busy working on the Space Shuttle in 1978 to think about Mars" (2001, p. 60) and other explorative missions. In his four years of being president, Carter did in fact pass a new space policy (The White House, 1978), which, however, was not accompanied by a central speech. Additionally, the policy effectively did not change much for explorative spaceflight, as there was a heavy focus on aspects of national defence. This all leads to the study not being able to reasonably include speeches by Jimmy Carter.

5.1.7. Ronald Reagan (1981-1989): Challenger, Two Policies, and No Talk

The year that Ronald Reagan was inaugurated also saw the first successfully launched Space Shuttle mission, STS-01. After two more presidencies had occurred in office, the plans that Richard Nixon once made were finally put into practice. Ronald Reagan again implemented his own, new space policy, which yet again did not have too much of a direct impact on the operational business of NASA, as it among some other aspects was the first policy encouraging private companies to invest in spaceflight (see also Kay, 1998). Just like Carter, Reagan, too, did not give a public, lengthy talk on the topic.

In January 1986, however, the Challenger disaster occurred, and arguably shook not only NASA, but the entire US and many people around the world, as the Space Shuttle Challenger exploded some 70 seconds after its launch and killed all seven astronauts on board. When four months after the disaster, James C. Fletcher became the new NASA administrator, he commissioned what became known as 'Ride Report' (Ride, 1987), as the work on it was chaired by former astronaut Sally Ride. Not only *despite,* but arguably *because* of the disaster that happened shortly before, the report proposed a new, and very explorative approach, containing plans to send astronauts to Mars as early as in 2005. This report also played a part in contributing to a second space policy of Reagan's, put into practice in 1988. Contrary to the 1982 policy, the last of six central goals publicly proposed in a summarising fact sheet was to "expand human presence and activity beyond Earth orbit into the solar system" (NASA, 1990, p.

194). However unfortunately, Reagan did not use talks to endorse any of his policies, automatically excluding him from this study.

5.1.8. George Bush senior (1989–1993): The Space Exploration Initiative

One year after Reagan introduced his overworked, second US space policy, he was succeeded by George Bush in 1989. Not coincidentally on the 20th anniversary of the Apollo 11 moon landing and only half a year after his inauguration, in a talk held on the steps of the National Air and Space Museum, he proposed what was given the name *Space Exploration Initiative (SEI)*. It consisted of three central steps:

1. In 1990s: build Space Station Freedom, a permanent station in low earth orbit
2. After 2000: Returning to the moon and establishing a permanent base there
3. About 2020: conduct manned mission to Mars

The programme proposed in the speech announced enormous financial and technical effort, marking one of the boldest approaches to US spaceflight that made it further than a conceptual stage. The speech itself, which lasted for about 16 minutes, will be the third speech to be included in the analysis.

5.1.9. Bill Clinton (1993–2001): Cancelling SEI and Building (On) Robots

Bill Clinton was inaugurated in January 1993, and it was him and NASA administrator Daniel Goldin who quite immediately cancelled SEI later that year. Goldin introduced the ‘faster, better, cheaper’-mantra to NASA, and, as a part of that, a much more robotics-focused approach to Mars. It took the Clinton office about three years to announce a reworked space policy, which was the case only in 1996 (U.S. National Space Policy, 1996). This policy, in stark contrast to what George Bush had proposed six years before, contained not a single mention of manned spaceflight beyond low earth orbit, but heavily relied on robotic missions. Also, it was not accompanied by a talk such as Kennedy, Nixon, and Bush had delivered one before. Thus, Bill Clinton will also not be part of the analysis.

5.1.10. George W. Bush (2001–2009): Humans to Explore

Bill Clinton was succeeded by George W. Bush, the son of Clinton’s predecessor, in 2001. The attacks on the World Trade Center that year have arguably delayed some work on American spaceflight. But it was only against the backdrop of another disaster, the disintegration of the Space Shuttle Columbia in February 2003, that George W. Bush proposed his renewed plans of where American spaceflight should move in the years to come (The White House, 2004). On January 14, eleven months after the Columbia disaster, he was at the NASA headquarters in Washington, D.C., when he announced his *Vision for Space Exploration* (NASA, 2004). This vision abandoned the foci Clinton had set eight years before, and proposed the following to be the new goals of NASA and American spaceflight:

1. Completing the ISS by 2010.
2. Retire the Space Shuttle by 2010 and replace it with a new system, the 'Crew Exploration Vehicle'.
3. Returning to the moon by 2015, making it 'the launching point for missions beyond'.
4. Finally, 'human missions to Mars and to worlds beyond', with robotic missions only as 'trailblazers'.

The speech lasted for about 18 minutes will be the fourth object of interest for my analysis. It eventually led NASA to implement their manned spaceflight programme *Constellation*.

5.1.11. Barack Obama (2009–2017): Abandon Constellation, Aiming for Asteroids

Inaugurated in January 2009, the same year in April Obama announced to review aforementioned programme *Constellation*. This review was conducted by the Review of United States Human Space Flight Plans Committee, *Augustine Commission* in short, which published their report in October 2009 (Review of the Human Spaceflight Plans Committee/NASA, 2009). In April 2010, the Obama office had finally worked out their new policy which was announced in a major speech given at the Kennedy Space Center and lasted for about 25 minutes. As already mentioned in the introduction of this section, with his new policy Obama again overthrew large parts of what his predecessor had intended NASA to do. *Constellation* was almost completely cancelled, only some parts of the spacecraft constructed for the missions of *Constellation* were kept, though only with adaptations (see also Office of Management and Budget, 2010). Furthermore, Obama abandoned the path leading missions to the moon again, but asked NASA to design manned missions to a near-Earth asteroid. Essentially, only the long-range goal of sending humans to Mars was kept, although becoming postponed. The introducing speech announcing all these newly crafted plans will be the fifth speech that is to be analysed within the context of this study.

5.1.12. Donald Trump (from 2017 on): New Old Plans and Mars

As of writing this, the current US president is Donald Trump. He was inaugurated in January 2017, and once again overthrew what his presidential predecessor had laid out some years before. After reactivating the National Space Council, an institution that was last used by George Bush in the early 1990s, Trump, in December 2017, published the "Space Policy Directive – 1" (Presidential Memorandum, 2017). In his first year as president he only gave some short remarks on what was proposed in the directive, namely abandoning the missions to asteroids, reactivating previous plans of returning to the moon, again intending to use it as a stepping stone to Mars. The relatively short performance did not provide much actual content and would not add substantially to the study at hand (see Remarks by the President, 2017). Other remarks were performed too late to be included, which is why Donald Trump will also not appear in the analysis.

6. Narrating Reality: Methods

6.1. Working with Narratives

"Words are but symbols for the relations of things to
one another and to us; nowhere do they
touch upon absolute truth."
Friedrich Nietzsche (1844-1900) in *Philosophy in the Tragic Age of the Greeks*

Obviously, narratives are closely tied to what I have described above under the label of the myth. By way of example, Slotkin describes a myth simply as a "narrative which concentrates in a single dramatised experience the whole history of a people in their land" by "reducing centuries of experience into a constellation of compelling metaphors" (Slotkin, 1973, p. 269). Paul, too, states that a "myth becomes manifest in narratives" (2014, p. 31). Finally, also Czarniawska claimed that "[t]o understand a society or some part of a society, it is important to discover its repertoire of legitimate stories and find out how it evolved. Hence, working with tools of narrative analysis seems virtually imperative for this study.

Bruner quite dramatically calls the (scholarly) process of "negotiating and renegotiating meanings by the mediation of narrative interpretation [...] one of the crowning achievements of human development in the ontogenetic, cultural, and phylogenetic senses of that expression" (Bruner, 1990, p. 67). Many scholars have indeed noted a 'biographical' or 'narrative turn' (see Czarniawska, 2004, p. 33) becoming observable through an an ever-growing interest in researching the social use of *narratives* as well its organisational and societal meaning. In an early work, Barthes claimed that "narrative is international, transhistorical, transcultural: it is simply there, like life itself" (Barthes, 1977, p. 79). This ubiquitous character made it interesting for various scientific disciplines, although still "[n]arrative research generally, and personal narratives in particular, have been used as an analytic tool for trying to understand wider social phenomena" (Andrews, 2007, p. 10). Ultimately, "[s]tories and storytelling are no longer the province of the playroom, but rather are increasingly regarded as an important arena for serious scholarly investigation" (ibid.), which is also being accompanied by an increasing focus on cross- and multidisciplinary research (Andrews, 2007, p. 10). In my research I will try to identify and unpack the narratives around US American spaceflight that are presidentially drawn on and thus became institutionalised to some degree. I believe a large portion of the main and sub narratives as well as the different conceptualisations they reveal, to be part of a much greater quasi-narrative; a sociotechnical imaginary of conquering space.

But what are narratives, why are they so widely used, and what are they used for at all? Most generally, narrative is one central part of the social process of *representation*. When humans represent, recall, recount, they have always automatically and "constantly told stories, presented events and squeezed aspects of the world into narrative form" (Cobley, 2013, p. 2); Czarniawska even spoke of the

"fact that in order to understand their own lives people putthem into narrative form – and they do the same when they try to understand the lives of others" (2004, p. 5). Very much similar to what I have pointed out above about myths (see chapter 2.5.1.), narrative both lets and *makes* people construct the world and meanings in and of it, especially of social action. Although notoriously difficult to comprehensively describe, its function may be boiled down to "find[ing] an intentional state that mitigates, or at least makes comprehensible, a deviation from a canonical cultural pattern" (Bruner, 1990, p. 49f.). Seen that way the construction of narrative may be seen as the production of situated knowledge, of narrative knowledge (see Czarniawska, 2004, p. 9f.); a resource people can and will draw on when taking actions. This, however, applies to just as much on the societal level, where narratives or stories are 'sediments of norms and practices' through their ongoing movement - the fabrication, expression and reception - in social structures (ibid.).

Analysing exactly that, I will follow what Cobley termed the 'constructionist' approach to narrative analysis, which acknowledges the "thoroughly social nature of the *construction* of meaning" (Cobley, 2013, p. 3). The approach claims that it is not exactly the people or objects, but rather the 'representational system' that they operate in, that lets meaning emerge from something. Furthermore, I shall briefly differentiate between what a narrative is, what a story, and what a plot. As I will use it, a book for example is nothing but a medium *representing* something, be it 'real' or entirely fictitious. To make the read comprehensible, it should tell and follow a certain, coherent *story*. This usually includes having some kind of protagonist(s) that the story revolves around. The protagonist(s), however, are not necessarily central to the *narrative* that is used by the narrator; The story can be about one person within a greater narrative, without the protagonist crucially altering the grand narrative. When the narrative is located in the Thirty Years' War, for instance, the actual story can also be just about one soldier who is comparatively irrelevant to the overall course of the war's events. A narrative thus exists to "reveal the relevant wider circumstances" (ibid., p. 4), while in turn being driven by what is being understood as the story's *plot*. The plot then is the "circumstances which involve [a protagonist] in a specific series of events" (ibid.), meaning the individual parts the story is composed of. The process of creating the plot around a story has been described as *emplotment* (see Czarniawska, 2004, p. 20f.) Each aspect is dependent on the other two, together creating meaning in a sequence of (retold) events.

Now, narratives do not only appear in fiction books. They are everywhere and everytime, can be about everything, and can express much more than mere entertainment; they really "are powerful resources for defining cultures and framing [its] actions" (Halverson, Corman, & Goodall, 2011, p. 1). Since Yuval-Davis (2006) notes, that "[i]dentities are narratives, stories people tell themselves and others about who they are (and who they are not)" (p. 201), I draw on this further insight of hers, as I intend to find exactly that; narratives hinting at or clearly describing (national or cultural) identities, or, as Šabanović (2014) had called it, specific 'cultural models'. I am then concerned with how these narratives are put into relationship with spaceflight. With identities however, I here do not only mean

identities of the speaker himself, but also the collectives he is referring to. The presidents in their talks are certainly individuals, but at the same time they do not only speak to, but also *for* certain collectives. This leads me to the more practical aspects of this section. Namely, to study narratives in my material, I will make use of two different techniques of narrative analysis as proposed by Riessmann (2005); *'Thematic Analysis'* and *'Performance Analysis'*, which in the following I will briefly introduce.

6.2. Unpacking Narratives: Thematic and Performance Analysis

"The function of sociology, as of every science, is to reveal that which is hidden."
(Bourdieu, 1996, p. 17)

First, I make use of a *thematic analysis*. Here, "[e]mphasis is on the content of a text" meaning the focus solely lies on "'what' is said more than 'how' it is said, the 'told' rather than the 'telling'" (Riessman, 2005, p. 2). Methodologically, a "typology of narratives organised by theme is the typical representational strategy" (ibid.). Employing thematic analysis enables the researcher to identify a set of different (uniquely used or recurring) topics addressed and narratives used in the material, which can then then be easily compared and related to each other. In this particular study, the method is of much help to structure and make sense of the narratives, first each individual talk *and* when interrelating them. It enabled me to see patterns, repeating narratives and arguments. The technique helped me answer the question how things are reasoned, how they are presented and framed, and what rationales are brought forward to realise certain sociotechnical futures.

The thematic analysis was complemented by what Riessman termed *performance analysis*. In performance analysis, "interest goes beyond the spoken word and, as the stage metaphor implies, storytelling is seen as performance – by a 'self' with a past – who involves, persuades, and (perhaps) moves an audience through language and gesture" (Riessmann, 2005, p. 5). While it is possible in performance analysis to analyse whole settings or dialogues, in this case I will centre the analysis around what she calls a character and its positionings in a story, as performative analysis ultimately is about "the positioning of storyteller, audience, and characters in each performance" (ibid.). It is about the communicative practice which in this work, through the talks being given, become very much "embodied, situated and material, discursive, and open to legitimation and critique" (ibid.). For this study it means analysing the process and the outcomes of how the speaker is using the talk to create and construct several identities. Identities that I focused on are on the one hand that of the speaker himself, but almost more importantly the institutional and national identities he is constructing, referring, and drawing on.

Somewhat part of both techniques are reflections about the contexts in which the talk was given, the audience the speaker is delivering to, as well as the specific place he is speaking from. All three aspects influence the content and thus the narratives that are being used. Except for these aspects, both

techniques focus on different things nicely supplementing each other. The thematic analysis will analyse *what* is said while the performance analysis examines by *whom* something is said, from *where*, and ultimately trying to reveal aspects of the *why*, that is the speaker's intentions.

6.3. Narratives at Work: Political Speeches and Why to Study Them

"The strongest man is never strong enough to be always master, unless he transforms his power into right, and obedience into duty."
(Rousseau as cited in Dunn, 2002, p. 158).

At this point, it might be fruitful to think a moment about what political speeches actually are, what they are meant to be, how they work and what their goals can be. This is what the upcoming short excursion is dedicated to explaining. But as a first step the question may be posed: What is *politics* in the first place? A tricky question, that Chilton (2004) tried to answer in, at last, a relatively simple way. To him,

> "[o]n the one hand, politics is viewed as a struggle for power, between those who seek to assert and maintain their power and those who seek to resist it... On the other hand, politics is viewed as cooperation, as the practices and institutions a society has for resolving clashes of interest over money, power, liberty and the like" (p. 4f.)

This notion is interesting as well as it is helpful, because it connects two points that oppose each other and eventually make up for what politics is: a complex entanglement of socially reasoned *conflict* and *cooperation*. Obviously, speeches are part of the political game between conflict and cooperation and must thus always have an agenda. Holding a speech as a politician means *doing* politics, actively and deliberately. Particularly holding political speeches does not only mean speaking *to* people, but also speaking *for* people - a circumstance that requires legitimation. Regarding that, Barker finds that "[t]o talk of legitimation is to talk of something that people *do"* (2001, p. 24, my emphasis). Especially in political contexts he also finds plain legitimation to be one very central activity, as without proper legitimation no stable government is possible. Hence, "[t]he self-legitimation [...] is part of the activity of ruling, and as such contributes to both constituting it and defining it" (ibid., p. 30). Especially politicians' public speeches are one of the sites where continuous self-legitimation takes place and are thus a very interesting object to be studied by the social sciences. Barker, too, argued that in political systems, individuals tend to primarily legitimise themselves and their own actions. Also, those talks proposing new space policies may be conceived of as legitimation work for the decisions the president himself was eventually responsible for. However, after analysing the complex negotiations that take place before such a talk can be given at all (see chapter 5), I will conceptualise the speeches not (only) as moments of individual legitimation, but perhaps even more as moments of institutional and national (self-)legitimisation. The presidents speak for themselves, but they also speak for the institutions they

represent. Hence, while acknowledging it, for the topic at hand reducing legitimation to plain self-legitimation would neither be useful nor at all sensible.

Barker, however, also states (self-)identification to be an inevitable part of legitimation, both being "dimensions of an inextricably intermeshed activity or pattern of activities" (2001, p. 35). Identification requires identity, and, again drawing on the work of Yuval-Davis (2006), identity is never a permanent state, but rather a "transition, always producing itself through the combined processes of being and becoming, belonging and longing to belong" (p. 202). When it comes to the realisation of identities,"[c]onstructions of self and identity can, however, in certain historical contexts, be forced on people" (ibid., p. 203), though this not to say, that political speeches are evil means of brainwashing people. It simply serves us as an important insight as to why political speeches are structured the way they are, and why the arguments appear the way they appear. Namely, as Barker explains, an identity and especially identities in political contexts, want to be 'cultivated' (2001, p. 50). Eventually, this explains that speeches in political contexts, especially those that are in one way or another addressed to 'the public', play a pivotal role in what Šabanović called the 'repeated assembly of a cultural model', which is essentially the continuous creation and subsequent legitimation of identity. Especially since "[s]elf-legitimation is an inherent and characterising activity of government, just as worship is one of the characterising activities of religion" (Barker, 2001, p. 30), I see political speeches as a central place to create and recreate said cultural models. Strategic use of appropriate narratives then serve as persuasive devices. Inappropriate use or construction of models, identities and narratives, though, can result in audiences 'struggle and resistance' towards the speaker and his messages (see Yuval-Davis, 2006, p. 203). In that case, legitimation erodes (see Barker, 2001), agendas may have to be adapted and the political game of conflict and cooperation begins anew.

7. Analysis

Before entering the analysis with the talk of John F. Kennedy, there is one interesting observation already to be made. Namely, by the choice of the material one can already find the interesting circumstance, that only those presidents gave a lengthy talk, who proposed large, and *explorative* policies. Richard Nixon, who abandoned exploration after Apollo and introduced the low earth orbit bound Space Shuttle is the only exception from this rule of thumb. Hence, we can already suppose that particularly explorative policy agendas call for more intensive reasoning and justification, or, in other words, in order to make them appear sensible, ask to "translate complex technological matters into meaningful public discourse" (Jordan, 2003, p. 210).

It remains however unclear whether that is the case because the respective presidents felt the need to actively justify their actions, or if explorative spaceflight is not only considered prestigious for the country, but also for the president himself. Although both is probable, regarding the aspect of political *justification*, the monies going into explorational spaceflight are great, even for the USA. They

hence call for a well-grounded reasoning, which is provided by the narratives the new policy is weaved into. On the other hand, regarding the aspect of political *legitimation*, I again consult Barker, who posed the question "whether identity can be seen to shape legitimacy, or legitimacy qualif(ies) identity" (2001, p. 39). Seen from this angle, the talks and the rather aggressive technopolitical choices promoted in the talks are at the same time very carefully practices of legitimation and profiling work of the president as his individual, presidential agenda, *as well as* the collective(s) he represents.

7.1. John F. Kennedy – Torn Between Fear and the Spirit of Optimism

"If God listened to the prayer of men, all men would quickly have perished: for they are forever praying for evil against one another."
Epicurus (~341-270 BC)

7.1.1. Some Context

This analysis' first talk was delivered by president John F. Kennedy on September 12, 1962 in Houston, Texas, at Rice Stadium. In the talk, he publicly proposes a manned mission to the moon, thus finally marking the US' entrance into the 'Space Race' to the moon. I have briefly touched upon the evaluations and deliberations above (see chapter 5), but after proposing the plans to congress in May that year, this talk in September marked the first time he publicly presented them in front of a large audience. The talk can be seen as one central moment in the history of spaceflight. When analysing the speech, one also has to put into consideration the state American spaceflight was in at the time. NASA had conducted its first manned spaceflight only twenty days before Kennedy first proposed such plans to Congress in May. At the time of the public talk in Houston, there had still only been one more manned flight, making the president proposing a mission to the moon with NASA only having 30 minutes of actual experience in manned spaceflight. Much persuasion and inspirational work was needed by the president, and "it was [his speech] at Rice University that marked his most concerted effort at justifying the lunar program and demonstrated his presidential rhetorical prowess in defining the 'moon shot' for the public" (Jordan, 2003, p. 210). The talk aimed at making the American people *believe* in spaceflight, which entails trust in the technical abilities of NASA as well as the overall purpose and significance of such an undertaking.

Considering the place the speech was given at, Barker notes that "[l]eaders surround themselves with objects which 'acknowledge' their importance" (2001, p. 53). Kennedy does exactly that, speaking in front of tens of thousands of people at the Rice Stadium of Rice University in Houston, Texas. Large parts of the audience were young citizens and affiliated with the university of Houston. He even actively points that fact out in the very first moments of his speech: "We meet at a college noted for knowledge, in a city noted for progress, in a state noted for strength" (JFK, #9f.). Authority and hence legitimation are on the one hand afforded *ex officio*, but on the other hand by the very place he speaks from to his

audience, and, in the end, to all American people. Hence, also the place was very well chosen by the Kennedy administration, aiming to amplify the messages Kennedy wanted to convey to the audience.

One can divide the speech into three parts. The first part is all about *giving context*, which is done a very metaphorical and figurative way. The second part of the speech explains the need for a mission to moon by conceptualisations of Americanness. The third part of the speech focuses on measures, goals, and reasons, starting with the famous line "[w]e choose to go to the moon" (JFK, #87).

7.1.2. Dichotomies, Contradictions, Americanness

The regular use of conceptual dichotomies and paired contradictions is a central rhetorical means that Kennedy employs in his speech. These dichotomies (see table below) mostly appear in the first half of the speech. When Kennedy moves from providing context, constructing the challenge and characterising the US to describing the measures taken, goals set, and the reasons behind that, dichotomies make way for one-sided, absolute terms and projections into the future. For this analysis, I want to focus on the dichotomies. Within them, Kennedy is doing an extensive characterisation of what he believes to be American and what the logical consequences of this shared Americanness are. The dichotomies play a very central role in that, as in every dichotomy presented, one part means to show what the US *is*, what it wants to achieve and stand for, with the other part attempting to show what it *is not*, what it does not stand for, and *must not be(come)*.

Table 1: Dichotomies employed by John F. Kennedy in his "We choose to go to the moon" *talk.*

***American* part**	***"Un-American"* part**
hope	fear
knowledge	ignorance
Dispelling old ills	Creating new ills
High rewards	Costs and hardships
Moving forward	Waiting, looking behind
Joining	Not joining
Leading	Staying behind
Banner of freedom and peace	Hostile flag of conquest
Instruments of knowledge and understanding	Weapons of mass destruction

Force for good	Force for ill
Sea of peace	Terrifying theatre of war
Moving ahead	Staying behind
Doing the job	Wasting money

These pairs construct ways for the US, first, to generally stay successful, but second, to stay true to itself - that is to stay singular and superior among the nations, and especially in comparison to the Soviet Union. Kennedy builds his local (American) cultural frame around these dichotomies and lets them determine the future. How the future unfolds is then constructed to be completely dependent on the decision *if* and *how* the US decides to engage in spaceflight, and more precisely, in the race to the moon. Constructing the challenge, however, is done in a very deliberate way, for he constructs the challenge of 'exploring space' as one that is inevitable for a "nation which expects to be the leader of other nations" (JFK, #51f.). Even though not spoken out verbally, it is clear that everybody's conception of the US as a nation includes this expectation; a clear moment in which American Exceptionalism and self-conception as being superior "informs and structures American self-representations" (Paul, 2014, p. 17). By character, the US is constructed as *bound* to accept that challenge, *bound* to go to the moon. This notion of American self-expectation to lead was also cited in the first paragraph of a front page article in the New York Times (Kenworthy, 1962) titled "Kennedy Asserts Nation Must Lead in Probing Space" (ibid.), publicly making the more general expectation applicable in and expressible through spaceflight. What was constructed as desirable future by Kennedy was not discussed, but effectively simply reproduced and hence publicly reinforced.

The usefulness of a manned mission to moon is then strengthened by constructing it like the modern equivalent of the myth of the 'West', or even a logical follow-up of the movement back then: "What was once the furthest outpost on the old frontier of the West will be the furthest outpost on the new frontier of science and space" (JFK, #132ff.). While considering the locality of the speech, he still includes the entire country in his ambitions, rhetorically making every citizen a part of the new endeavour. In the talk, space became the place for the US to break frontiers again. The plausibility of going to the moon is afforded by constructing it as a collective and culturally founded endeavour, presenting it as if *one homogenous nation,* one community, flew there. He "invite[d] audience members to live up to their pioneering heritage" (Jordan, 2003, 210), building on a commonly understood cultural heritage, that is to a large part derived from the myth of the 'West', and the idea of the manifest destiny.

Yet, this internal reason is accompanied by an external one. Although Commager (1967) claimed that the US to have some difficulty to construct its villains and antagonists, that does not become quite apparent in this speech, as the Soviet Union is rendered into the definite enemy. He presents two absolute options of the future, in principle another dichotomy: either the US join the Space Race and space will become a "sea of peace" (JFK, #74f.), or they refuse to join, and space will become a "terrifying theater of war" (JFK, #75). Imagining the Soviet Union as another distinct, homogeneous community, the question is not *if* space will be conquered, but if it is going to be conquered for the 'right' reasons, by the 'right' technopolitical culture; the right imagined community. The challenge and accepting it, is thus given relevance by an internal factor, driven by national pride, and an external, driven by fear. In principle, it is the fear that the US is slowly being deprived of its breeding-ground for the national pride. Ultimately, he achieves to evoke an atmosphere that is strangely torn between fear on the one hand, and optimism on the other hand, a condition evoked by the Cold War. Thus, the challenge of going to the moon gains explicit urgency by the (Soviet) enemy. Yet, additionally, what Kennedy calls a 'challenge', between the lines even becomes a threat on the identity of the US. As his underlying narrative goes, avoiding the challenge would in turn mean the abandonment of being exceptional among the nations. In a way, Kennedy constructs this as already having become the case. The US *is* not the "world's leading space-faring nation" but has to *become* it: "To be sure, we are behind, and will be behind for some time in manned flight" (JFK, #120f.). Kennedy is challenging central aspects of American self-understanding. But he also offers a path to restore national and cultural superiority - namely by 'choosing to go to the moon'.

7.1.3. Exciting America

The talk is an agitative one, that seeks to evoke emotion and particularly excitement about a mission to moon, and performance analysis shows, that it in fact it does. Performance analysis does not only seek to ask questions about what identity is constructed, but also how it is performed in an act. Some simple yet quite momentous moments in which performance and interactiveness accompany each other are the moments of the audience applauding. They can indicate points in the talk that are important to the speaker, the audience, or both. Analysing when the president gets interrupted by applause reveals some very interesting insights of moments in which Kennedy could achieve particularly strong contentual approval. Interruptions occurred nine times in Kennedy's speech, after the following sentences:

1. "[t]his country of the United States was not built by those who waited and rested" (JFK, #40f.)
2. "We intend to be first!" (JFK, #64)
3. "We choose to go to the moon!" (JFK, #87)
4. "We intend to win!" (JFK, #92)
5. Satellites "made in the United States of America [...] supplied far more knowledge to the people of the world than those of the Soviet Union" (JFK, #106ff.)

6. “We shall make up and move ahead" (JFK, #122)
7. “What was once the furthest outpost on the old frontier of the West will be the furthest outpost on the new frontier of science and space” (JFK, #132ff.)
8. “If I were to say, [...] that we shall send to the moon [...] a giant rocket, [...] and do it right, and do it first before this decade is out—then we must be bold” (JFK, #151-163)
9. “This university is playing a part in putting a man on the moon as part of a great national effort of the United States of America" (JFK, #173f.)

In each and every of these instances, the president revealed something about his perceived character of the United States of America, what it is, and what it ought to be, and each time the audience explicitly showed approval. Winning, being first, moving ahead and being bold are all characteristics that suggest exceptionalism, the overarching local cultural frame, not only in technoscientific matters. Overall, the speech achieves to build up and reinvoke the feeling of being exceptional - yet. Exceptionality is being threatened by the Soviet’s technological advances in spaceflight. The other moments of applause stressed the successful effort in evoking the national; having the best satellites, being part of a “great national effort” (JFK, #173) and its ‘furthest outpost on the new frontier of science and space’ respects locality while at the same time invoking what Anderson twenty-two years after the speech termed an ‘imagined community’, invoking it and giving it a purpose. This communal aspect becomes very clear also in the wording, as he addresses the audience as us/we five times in the nine above quotes alone – the community needs to be named in order to be imagined.

In sum, the speech clearly characterises the US around a shared understanding of being exceptional, provoking active approval by the attending audience. Anyhow, this exceptionalism is endangered by the enemy of the Soviet Union, yet a future in which the US has been able to overpower the Soviet Union again, is presented as the way to restore and prove American exceptionalism.

7.1.4. Technologies, Knowledges, Futures

Obviously, when there is talk of the future in the speech, most of the time it is about the specific future of the US. As I have described above, dichotomies are an important means of narratively creating the ‘inside worlds’ of the speech, and many of these ‘inside worlds’ are projections of possible future worlds, all caused primarily through (eventually rather unspecific) technological advances. Furthermore, for Kennedy, these technological advances are logical and ultimately inevitable; the “quest for [...] progress, is determined and cannot be deterred” (JFK, #49), meaning that “the exploration of space will go ahead, whether we join in or not” (JFK, #50), partly also because “technology has no conscience of its own” (JFK, #71), so the line of argument goes. Especially the last statement is interesting, as it was (unknowingly) inspired by social constructivism (see Winner, 1993), and greatly served the purpose of the talk. If technology had been pictured as ultimately in full control of those who created it in the first place, the narrative construction of the inside future worlds could not have happened as sharp and

confident as it was the case. Technological determinism would put the technology in control of the social and thus the future, but Kennedy's social constructivism grants the power to shape the future to technocultural collectives consisting of human beings, their values, and their decisions. These, however, are indeed pictured as quite determined and predictable. Through its definite, determined and worthy purposes, its character expressed through technology, and through international technological leadership in spaceflight, only the US is able to ensure a peaceful future - an exceptionally strong sociotechnical assessment and temporal projection of cultural capabilities. Following Kennedy and depending on whether the "frontier [...] space" (JFK, #133f.) could successfully be broken by the US *first*, either a technocultural utopia or dystopia will come to be, while these imaginations are heavily based on nonverbally shared imaginations of the Soviet enemy. Throughout the speech, these 'future inside worlds' are constructed in "careful, *general* detail" (Anderson, 2006, p. 23), and presenting these definite options/futures is being done almost in the manner of Hollywood science-fiction. The villain will destroy anything and everything that is good and fair, unless the hero takes action (I have mentioned above that also Jasanoff found a close relationship between imaginaries and science-fiction). Defining the villain is also being done via the concept of knowledge. By stating, that "man, in his quest for knowledge [...] is determined and cannot be deterred" (JFK, #48f.), a conceptualisation of the very human nature is used to again render inevitable a future situation in which the US has to lead. Then the questions arise: who has knowledge, who does not have it, and is it the 'right' knowledge one possesses? In "an age of both knowledge and ignorance" (JFK, #11f.), Rice University is claimed to be a place of the 'right' knowledge. That not only Rice University, but the entire nation possesses *and* produces 'right' knowledge is also stressed in the following. By speaking of "new knowledge to be gained, and new rights to be won" (JFK, #69f.), as well as "new hopes for knowledge and peace" (JFK, #180), specifically US produced knowledge is also put in close relation with enabling and preserving global peace. As a consequence of only the US knowing what 'right' knowledge is, the US again emerges as superior; as 'world's best hope'.

Building on what I have stated before concerning the threat on American exceptionalism, its expression may be merely rhetorical for the moment, but the intended expression takes place through technology, resembling the above quote by Mahler, who said that "[i]mages of shuttle launches and earthrise over the rim of the moon are iconic representations of American strength, technological capacity, and the future of humankind" (Mahler, 2010, p. 711). At length, Kennedy is describing past missions, future plans, and specific models of rockets and their strength, and in the narrative technology becomes the means to embody and show superiority and singularity - a means to embody Americanness itself. To some extent, this sociotechnical materialisation of American exceptionalism is also openly being proposed to be done just for the sake of it, or at least without clear, measurable intents. Besides the rationales based on cultural conceptualisations, Kennedy also admits, that "we do not now know what benefits await us" (JFK, #149f), and simply proposes to 'climb' space "[b]ecause it is there" (JFK,

#178f.). That way, although at that point the USSR was a step ahead in spaceflight, the technology itself is conceptualised as typically and inherently American. Just like in American myths, exploration becomes something logical instead of something debatable.

In the end, I find Kennedy's speech at its very core to be about choosing among two possible futures, both being propelled specifically by spaceflight technologies. The US as one distinctive community has to choose rightly, responsibly, and wisely, to avoid a Soviet and communist dystopia, a 'terrifying theatre of war', and to allow for a global, yet American-lead, peaceful utopia to come into existence. Eventually, however, the speech achieves it to make actually asking how and whether to go to the moon at all completely obsolete, as the answer is already there, predetermined by American exceptionalism and its mythically reinforced ideals.

7.2. Richard Nixon - Defending No Space Offensive

"I am convinced that before the year 2000 is over,
the first child will have been born on the moon."
Wernher von Braun (1912-1977), NASA aerospace engineer, in 1972

7.2.1. Some Context

The talk Richard Nixon gave in 1972 is an exception. One the one hand, Nixon proposed a specifically *non*-explorative approach to spaceflight, and on the other hand, surprisingly gave a speech nevertheless. He thus serves as a great point of comparison to the other talks. In the talk, he re-interpreted "old-style space flight" (RN, #233) by offsetting its politico-symbolic value and its economic use. He proposed to "mov[e] out from our present beach-head in the sky to achieve a real working presence in space" (RN, #223f.). In fact, he seeks an, at least temporary, closure to deep space exploration: "The new year 1972 is a year of conclusion for America's current series of manned flights to the moon" (RN, #201f.). This talk, the only of which no video was traceable, was considerably shorter than the others, yet of the same nature than the others, which is why it still found its way into the analysis.

7.2.2. Reasonability and Down-to-Earthness

One cornerstone of this work is the idea of 'conquering space'. And yet, what does it actually mean to 'conquer' space? Does sending probes into space mean to conquer it? Do the probes have to touch down on other celestial bodies? Or do human beings have to get into space? If so, for how long? Is it enough to just be there for limited amounts of time, always returning to planet earth? Is it enough to stay in earth orbit, or is it necessary to reach other destinations? For Kennedy, what should at least be the first step, was clear. The space race inspired 'conquest' of space was tied to a manned mission to the moon. Only rhetorically, he asked 'why the moon?'. For Nixon, in contrast, this question of 'why the moon?' would not have been a rhetorical one at all. After the space race was 'won', he seemed to have had a fundamentally different idea and definition of what 'conquering' space means than president Kennedy. Nixon aims to 'conquer space' by establishing a 'real working presence' in space,

transforming space into an actual *habitat*, whereas for Kennedy, 'conquest' is perfectly congruent with *exploration*. It is thus not surprising that the idea of 'space as habitat' does not appear once in Kennedy's talk, yet it in fact does appear in every talk after him, starting with Nixon.

Already after some two introductory paragraphs, he constructs the ultimate purpose of spaceflight as "utilizing space to meet needs on Earth" (RN, #211), calling on examples like weather forecasting, airplane coordination, and pollution control. Including these specific scopes is quite contrary to how other presidents at times framed spaceflight as an end somewhat in itself (remember Kennedy's 'because it is there'). With this framing in mind, he defends his less explorative approach: "all these possibilities, [...] with direct and dramatic bearing on human betterment, can never be more than fractionally realized so long as every single trip from Earth to orbit remains a matter of special effort and staggering expense" (RN, #221ff.), in which he, other than the other presidents, emphasises the cost over the emotional and cultural value of spaceflight. Kennedy, for example, openly admits that "all this costs us all a good deal of money" (JFK, #142), and president Obama, as we will see, claimed that "for pennies on the dollar, the space program [...] inspired generations of Americans" (BO, #974ff.). While the other presidents wanted to legitimise higher investments, Nixon believed the most positive aspect to be that the space shuttle "may bring operating costs down as low as one-tenth of those present launch vehicles" (RN, #220f.). That way, his argumentations arrive at very different destinations than those of other presidents, and, as we will see, somewhat stresses financial over the social reasoning, which other presidents have deployed for explorational spaceflight.

Thematic analysis additionally revealed, that there is effectively no moment in which Nixon does not in some way *justify* his decisions. He is excessively soberly *explaining* his rationales, eventually making it almost seem as if he feels the need to apologise for his policy. Hence, the main objective of the talk is not to *excite* people, but to *defend* the very new policy in front of them. Performance analysis supports this as well, as the language he uses is more sober than that of the other talks, much less driven by emotions. It tries to persuade with measurable arguments rather than with emotion, and is not exactly inspiring, but calculating. However, in the end also president Nixon uses a historic figure, writer Oliver Wendell Holmes, to reason his decision: "We must sail sometimes with the wind and sometimes against it [...] but we must sail, and not drift, nor lie at anchor'" (RN, #270f.), adding that "[s]o with man's epic voyage into space - a voyage the United States of America has led and still shall lead" (RN, #271f.). This instance, directly after again promoting "low-cost, multi-purpose space missions" (RN, #268), is and ideological exception within the exception that Nixon's talk constitutes. It seems as if Nixon's conscientiousness compelled him to this one, historical reference. Because spaceflight in America seems to be asking for more than positive financial balances, and he knew full well (see his memorandum included in chapter 5).

Finally, the mere shortness of the talk may also be seen as a hint to the defensiveness of Nixon. While clearly laying out the rationales behind the decisions, he does not even really try to weave the policy into a plot that is as exciting and compelling - and supposedly 'American' - as that of Kennedy. Themes of courage, taking risks and (past) heroes appear in every talk except for that of Nixon, who does not even include them once. Additionally, he is the only president who did not include humorous aspects in his talk. In interesting contrast, aspects of 'caring for earth' are implemented relatively intensively, and are the only thing that Nixon put in poetic, dramatic language: "We are learning the imperatives of universal brotherhood and global ecology, learning to think and act as guardians of one tiny blue and green island in the trackless oceans of the Universe" (RN, #262ff.). Hence, Nixon's account of spaceflight is, so to speak, very much down-to-earth. It is rendered from an ideological weapon and cultural obligation into a mere technological tool that has no particularly profound impact on (long term) societal forthcomings. The national wellbeing and progress are neither dependent from nor particularly evident through spaceflight; a starkly different assessment than those brought forward by other presidents, from Kennedy to Obama, as I will show. Also, for him, spaceflight does not *per se* express Americanness, at least he does not include this explicitly in the talk. However, as presidents are somewhat expected to follow the idea of American exceptionalism, he is understandably reluctant to include connected themes in the talks. In fact, his narrative and argumentative goal is to decouple spaceflight from the American identity, or at least take away some ideological weight from it, that Kennedy had successfully laden it with a decade before.

7.3. George Bush – Pride, Preachers and Whom to Owe Spaceflight

"Once the state has been founded, there can no longer be any heroes.
They come on the scene only in uncivilized conditions."
Georg Wilhelm Friedrich Hegel (1770-1831), philosopher

7.3.1. Some Context

The third talk is that of George Bush, delivered in 1989, seven months after his inauguration. It builds on the second policy of his predecessor Ronald Reagan, and specified Reagan's policy goal "to expand human presence and activity beyond Earth orbit into the solar system" (NASA, 1990, p. 66). In the wake of the fall of the Iron Curtain, some great changes in world politics were about to come. As much as the influence of these events on the decisions and talk can only be speculated about, there is not much doubt that another incident has had its impact on the policy: the loss of the Challenger shuttle three years earlier, which is in fact prominently brought up in the talk. The talk was delivered on the steps of the National Air and Space Museum. Like Kennedy did before him, he stages the talk in a place connotated with knowledge, history, and authority, lending importance to the performance, that aims to legitimise the decision presented (see Barker, 2001). Even though Bush's decisions and the subsequent talk did not have an actual impact nearly as great as that of Kennedy or Nixon in the long run, it is one

seminal moment of American spaceflight for the social sciences. It contains strikingly strong messages, weaved into a remarkably distinctive narrative, that I will explore in the following sections.

The talk may be divided into four parts. After some acknowledgements, Bush continues to honour past heroes with an extensive narration of the Apollo 11 mission. He builds on that, proceeding with the third and longest part of the talk, in which he, like his predecessors, presents his draft of the US, and presents his actual policy goals. He smoothly finishes with an emotional closure.

7.3.2. An American Past: The United States' Proud Children

Already Murray found that "Bush in his 1989 speech was a lot like Kennedy trying to set a new nationalistic Apollo goal to get the country moving" (2016, p. 186). National greatness, that is superiority and singularity, is a central theme for George Bush to 'get the country moving', as some very unambiguous lines reveal very quickly. Already the third sentence, essentially his thematic introduction into the talk, reads "[b]ehind me stands one of the most visited places on Earth, a symbol of American courage and ingenuity" (GB, #309f.), supporting Barker's (2001) point how places and objects are used in terms of lending substance and legitimation to (techno-)political messages. Only moments thereafter, he asks to "tell [American children] of the flag - the American flag - that still flies proudly in the ancient lunar soil" (GB, #327f.), not without adding later on that "[t]he only flag on the moon is an American flag" (GB, #417f.), perhaps the most remarkable occurrence of emphasising American singularity, deducted from American mythology. Throughout the entire talk, the US and its achievements become intensively belauded, partly in quite dramatic and ornate ways. Supporting spaceflight means to "join us in a great dream, an American dream, a dream without end" (GB, #329f.), and America is depicted as the "the world's greatest experiment in freedom and diversity" (GB, #372) - in other words, the world's best hope. In the following incident he almost gets blunt in emphasising exceptionality: "today, yes, the U.S. is the richest nation on Earth, with the most powerful economy in the world. And our goal is nothing less than to establish the United States as the preeminent spacefaring nation" (GB, #387ff.). Yet, the simple message makes clear a set of presumably inevitable future actions. In the American imaginary Bush constructs from the past, technological choices are equalled with cultural choices. Accepting and embracing technological challenges becomes naturalised, as the country can count on its historically proven values and traits:

> *"Apollo is a monument to our nation's unparalleled ability to respond swiftly and successfully to a clearly stated challenge and to America's willingness to take great risks for great rewards. We had a challenge. We set a goal. And we achieved it" (GB, #358ff.)*

This is a particularly interesting moment, as it renders endeavours of spaceflight into something that is to be done out of (American) *tradition*. Narratively, this is a useful step, because if it has to be done out of tradition, it cannot be discussed with those who supposedly started the tradition, in this case

a cultural tradition of progress, bravery, and risk seeking. Instrumentalising the Apollo 11 crew as central icons of spaceflight and all America is yet another thoughtful tactic, as particularly Buzz Aldrin is until this day a great proponent of spaceflight (see for example Aldrin & Wachhorst, 2004).

These extracts, and especially the language, show, how a kind of 'simplistic romanticism' is a central way of framing that Bush uses while constructing his local cultural frame. Through that, he achieves heroisations of both, the dead and living people. He frames the situation around his performance as an "unprecedented gathering of America's space veterans" (GB, #312f.), admitting himself to be proud "shar[ing] this stage with three of the greatest heroes of this or any other century: the crew of Apollo 11" (GB, #313f.). Simplistic romanticism allows Bush to instrumentalise protagonists of his talk, facilitating his messages in a way that they can hardly be attacked by any American, as they address basic American assets that are rooted in traditional mythology American, more precisely American exceptionalism. He achieves what Šabanović termed 'cultural continuity', by counting on what Anderson called the 'imagined community'. Now, the American president constructing America in exceptional ways is just according to an the historically grown national narrative, and thus not particularly surprising, as this study shows (see also Gilmore, Sheets and Rowling, 2016, p. 516). What distinguishes this talk from the other four talks is the exceptionally clear-cut conceptual grounding of greatness. Although there is no exception in the other presidents using it, a thorough thematic analysis clearly shows that Bush's approach to spaceflight is driven very strongly by motives of certainty and pride, which are derived to a great extent from cultural icons and the respective historical accounts. Incidents in the past lineary evoke present values, acting as a logical fundament for the future. Very interesting is the argumentation around the Challenger tragedy, which I find useful to be interpreted through the lens of imagined communities. Anderson wrote, that

> "[t]he idea of the ultimate sacrifice comes only with an idea of purity, through fatality. Dying for one's country, which usually one does not choose, assumes a moral grandeur which dying for the Labour Party, the American Medical Association, or perhaps even Amnesty International can not rival, for these are all bodies *one can join or leave* at easy will" (2006, p. 144)

Said practical inevitability of nationality is here instrumentalised by Bush. He perfectly links the death of the seven astronauts to the life of every American citizen, as if those had died for *family members*, when in fact, they can only said to have died being part of an essentially imagined community.

> *"There are many reasons to explore the universe, but ten very special reasons why America must never stop seeking distant frontiers: the ten courageous astronauts who made the ultimate sacrifice to further the cause of space exploration. They have taken their place in the heavens so that America can take its place in the stars"* (GB, #446ff.)

That way, the dead astronauts become deeply authentic representatives of the entire nation, and at the same time greatly heroised individuals (see Hersch, 2012). He draws on similarly heroic imaginations about astronauts as they appear in pop culture (see chapter 2.2.), while his depictions are not for purposes of art, but seek to evoke national unity through constructing a national legacy. This legacy is depicted as being centuries old, beginning with the myth of Columbus, and, by his way of including Challenger, just as well thematically taking up the myth West and its idea of the possible setbacks that have to be overcome for eventual success. He continues drawing upon a number of other historical figures, climaxing in said Challenger, perfectly showing the great flexibility and adaptability of mythologies. However, even with the inclusion of Challenger, the legacy is framed very positively by evoking pride instead of grief. By telling a tale of the American flag "that still flies proudly in the ancient lunar soil" (GB, #327) he rhetorically, narratively, and logically evokes the collective connected by pride of a shared history. An imagined community emerges, that, as a cohesive entity, takes part in the 'necessary adventure' that spaceflight is rendered into. It is every American's flag up there, including those who have not even been alive when the flag was being planted. Finally, he rounds off the heroisation by heroising the American people as such, too. Historically, "Apollo's success was made possible by the drive and daring of an entire nation committed to a dream" (GB, #366f.). And, equally, today, "the pathway to the stars begins, as it did 20 years ago, with you, the American people" (GB, #405ff.).

All of this constructs an image of America as an unquestionable, organically grown idyll, strongly resembling the mythical idea of the West (see Paul, 2014), as still in his introduction, he reminds the audience that "a nearly full moon will rise out of the darkness and shine down on an America that is prosperous and at peace" (GB, #322ff.). As Bush constructs his narrative, the US has come a long, linear, plausible way, consistently driven by the same inherent values and traits. Conflicts are excluded from history, societal and technocultural achievements are utilised to fit the narrative, and mythology functions as both, origin and confirmation of the American idyll. Finally, ambitious goals in spaceflight are what he deducts from the narrative of boundless cultural success.

7.3.3. An American Future: Space Romance and the Aggrandisement of Spaceflight

Through various means, every talk lets arise a very specific atmosphere. Comparing these atmospheres, performance analysis allows to see how Bush's talk is achieving a very different atmosphere as for example the talk delivered by Kennedy. While Kennedy, as I showed above, uses strong dualities and images of war, Bush's performance may be described as exceedingly calm, romantic and perhaps even dreamy towards the general topic. Gestures and inflexion heavily differ compared to Kennedy, but also to Obama. For example, Kennedy almost yells that "we do not intend to stay behind, and in this decade, we shall make up and move ahead" (JFK, #121f.), whereas Bush makes his romantic statement about the 'nearly full moon' would shine down "on an America that is prosperous and at peace" (GB, #323f.). The American idyll he constructs from the past through the present, together with

the nation's linear success story, lets future successes appear inevitable. Vague hopes become trustworthy promises, and the future becomes presented in a way as if it has almost already happened. In Šabanović' (2014) words, he is creating a feeling that, necessarily, 'things will have been'. Both foundation and consequence of that atmosphere is the explicit romanticising of space and the aggrandisement of spaceflight technology. By involving and linking different generations of Americans, Bush tries to evoke cross-generational enthusiasm for spaceflight, for which heroisations and cultural elevation of all American people are pivotal, because, narratively, he is rendering this past-oriented argumentative construction into the perfect reason for a specific desirable future. He draws all American people into spaceflight, making of the imagined community an imagined interest group, with a joint feeling of duty and the same unspecifically specific expectations of the future in space.

I have already termed one of Bush's strategies 'simplistic romanticism' when he is talking about the (American) past. The atmosphere he achieves yet allows him to be just as simplistically romantic about the future as well. Humans "dream of distant shores" (GB, #451), and NASA sets the American people to be on "the pathway to the stars" (GB, #405f.) - strikingly poetic depictions of what Kennedy in contrast presented as a potential "theater of war" (JFK, #75). In Bush's words, it was not a rocket launched in July 1969, but "[t]he sun [that] rose a second time [...] as the awesome fireball of the Saturn V lifted these three pioneers beyond the clouds" (GB, #333ff.). Using this pictorial description also lets the technology involved appear not only in a simplified way but elevates it on a level that I want to call the aggrandisement of technology, in this case of rocketry. While always linking it directly to past cultural experiences, simplistic romanticism and the aggrandisement of technology shape Bush's depictions of the future; "[S]pace is the inescapable challenge to all the advanced nations of the Earth. [...] What was once improbable is now inevitable" (GB, #379ff.). Spaceflight is elevated above virtually all other challenges, be it of technological, societal, or any other nature. Spaceflight *is the future*. By adding how it once was improbable, that is, a dream, but now inevitable, he does several things at once: evoking pride of the technocultural advancements, romanticising and naturalising (technological) progress, and simplifying inherently non-linear technocultural developments. He now claims to make the imaginary a reality, and thereby heavily participates in (re-)creating the very imaginary of conquering space. Especially the construction of certain future's inevitability is also achieved through past-based simplifications and romanticism, for example by saying that "humans will again leave their home planet for voyages of *discovery* and *exploration*" (GB, #380f., my emphasis). Here, he draws on the historic mythological ideas of discovery and exploration, that ultimately links spaceflight with the voyages of Christopher Columbus (see Paul, 2014), and other explorers like Meriwether and Lewis, that George W. Bush would remind his audience of 15 years later. "We will travel to neighbouring stars, to new worlds, to discover the unknown" (GB, #458f.) are very strong and linear depictions of what *will be*. Especially in this last sentence, the technology that is necessary to achieve these goals is made invisible, for they are natural, and naturally *will be there*. The reasoning to undertake steps to this

supposedly inevitable future is just as simplistic and romantic as its very descriptions, for at one point he simply claims that “history proves that we have never lost by pressing the limits of our frontiers“ (GB, #391f.). While only moments earlier drawing on the Columbus myth, he now relatively explicitly draws on the myth of the West, as the narrative of the ‘frontier’ distinctly shows. Subsequently, he once again draws on a past national hero, Apollo 11 astronaut Michael Collins, using his quote that “the moon is not a destination; it's a direction” (GB, #378f.). At the very end of the talk, the romantic, simplistic, past-based projections of an inevitable future is interestingly connected to, and enhanced by yet another set of past incidents, which are the ten astronauts NASA lost until that day (three in 1967 and seven in 1986). Although having stated, that ‘we have never lost’, he still draws on said deceased astronauts. He constructs them as spaceflight’s martyrs who “made the ultimate sacrifice to further the cause of space exploration” (GB, #448f.), which is only consequential, as he did use before the West-mythology and the connected manifest destiny. In a very dramatic, figurative way, he claims that “[t]hey have taken their place in the heavens so that America can take its place in the stars” (GB, #t449f.). This is arguably the strongest, and most simplistic romanticism in all of the talks. He may be strongly heroising the dead astronauts, starkly resembling the heroisation of astronauts in pop culture, yet he does this *on the basis of an imagined community*. He invokes a ‘they-for-us’ kind of logic, to construct the narrative that America *owes them* to keep being spacefaring, and to even start being more, be even more daring and innovative, that is more explorative. The community narrative thus not only serves to explain and experience the past, but also to make the future understandable and easily attainable, allowing to emerge an inner telos of the overall endeavour.

It is also this simplistic romance towards the future in space that receives approval by the audience, which applauds for example after the bold and self-confident statement that the US will travel "back to the moon; back to the future [...] and this time, back to stay" (GB, #402f.), or when announcing "a manned mission to Mars" (GB, #404f.). The audience also approved the statement that a next ‘giant leap’, as Armstrong did his, could not be taken "unless we take a single step today" (GB, #462) - again connecting a past incident, this time a quote, lineary extracting an inevitable and plausible future from it, while building on a shared, national pride of an imagined community that draws on that very same past. Lastly, the quite poetic and romantic depiction of the (in fact never realised) Space Station Freedom as an easily walkable "bridge between the worlds" (GB, #423f.) received benevolent applause, too (and, notably, three years after the Challenger destruction). Hence, the narrative strategy did in fact have the intended effects at least on the then present audience. However, primarily because of the planned Mars mission, effective narrative work was necessary, as Murray explains. Such a specific goal had not been proclaimed since the Apollo days. Hence, “Bush's efforts are an enormously important step towards an efficient and rewarding manned US space effort. He has put a lot of political muscle behind that commitment. It was not just a throw-away line in a speech” (Murray, 2016, p. 185). Albeit, as poetic and romantic as he has presented himself, as strategic and deliberate he was in that, naturally.

7.4. George W. Bush – Of the Human Nature and Our Limits to Dream

"States are as the men, they grow out of human characters."
Plato (428/427-348/347 BC), philosopher

7.4.1. Some Context

As mentioned above, the policy introduced by George W. Bush in 2004 may be seen as being heavily influenced by the Columbia disaster, which took place about a year before the talk. Seen in context with the long-lasting changes the 9/11 attacks in 2001 have had on America, its self-image, once again the president could utilise spaceflight to communicate a larger message to the people. Expansive plans of moon stations in 2020 and manned missions deep into the solar system are indeed scientifically relevant, yet also constituted a tailored frame to make statements about very social and societal issues, too.

7.4.2. The Human Nature, the American Nature, and Other Worlds

As I have explained, this part is to show what sets the individual talk apart from its counterparts. In principle, the talk delivered by George W. is relatively average among the five included in this study. He raises all the central themes that his predecessors raised as well, while no theme occurred outstandingly more often in his talk than it did in the other talks. However, taking a closer look, differences become clear anyway. The first thing that makes this talk special is the circumstance, that he does not only characterise the American culture, but also does some work in characterising the general human nature on several occasions, most clearly at the following instance:

> *"[T]he human thirst for knowledge ultimately cannot be satisfied by even the most vivid pictures, or the most detailed measurements. We need to see and examine and touch for ourselves. And only human beings are capable of adapting to the inevitable uncertainties posed by space travel" (GWB, #616ff.)*

Framing the human being in such a way nicely serves the purpose of justifying the exploration-oriented policy. He stresses his explorative conception of human beings again later in the talk saying that "we know this: human beings are headed into the cosmos" (GWB, #623) , and again in the very last paragraph: "Mankind is drawn to the heavens for the same reason we were once drawn into unknown lands and across the open sea. [...] So let us continue the journey" (GWB, #664ff.), smoothly connecting the supposed human with the supposed American nature. Dramatically positioning this argument within the last sentences of the talk already shows this conceptualisation to arguably be the most tangible, specific reason for exploration that Bush presents throughout the entire talk. It becomes the main driver in the narrative of discovery that he tries to draw the audience into in the beginning of the talk: "[Meriwether and Lewis] made that journey in the spirit of discovery, to learn the potential of vast new territory, and to chart a way for others to follow" (GWB, #530ff.). Although "America has ventured forth into space for the same reasons [like Meriwether and Lewis explored unknown territory]" (GWB, #533), and although the "desire to explore and [to] understand is part of [the US American] character"

(GWB, #534f.), both is not rendered something that inherently sets the US apart from the rest of the world. Contrary to the other presidents, to Bush this spirit of discovery is not something particularly American, but essentially human, although bringing it up serves the same purpose: it naturalises spaceflight. The conquest of space is not something that *can* happen, but something that *is to* happen. For Bush, it seems, the US is not superior in a temperamental sense, but rather in the sense that especially the US simply is capable of living up to these human traits in space as well, and exceptional in the sense that the US is the not less, but also not more, than the herald of the supposedly coming "era of discovery" (GWB, #644), or as Kennedy termed it 40 years before, the "age of space" (JFK, #57). The Meriwether-Lewis allegory can also be seen as perfect example of Bush's generally rather egalitarian approach. Although he is projecting the ancient explorers 'charting a way for others to follow' on current proceedings, taking the somewhat same line of American superiority as the other presidents, he explicitly "invite[s] other nations to share the challenges and opportunities of this new era of discovery" (GWB, #643f.). Although America is constructed as destined to discover, destined to *lead*, the superiority is tied more to exceptionality than singularity. As rhetorically implied, others should follow the US beaten path, but not necessarily be outpaced and eventually left behind. Nevertheless, interpreting the Meriwether-Lewis metaphor as allegory is still one of the strongest incidents of meshing national/cultural American exceptionalism with the mythical representations of discovery. The allegory invokes a clear hierarchy of nations yet emphasises superiority more than singularity.

Overall, however, George W. Bush seems to take a more humble, balanced stance when introducing his space policy. This observation gets strengthened by another observation, as coding showed. Namely, although indeed framing the American character in a favourable way, he does it slightly differently than the other presidents in yet another way. He is not *adding* something particular to his notion of Americanness but *leaving out* a notion that is expressed very frequently elsewhere: the inherent *greatness* of America and Americanness. This is not to say that Bush is belittling the US. He simply is less explicit in communicating the country's greatness in comparison to other countries, other (sociotechnical) cultures, and their technological capabilities and motives. For instance, he claims NASA to have "increase[d] the sum of human knowledge" (GWB, #546), yet does not claim that other space agencies did not do that as well. He plans to establish "extended human presence" (GWB, #600) on the moon, not an American presence. He finds, that it is America who will "return with peace and hope for all mankind" (GWB, #597f.) to the moon, yet he does "invite other nations to share the challenges and opportunities" (GWB, #643f.), and stresses his strong approval of "the joint efforts of the Russians with our country to explore" (GWB, #517f.). A purely statistical perspective supports that point again. In the five talks together, 'lead' as single word or as part of a word, appears 21 times. Bush only uses it twice, and in both instances, the use is barely connected to the speech's greater narrative or its protagonists. There is little doubt that at its core national interests are one driving force of all activities

in space, and that this is no different for the Bush administration. However, the point here is, that the narrative framing is considerably different. It is less US-focused, less aggressive, less competitive.

As part of this line of argumentation, I want to briefly work out how George W. Bush tended to use expressions of exploration in a rather communal and collective sense. As a comparison: Kennedy spoke of American satellites that provided knowledge to humanity. Even Nixon spoke of a specifically American beach-head in the sky. George W. Bush's father proudly mentioned the American flag on the moon. And, as we will see later on, Obama spoke of "strengthen[ing] America's leadership here on Earth" (BO, #965f.). Bush, in 2003, however, tried to appeal to much greater collectives than that of the US. The list below shows the most striking incidents, as in all of these incidents, instead of speaking of 'man' or 'humanity', he could have also used an American framing.

a. "carry man forward into the universe, to gain a new foothold on the moon, and to prepare for new journeys to worlds beyond our own" (GWB, #508ff.)
b. "no human being has set foot on another world" (GWB, #556)
c. "the main purpose of this spacecraft will be to carry astronauts beyond our orbit to other worlds" (GWB, #586f.)
d. "we will then be ready to take the next steps of space exploration: human missions to Mars and to worlds beyond" (GWB, #611ff.)
e. "a new plan to explore space and extend a human presence across our solar system" (GWB, #561f.)

After this thematic approach revealed the importance of these aspects, performance analysis can confirm them, showing that they mattered greatly not only to the president, but also to the audience. The audience applauded five times during the talk, with every instance being connected to one of the topics mentioned until now, although surely also due to the fact that the audience consisted of people working in the spaceflight industry, and thus being prone of having similarly spaceflight favourable perspectives. The particularly explicit claim that "we know this: human beings are headed into the cosmos" (GWB, #623f.) received applause as much as did the claim that "human missions to Mars and to worlds beyond" (GWB, #612f.) would take place in the foreseeable future. Likewise, notions of the American nature were explicitly approved as well, as for example the declaration, that "America will make those words [on returning to the moon] come true" (GWB, #597f.), was followed by a particularly long applause. The audience also supported the claim that the Columbia crew "did not turn away from the challenge and neither will we" (GWB, #662f.), a sentence that clearly implies and projects age-old 'American values' that I have discussed in the context of especially the myth of the West. To conclude this section, the American character is again constructed in a very positive, favourable way, and receives strong approval by the audience. However, contrary to the other talks, and as already put above, the *American*

ways are much stronger connected to how general *human* ways are constructed, showing less inherent deviance between them.

7.4.3. High Hopes and the Obligation to Carry On

As I have outlined above, in national political respects the undertone of this talk is calmer and less competitive. Instead of constructing the imaginary of a global conflict, or the idea of purely nationally driven rationales, Bush achieves to invoke an atmosphere of anticipation and primarily technological - not quite national - pride. This might seem an unlikely mixture considering that the talk took place just about one year after the loss of the space shuttle Columbia. But how does he exactly achieve this positive spirit despite of the ominous preconditions?

First, just like his father did 15 years before him, he employs the narrative imperative of the 'spirit of discovery', which he renders imperative through his conceptualisations of the human nature (see above). While George Bush explicitly mentioned Columbus twice, his son made reference to the Lewis and Clark expedition, which took place from 1804-1806: "[Lewis and Clark] made that journey in the spirit of discovery, to learn the potential of vast new territory, and to chart a way for others to follow" (GWB, #530ff), achieving the same message: the US is historically and hence temperamentally *bound* to 'explore'. Second, he invokes technological pride and excitement, based on relevance. Spaceflight is "mighty important to the country and to the world" (GWB, #527f.). He proceeds claiming that "that quest [of spaceflight] has brought tangible benefits that improve our lives in countless ways" (GWB, #535f.), just as the Space Exploration Vehicle will be "the first spacecraft of its kind since the Apollo Command Module" (GWB, #587f.); a logical and compulsory sequel. Within that technological sequel (a few years later, Obama would use the expression of the 'next chapter'), robots and probes are not just inanimate objects, but anthropomorphised "trailblazers - the advanced guard to the unknown" (GWB, #614), sending "spectacular images" (GWB, #616) back to earth. Third, to let everything appear close and urgent, he reminds the audience that "[a]t this very hour, the Mars Exploration Rover Spirit is searching for evidence of life beyond the Earth" (GWB, #553f.). Most prominently, then, the sixth sentence of the speech simply reads "America is proud of our space program" (GWB, #501), which even adds a communal touch to it. Without exceptions whatsoever, it is the *entire country* that is proud of *its* space programme. Fourth, drawing upon the technological pride and excitement, he stirs up high hopes. Under the precondition, that "much remains for us to explore and to learn" (GWB, #555), he frames the current investments as "only a beginning" (GWB, #653), assuring the audience that "along this journey we'll make many technological breakthroughs". The evocation of well-grounded hope becomes most clear in a moment when his words become just as flowery as they become imprecise and vague: "We may discover resources on the moon or Mars that will boggle the imagination, that will test our limits to dream" (GWB, #627ff.). Regarding future benefits of spaceflight, general uncertainty turns into merely unassessable certainty, and something that must not be disregarded. At this point, the line of argument is already coherent and effectively functional. However, Bush again uses a similar narrative

strategy like his father. Namely, fifth and finally, he turns a complete and fatal failure into a reason. I have pointed out above the rather sad circumstance of the talk, that of the Columbia disaster that happened less than one year before the talk. As relevant as the issue actually might be perceived for American spaceflight, he essentially mentions Columbia only in the very end of the talk, turning the disaster into a reason to expand even more aggressively. Just like his father constructed it around the Challenger incident, George W. Bush narratively constructs the situation so that the US is *owing* more expansive spaceflight to the Challenger crew: "'The legacy of Columbia must carry on - for the benefit of our children and yours.' The Columbia's crew did not turn away from the challenge, and neither will we" (GWB, #660f.). The reason, thus, is not just a good reason, but a historically and (techno-)culturally grounded American obligation - a manifest destiny.

7.5. Barack Obama – Back into the Future

"Issues are never simple.
One thing I'm proud of is that very
rarely will you hear me simplify the issues."
Barack Obama, 44th president of the US

7.5.1. Some Context

This last talk took place in April 2010 in the assembly building of Kennedy Space Center (KSC), which was named after John Kennedy, whose seminal space talk was investigated above. The KSC and the associated Cape Canaveral Air Force Station is a central institution in American spaceflight, having been the launching place of all Apollo and space shuttle missions. Hence, the place was again intended to 'speak' as well, adding relevance and weight to what was to be communicated in the talk. One important political as well as economical and societal context was the financial crisis that had great impact not only on the US, but on global economies. It is a context that Obama himself even makes part of the speech. He delivers the longest of the five talks included here, the main reason being that he goes at length into NASA as an employer. He, hence, is addressing issues of people losing jobs due to the termination of the space shuttle programme the year after his talk, which is another central part of the talks' initial situation. These issues are not particularly interesting in itself, yet they hint at something that Obama evokes more intensively than his predecessors: communality, with NASA being one communal collective. He addresses "worries of folks concerned not only about their own futures but about the future of the space program to which they've devoted their lives" (BO, #795ff.), and is later 'challenging' NASA to 'break barriers', while adding that "I know you will [break those barriers], with ingenuity and intensity, because that's what you've always done" (BO, #919f.). He invokes a culture within NASA as an entity, that is quite central to the talk and shows his sensitivity as towards his audience.

7.5.2. Lacking Vision: Shadows of the (Recent) Past

After the two positive and solely encouraging talks of George Bush and George W. Bush, Obama in comparison performs a rhetorical sweeping blow, in the first half of the speech heavily criticising much of what had been done before, primarily by the governmental side of American spaceflight. A central theme of Obama's talk is that of *vision*, and the question who has one, who does not, and what it is or should be. He is attesting especially the administration of George W. Bush and the consequential programme *Constellation* a general lack of vision. He depicts much of the rather recent past as being dominated by lack of direction, by inconsistency, and by sheer incompetence. I believe the following statement to be very central for the entire talk:

"But we can also see it in other ways: in the reluctance of those who hold office to set clear, achievable objectives, to provide the resources to meet those objectives, and to justify not just these plans but the larger purpose of space exploration in the 21st century" (BO, #804ff.)

Much is to be found in this statement alone, yet I want to focus on three aspects. First, as did the other presidents before, and as I will also discuss at length in chapter 7.6.6., he assumes a clear *trajectory* in spaceflight and its proceedings, that is supposedly fostered and eventually only enabled by sets of 'clear objectives'. Second, by stating that it was American politics who failed to provide resources to follow a certain trajectory, he takes away any blame for past omissions from the entity that NASA and the spaceflight industry in general is constructed to be. Third, he addresses a 'larger purpose of space exploration', which previous administrations assumedly did not address sufficiently. These three steps constitute what I summarised under the term of the 'shadows of the past'. The reason for the past administration(s) hindering progress in spaceflight is constructed in a simple way: "People in Washington [may be] driven sometimes less by vision than by politics" (BO, #800f.). While on the one hand, this proves my previous point of spaceflight indeed constituting a mere political instrument, on the other hand, at the same time it makes an interesting move in explicitly trying to decouple American spaceflight with the country's politics. Additionally, adding legitimisation, through positioning himself as someone who understands these tensions, Obama renders himself into an indulgent spokesperson for NASA, depicting it as optimally politico-independent institution, and makes that the basis for NASA being able to live up to a supposed vision again. He tries to strengthen this positioning by adding that his accusations are "not just my assessment; that's also the assessment of a panel of respected non-partisan experts" (BO, #878f.), which distributes responsibility for any future action. Regarding the vision in spaceflight, then, it is right that thematic analysis indeed showed 'visions' to be not as urgently and recurringly mentioned in other talks as in Obama's. Nevertheless, to "live and work in space for longer periods of time more safely" (BO, #865f.) is a version of the sociotechnical imaginary of conquering space, that, in the end, is neither very specific, nor exclusively Obama's. As I have shown above, it was already Nixon who aimed for "a real working presence in space" (BO, #223f.). George Bush imagined a "future where Americans and citizens of all nations will live and work in space" (BO,

#385), and George W. Bush proposed the "goal of living and working [in space] for increasingly extended periods" (BO, #594). Hence, the overall argumentation can to a large amount be seen as political self-legitimation and narrative strategy to strengthen his position. Additionally, it achieves to frame the Obama-shaped future in spaceflight as much less politically driven, but driven more by a general vision of the technoscientific future.

However, it is for the most part the political sphere that Obama criticises. On several points he praises NASA's skills and expertise, as he speaks of "harness[ing] the ingenuity of [America's] people" (BO, #763), finds that "our capabilities in space will continue to serve our society" (BO, #784) as a whole, and explains the purpose of the ISS to be "conducting advanced research that can help improve the daily lives of people" (BO, #825f.). Finally, he describes Apollo 11 as an "endeavor that pushed the boundaries of our knowledge, of our technological prowess, of our very capacity as human beings to solve problems" (BO, #987ff.). In the past, following Obama, the US was prevented from having a worthy spaceflight programme, an analysis starkly resembling how the Augustine Commission framed the outcome of its study that was conducted to inform the president about current affairs in spaceflight. It was published under the title *Seeking a Human Spaceflight Program Worthy of a Great Nation* (Review of U.S. Human Spaceflight Plans Committee/NASA, 2009). Now, speaking of 'shadows of the past' implies a present, and, even more so, a future. Of course, he depicts this future as well, introducing it in captivating words: "We want to leap into the future; we want major breakthroughs; a transformative agenda for NASA" (BO, #873f.) - a quote that leads to the second part of this individual analysis.

7.5.3. Commitment and Society: The Grand Future

There is one remark Obama makes the central prerequisite for future spaceflight: "The bottom line is nobody is more committed to manned space flight, to human exploration of space than I am" (BO, #885f.), a statement that he confirms again later on: "I am 100 percent committed to the mission of NASA and its future" (BO, #782f.). Part of reasoning his excitement about spaceflight is quite interesting, as it is private, driven by his very much personal emotions and memories:

> *"I have been part of that generation so inspired by the space program. 1961 was the year of my birth - the year that Kennedy made his announcement. And one of my earliest memories is sitting on my grandfather's shoulders, waving a flag as astronauts arrived in Hawaii"* (BO, #764ff.)

An interesting foundation for allocating billions of dollars, and also a stark contrast to how he presents the recent past in spaceflight and spaceflight in society. It once was celebrated, glorious, now it is hindered and ineffective. Hence, he does not want to *continue*, but to lead NASA *back* into these glorious times *again*, as the narrative goes, although Obama expressed it a little more casual: "we can't just keep on doing the same old things that we've been doing and thinking that somehow is going to get us to where we want to go" (BO, #887ff.). The shadows of the past want be overcome via

implementing vision and milestones. However, the perceived lack of vision lets arise the question: What "visions" does Obama now bring up to counterpart the supposed lack thereof?

Obama's vision is very much informed by conceptualisations of spaceflight and society, and how the former improves the latter:

> *"Because broadening our capabilities in space will continue to serve our society in ways that we can scarcely imagine. Because exploration will once more inspire wonder in a new generation - sparking passions and launching careers. And because, ultimately, if we fail to press forward in the pursuit of discovery, we are ceding our future and we are ceding that essential element of the American character"* (BO, #783-789)

Despite his previous emphasis on 'clear and achievable objectives', these intentions may indeed be achievable, yet hardly clear, let alone verifiable. Contradicting the basic idea of objectives, he proceeds speaking about similarly unspecific rationales why spaceflight is a solution to societal issues, all being hardly controllable, reachable, or plannable. "Science [...] will garner tangible benefits, helping us to protect our environment for future generations" (BO, #821f.), the purpose of the ISS is described with "advanced research that can help improve the daily lives of people here on Earth, as well as testing and improving upon our capabilities in space" (BO, #825f.), and a new vehicle that three billion Dollar will be invested in will simply "transform not just where we can go but what we can do when we get there" (BO, #856f.). It is right, that Obama also puts out achievable milestones like a manned mission on an asteroid, and a manned mission to Mars in the 2030s. However, besides these two destinations, he does not provide any clear objectives, but promotes, as he himself puts it, generally "groundbreaking technologies" (BO, #863), that is basic research. It is also the scientific and explorational goals that ultimately are targeted in the name of societal progress: "For pennies on the dollar, the space program has fueled jobs and entire industries. [It] has improved our lives, advanced our society, strengthened our economy, and inspired generations of Americans" (BO, #974ff.). Obama trying to conceptually tie spaceflight closer to society than to politics becomes also clear when taking into consideration the 2009 global circumstances. Through stressing that he intends to raise NASA's budget while freezing many other institutional budgets, he strengthens the supposed societal impact of spaceflight for the entire country and turns an economic crisis into a plausible reason for explorational spaceflight. Especially him presenting 'inspiring generations of Americans' as a way to counterpart a massive crisis, is an argumentative logic supporting some formerly made claims of mine: spaceflight possesses communicative power, and it is ascribed with inherent societal and political weight, through carrying and reifying basic cultural values.

Also, performance analysis perspectives are rewarding here, as they reveal the contradictions as well as the perfectly working rhetorical strategy of Obama. The depiction of him as a political spokesperson who is giving freedom of research back to NASA seems to be accepted and embraced

judging by the audience applauding after both statements assuring Obama's commitment. Just as reliably does the audience spend applause when any explorational goals and measure is announced, for example sending "many more astronauts to space in the next decade" (BO, #896f.), promising "future deep space missions" (BO, #849) and "increasing NASA's budget" (BO, #809). Also, unspecific 'major breakthroughs' and the announcement of building a new heavy lift rocket are warmly approved. It shows that the talk, similarly to the others, is primarily conveying a general narrative, not trying to explain any details and specific reasons. To get general support for the new policy, its goals want to be embedded in larger social contexts. For that purpose, the talk lets arise an atmosphere of demanding optimism. Very symbolic for that atmosphere may stand the extremely determined face Obama puts on after boldly stating that "I expect to be around to see [a manned mission to Mars]" (BO, #913). Four times applause is given in the paragraph heading to that statement alone, the whole act is very much performed, lived even perhaps, together by audience and speaker, informed by one goal: to enable a US exceptional and superior future in space.

7.6. Common Narratives: Why to Conquer Space

"The human being is in the most literal sense a political animal, not merely a gregarious animal, but an animal which can individuate itself only in the midst of society."
Karl Marx (1818-1883), philosopher and economist

In the previous five sections I have extensively laid out what sets the individual talks apart from each other, what makes each narrative special. However, not just reading between the lines could we see that despite being delivered over a time span of about five decades, the speeches are deeply and peculiarly connected not only by the overall topic and intent, but just as much by their individual conceptualisations, reasonings, and whole lines of argumentations. Hence, what I have worked out until now are not fundamentally different approaches to American spaceflight, but merely narrative variations and different emphases. Kennedy was focused on dualities, based very much on the political impetus of the Cold War, and its consequential space race. Nixon stressed that reducing costs was essential, but still emphasised America's (ongoing) leadership in space. George Bush senior turned out to be a space romanticist, that honoured the past just as much as he anticipated the future. His son, George W. Bush, similarly driven by a spaceflight catastrophe like his father, found reason to conquer space not only in American, but in human nature. And even though Barack Obama found harsh words for past spaceflight, his subsequently presented vision was still based on very 'American' values and perspectives. This sixth section now aims at bringing together what was brought up strikingly frequently in *each* talk. I will again divide this section thematically (see Riessmann, 2005) into six different sections; unity, exceptionality, history, destiny, hierarchy, and trajectory. These six steps may be seen as constituting the overall narrative strategy to excite audiences for the idea of conquering space and embed the sociotechnical imaginary of conquering space in the American society.

7.6.1. Unity: The Spacefaring Nation

NASA has "always reflected the finest values of our *country* - daring, discipline, ingenuity, and *unity in the pursuit of great goals*" (GWB, #498, my emphasis). Here, in his fourth sentence already, George W. Bush proclaims what is necessary for both, exploratory spaceflight, and an effective narrative to receive sufficient support for it: national unity. How this unity gets evoked at other occasions, too, and why this is a plain necessary strategy, is discussed in this section. The most often used, and in a way at the same time most obvious and subtle rhetoric means, is the presidents almost always speaking of *we,* or of *us,* of the one community that everybody can refer to and draw on. Practically, it is neither Kennedy, nor NASA, deciding to 'go to the moon', but '*We* choose to go to the moon'. Each of the presidents used very similar narrative tactics of mobilisation through unification. Nixon, the exception, for example, indeed began his talk saying that "I have decided" (RN, #191) to build the shuttle, yet also, he, in his last sentences, demanded that "we must sail, and not drift, nor lie at anchor" (RN, #269). George Bush assumes that "like Columbus, we dream of distant shores we've not yet seen" (GB, #451f.), and his son, George W. Bush, felt that "we have undertaken space travel because the desire to explore and understand is part of our character" (GWB, 533ff.), and that conquering space "lifts our national spirit" (GWB, #666). Obama, finally, set about meeting his goals "as a nation" (BO, #749f.), and announced that "we will push the boundaries not only of where we can go but what we can do" (BO, #958f.) - it is not about what robots or astronauts do, but what *we do* there. And these are just some examples. In all talks, the currently about 330 Mio. citizens of the US become rhetorically homogenised, and one entity, one very much definable public to speak to. And although this study uses qualitative methods, one may, rather anecdotally, refer to one simple quantitative measure here, too. Namely, the word *we* appears a whole 200 times in all talks, about 50 times it is referred to an undefined *us,* strengthening my point of the strong feeling of community and togetherness that is evoked. Additionally, unity through greatness is often being connected with the place the talk is given from, respectively at. As Barker finds, "[l]eaders surround themselves with objects which 'acknowledge' their importance" (2001, p. 53), which is also used by all presidents, perhaps most vividly by president Kennedy: "We meet at a college noted for knowledge, in a city noted for progress, in a state noted for strength" (JFK, #9f.), a statement that achieves to evoke unity through locality, while speaking to a factually intrinsically disconnected crowd, that is even more disconnected from the rest of the country's citizens. Still, they all become one unit through relating the smaller to the larger circles; the college with the city with the country - narratively becoming nothing but one entity with an intrinsic logic. The talks obviously try to make people wish or feel good about *belonging* to something, that is the United States of America. This belonging becomes possible through the evocation of an imagined community whose members share a unified collective identity (see also Yuval-Davis, 2006, p. 204f.).

For unity, a special role do those incidents play, in which acute crises are considered, which was particularly the case for George Bush and George W. Bush. Against the backdrop of these incidents, the

presidents evoke something that goes even deeper than sheer community. I already hinted at above (see section 7.3.), how George Bush made the Challenger disaster appear like an awful *family* drama. The astronauts are portrayed as having died for all other Americans, an argumentative strategy that George W. Bush copied: "The Columbia's crew did not turn away from the challenge, and neither will we" (GWB, 662f.). Following the point, the dead crew members were essentially convertible with 'regular' citizens; an 'it-could-have-been-you!' logic. What emerges, is not only community, but fraternity (see Anderson, 2006, p. 7) between people who do not know each other at all. The fraternity, the imagined and *inherent* human closeness, is rendered the *cause* of basic values that all Americans supposedly possess. All are the same, were the same, and will be the same, everybody is united under the stars and stripes. In other words, the talks evoke a strong 'ethnocultural homogeneity', a term I also lend from Anderson (2006, p. 95). In essence, speaking about spaceflight does not mean to speak about a few individuals going to space, but to draw the picture of one entire *spacefaring nation*. Additionally, it is constructed a concept of an inherently logical home, of *heimat*, that it is worth to work for, and sometimes even worth to die for (see Bush's Challenger reference, George W. Bush's Columbia reference, and principally also Kennedy's Mallory reference, as Mallory died on Mount Everest).

Concluding this section, we can state that the presidents talk about the country's activities like the country was one completely homogenic construct, one entity, one unit. Now, as we will see, the five presidents ascribe this unit of the United States and its people with values and treats that pop culture likewise is ascribing astronauts with. Put the other way round: astronauts come to embody Americanness. To illustrate my own narrative here, I will now characterise and describe the self-understanding of the US that the presidents undertake by characterising a fictive person, an astronaut, using it as a metaphor of how the US is constructed as one single character. I will call it the *US-tronaut*. What emerges, is the said very consistent picture of the US, that unity lends eventual substance to.

7.6.2. Exceptionality: Valuing the United States of America

To begin with, this is not a piece of work to be located in American studies. Some literature from that field provided me with valuable insights, but this work does not claim to find out who, what, and how the United States of America are. What I can and will do, however, is to see how the United States are depicted and valued within the scope of my material, in which a great number of incidents occurred, containing traces of how the US is constructed by the very person who was, at the time of speaking, the US' highest representative. The words used to describe the US-tronaut are partly even identical, and their root is the same - it is American exceptionalism. Every talk contains traces of it, some of them tiny and subtle, others strong and perfectly unambiguous, easily traceable back to classic American themes and myths. Remarkably congruent are the presidents' concepts of origin and inferences of that identity, too. In the following, some of my sentences may sound excessive or sarcastic even, yet the entire paragraph is nothing but a literal accumulation of presidential American self-

representations in the talks. To clarify how this characterisation is indeed directly derived from the talks, I have put in italics the words and expressions *de facto* used in the talk.

The carefully assembled 'US-tronaut' perceives himself as fundamentally *superior*, and superior to any person sharing his near and far surroundings, and especially to any person sharing his occupation. What he does, he always does to the fullest, with remarkable *discipline* and perseverance, inspired by his deeply inherited trait to *never rest*, but to *move forward*, and not letting *progress* come to a halt. The *progress* he ensures is guided by his general *ingenuity*, he is always being ready for new *adventures. Ambition,* paired with *courage, daring, boldness*, and the *willingness to take great risks*, are some of the deepest, and *finest values* that drive him on his personal *pathway to the stars*. *Being first* is, what he aims at, *always*. He unquestionably achieves this through *great commitment* when facing the *challenges* that he regularly poses to himself, reaffirming *creativity* and various other *unparalleled capabilities*. It was *his knowledge* alone, and his sheer *technological prowess*, that made and keep him being *the best* in what he is doing, and also made him *the richest* individual of them all. *What he dreams, he does*, whatever ability is needed. He will *learn* and grow with the challenge, as, ultimately, he is the embodiment of mental and physical *strength*. In all that, though, the US-tronaut takes pride in his confidence to always follow quite noble intentions. Among them is the *discovery* not only of *new knowledge*, the urge to *understand* nature as it is, but also to ensure *peace* for him and everyone else. Although interested in cooperation, he will always be palpably *greater* than any counterpart, and asserting to leadership is always priority. Subsequently, it is clear that *only the US*-tronaut who can ensure true peace. Others need him. Hence, whatever he tackles, he can be *confident* about his eventual superiority not only capability-wise, but also morally-wise. However, it is always only going to be a carefully regimented *share*, as the US-tronaut's thinking is not limited to the present, but also includes the *future*. And in this future, he will, just as he does today, *lead*, by right, by *destiny*. His very *character* does not allow for anything else, aiming lower would simply mean *ceding essential elements of his character*, hence factual self-deceit. Meanwhile, he still takes pride in his *openness*, and how his approach to life makes him utterly *free.* In consequence, through being *superior* but still being *open* and caring for the less able and differently minded, letting them also profit from his noble efforts, he perceives himself unquestionably on moral high ground. Living a life following his values, he is sure of, maybe *dangerous and hazardous*, but *the world's greatest experiment in freedom.* From his viewpoint, he has every reason to be more than *proud* of himself. After all, he and his traits are but *the best of all mankind* - the world's best hope.

Two specific quotes may round up this section. George Bush in 2004 vividly depicts how American exceptionalism is used in the talks, and thematically related to spaceflight:

> *"To this day, the only footprints on the moon are American footprints. The only flag on the moon is an American flag. And the know-how that accomplished these feats is American know-*

> *how. What Americans dream, Americans can do. [And] Space Station Freedom [will be] an investment in the growth, prosperity, and technological superiority of our nation"* (GWB, #416-425)

At the heart of it, however, is NASA, carefully weaved in into the narrative of communality. NASA is constructed as not just some governmental research institution but is rendered the nucleus of the US as one *spacefaring nation*, and thus one nucleus of the American identity. An interpretation that Barack Obama put into his own words in 2009:

> *"For me, the space program has always captured an essential part of what it means to be an American - reaching for new heights, stretching beyond what previously did not seem possible. And so, as President, I believe that space exploration is not a luxury, it's not an afterthought in America's quest for a brighter future - it is an essential part of that quest"* (BO, #767-772)

Throughout the talks, a very specific Americanness gets constructed, grounded on values that, at least within the context of spaceflight, do not vary much over the course of the time span my study covers. Especially exploratively used and manned rockets become elevated from being - admittedly quite sophisticated - technological devices to vivid technological expressions of the supposed national character of the USA.

7.6.3. History: The Traditionalisation of Values

Any character, individual or national, needs a past that formed it. But how far does one have to go back in time to find the origins of one's nature? In this study, I am interested in the American character, how it is depicted and grounded in the case of the US presidents promoting their space policies. In that specific context, origins of the US national character are constructed to lie back as far as 500 years in the past. It derives from a history that is rendered linear and plausible, illustrated by many past 'American' heroes. Many glimpses in recent and far away pasts are undertaken in the talk, and a number of historical figures are introduced and narratively utilised. Past developments are reconstructed and then projected into the present and future.

Two of the five speakers already draw on history regarding the locality of their talk. George Bush mentioned the National Air and Space Museum, keeping the "testaments to Apollo and to what came before - the chariots of fire flown by Armstrong, Yeager, Lindbergh, and the Wrights" (GB, #368ff.), and the National Archives "preserve[ing] the founding documents of the idea that made [the United States] possible" (GB, 371ff.). Obama referred to the KSC, stating that "[i]t was from here that NASA launched the missions of Mercury and Gemini and Apollo. It was from here that Space Shuttle Discovery [...] carried the Hubble Telescope into orbit, allowing us to plumb the deepest recesses of our galaxy" (BO, #728ff.). That circumstance may already hint at what table 3 and four finally reveal; historical references are pivotal for the president's lines of argumentation favouring the conquest of

space. It shows in (partially disputable) chronological order[4] a timeline of all historical references included in the five talks. Obviously, the individual categories for *Type* and *Context* are far from being absolute. They overlap and are inherently interdependent, yet provide a first glimpse into what contexts the talks provide:

Table 2: Color codes explaining tables three and four.

Reference Type	Context	Presidents
General Temporal Reference	American	Kennedy (JFK)
Invention/technical development	Global	Nixon (RN)
Discovery		Bush (GB)
Human icon(s)		W. Bush (GWB)
Specific moment or time span		Obama (BO)
		Multiple

Table 3: Time specific historical references made in the talks.

Type	American?	President
Stone age, usage of animal skins		
Writing and invention of the wheel		
Foundation of Christianity		
Leonardo da Vinci		
Printing press		
Christoph Columbus		GB, GWB, BO
William Bradford/Plymouth colony		
US founding documents		
Newton/gravity		
William Bradford/Plymouth Bay Colony		
Industrial Revolution		
Louisiana purchase		
Meriwether Lewis and William Clark		

[4] Primarily when it comes to processes rather fixed dates, the exact order may be disputable. That, however, is not of much interest for the points I try to take from it.

Oliver Wendell Holmes		
Steam engine		
Electric light		
Telephone		
Automobile		
William Jennings Bryan		
Wright brothers		JFK, GB, GWB
Penicillin		
George Mallory/Attempted Mt. Everest ascend		
Charles Lindbergh		
Television		RN, JFK
Nuclear power		
Chuck Yeager		
Sputnik		
Eisenhower/NASA foundation		
President Kennedy/moon talk		
Project Gemini		
Space Race		JFK, GB, GWB, BO
John Glenn flight/Project Mercury		JFK, BO
Apollo programme		RN, GB, GWB, BO
The Apollo 11 crew		GB, BO
Moon landing		
Neil Armstrong		
Buzz Aldrin		GB, BO
Michael Collins		
Eugene Cernan		
Michael Jackson		
Challenger crew		GB, BO
Columbia crew		

Table 4: Not time specific references made in the talks.

Unspecific references	American?	President
US westward expansion		
The Oregon Trail		
Weather forecasting		RN, GB
Communication		
Computing		
Rescue technology		
Robotics		
Electronics		
Satellite communication		RN, GB
GPS system		RN, GB
Imaging in CAT scanners		
MRI machines		
Monitoring nature resources		
Pollution control		

The length of this list alone can tell us about the importance that is given to historical context when presidents talk about spaceflight. The presidents and everyone who was involved in the process of crafting the talks could have used *any* words they wanted to, they could have spoken solely about the future. But even when considering the past, they could have included *any* past incident. Yet the table shows what the presidents considered relevant, something Asdal and Moser (2012) called 'contexting'. It is this specific context they want to see the imaginary of conquering space embedded in, and it appears consistently over each of the five talks. Contexting never happens by chance, but it is something deeply deliberate. Hence the question arises: What do all these incidents stand for? Why is the (far away) past so important in political considerations about spaceflight in the (far away) future?

To find out about the *why*, we shall first look into the *how*. In the individual discussion of George Bush' talk, I introduced the idea of *simplifying romanticism*. This narrative technique, essentially the deliberate and purposeful reconstruction of the past, perhaps becomes most obvious in the cases of Christopher Columbus and the myth of the West (see chapter 2.5.1.). First, although Columbus might

indeed have "dream[ed] of distant shores" (GWB, #451), today, historians have come to know that his intentions were not all excessively romantic and fundamentally noble. Nevertheless, for the purpose of the talk, the 'good' Columbus wins over the 'bad' Columbus (see Paul, 2014). He finds his way into the talks, becomes a reason for American identity, and thus for 'conquering space'. Something very similar applies to the myth of the American West. George W. Bush, even intermeshing both myths, said that "[m]ankind is drawn to the heavens for the same reason we were once drawn into unknown lands and across the open sea" (GWB, #664f.). Regarding the 'unknown lands', however, he completely conceals the at least very questionable happenings taking place during that westward movement, primarily concerning the confrontation of expansionists with native American people. Just like it is the case with Columbus, for the sake of cultural plausibility, and probably against better judgement, the past gets bended. What counts is the positive construction of the local cultural frame; appropriate is, what endorses the imagined community's' noble values. Anything that opposes these values may simply be ignored for the sake of the argument's plausibility.

That being said, many other direct quotes now aid us in finding out in detail *why* history matters to the narrative so much. As the section's title already implied, I found the principal intention of including history to be the grounding of cultural identity. Ascribing historical events and figures with supposed American values lends linearity and thus an inner logic to them. In essence, it *traditionalises Americanness*. Connecting history to identity, George Bush saw "a monument to our nation's unparalleled ability to respond swiftly and successfully to a clearly stated challenge" (GB, #358ff.) in the Apollo programme. The work of one governmental institution, by then done about two decades ago, is not only constructed as a success of a past version of the nation, but just as well as something that Americans today can and *should* be proud of. That invitation includes "those who were not yet born or then too young to recall" (GB, #328), as they, too, are asked to "join us in a great dream, an American dream, a dream without end" (GB, #329f.). Values are passed on to them, they are part of the inevitable American cultural heritage, resulting in a dream, that is to be dreamed out of tradition (on the 'invention of tradition' see Hobsbawm and Ranger, 1983). A similar approach is taken specifically when talk is about what I summarised under inventions and technical developments (see table 1). Although some of the inventions and moments are not specifically American and are not always directly constructed to be so, they always embody central American values reproduced in the talks. Kennedy, for example, used George Mallory's 'Because [Mt. Everest] is there!' as one of his central arguments to conquer space, although Mallory was an Englishman. However, with his attempted Everest ascent, he can still serve as an endorser of American values, despite his English descent. He perfectly embodied the characteristics of the timeless imagined American community. The National Air and Space Museum, that shows many artefacts of spaceflight history, is, by George Bush, literally described as "a symbol of American courage and ingenuity" (GB, #309f.). Ultimately, as it became more and more established over time, spaceflight *itself* became traditionalised, too: George W. Bush, despite the backlashes of the Columbia disaster, said

that "America has ventured forth into space for the same reasons. We have undertaken space travel because the desire to explore and understand is part of our character" (GWB, #533). The traditionalised identity leads to traditionalised practices, in turn making any future undesirable, in which space is not conquered by American efforts.

When Obama, for example, talked about the moon landing, he claimed that it "wasn't just the greatest achievement in NASA's history - it was one of the greatest achievements in human history" (BO, #989ff.). This could have been said about almost every other incident in table 3. In the end, all historical references simply substantiate Americanness. Although some of the past heroes might have lived hundreds of years ago, and although also some of the incidents occurred just as long ago, the values they embodied endured through time. My first early conclusion here, is, that the historical references all in all convey three basic themes: ingenuity, progress, and courage. All of them are themes constructed to be deeply American. But it gets even more interesting when looking into what this historically grounded Americanness is again turned into. The specific figures and incidents achieve to turn an arbitrary selection of reinterpreted past events into a linear array of interrelated and interdependent moments - exactly what Commager called the construction of a 'usable past'. I posed before the question why history is such a central theme in the talks concerned with events up to several decades in the future. The answer is simple. The argumentative strategy, namely, is to turn a shared history into an inevitable legacy, which has to be fulfilled. From history emerges *destiny*, which is what the following section will examine.

7.6.4. Destiny: Expanding into the Future

"Space: the final frontier."
First words of the Star Trek title sequence

We do not know if Anderson had in mind specifically the US when originally writing his book in 1983, yet what he wrote about nationalism seems tailored for the United States: "It is the magic of nationalism to turn chance into *destiny*" (2006, p. 12, my emphasis). We have discussed before the meaning of the (manifest) destiny in the American context, and indeed, the national identity in the talks, that is derived from a plausible history, is in fact turned into a future- and action-oriented destiny. "Standing between these twin legacies, is a fitting place to look forward to the future" (GB, #373f.), found president George Bush, making clear his destiny-evoking temporal inferences, something that he is far from alone with, as I will show in the following.

Already president Kennedy claimed that "[t]his country was conquered by those who moved forward—and so will space" (JFK, #42f.), laying out the conceptual foundations of necessities for progress. George W. Bush, about 30 years later, took very much the same line, although relying more on naturalisation than on compulsion. He claimed that all people are 'dreaming of distant shores', and became quasi complemented by his son about 15 years later, who explained to the audience that

"[m]ankind is drawn to the heavens for the same reason we were once drawn into unknown lands and across the open sea" (GWB, #664f.). The common national character gets re-invoked, and action lineary derived. Without an exception, the presidents summon a national cultural "destiny to strive, to seek, to find" (GB, #452f.), which is rendered being an unquestionable, *natural* thing, since "the desire to explore and understand is part of our character" (GWB, #534f.). This general idea is sometimes specifically American, sometimes generally human, yet a *natural* trait either way. Even Nixon, proposing goals not as explorative as the other four presidents, drew on American author Oliver Wendell Holmes Senior (1809-1894) to convey the same message of historically and culturally grounded compulsory participation in international future spaceflight undertakings: "We must sail sometimes with the wind and sometimes against it, [...] but we must sail, and not drift, nor lie at anchor" (RN, #269f.).

All these instances connect past and future in a peculiar way; history is first tied to identity, then turned into an (American) legacy to be fulfilled, implying an inescapable *obligation* for American citizens. Underlying is always the same undisputed optimism that George Bush expressed in the simplest way: "[W]e have never lost pressing the limits of our frontiers" (GB, #391f.), "and must never stop seeking distant frontiers" (GB, #447). He willingly and completely denies any possible repercussions of expansionist behaviour and normalises it by traditionalising and romanticising it. Rocketry, then, is now merely the technological means to take up again the age-old theme of expansion, of 'pressing frontiers', justified by the national and manifest *destiny*. Numerous incidents, as shown, imply the explicit exceptionality of the US, and the implicit technocultural obligations that it entails; "Destiny is not a matter of chance; it is a matter of choice. It is not a thing to be waited for; it is a thing to be achieved" (GB, #412ff.) said George Bush, quoting William Jennings Bryan. Finally, introducing his talk in 2009, president Obama said, that "[h]ere at the Kennedy Space Center we are surrounded by monuments and milestones of those contributions" (BO, #727f.), constructing a simple, yet demanding self-understanding; just as the Americans before them, today's and future Americans must follow their inherited destiny, and produce monuments and milestones themselves - though, this time, in space.

As may have become clear already, it is also the plain language that is reminiscent of that within the manifest destiny, including the myth of the West and the Columbus myth, as for instance the first three talks included the metaphor to 'sail' in(to) space, revealing five overall occurrences. Nixon described spaceflight as a 'voyage', and in addition, George Bush wanted to "build new ships to carry man forward into the universe" (GB, #507f.), another striking connection to the American mythology that is carried by traditionalised images of discovery, conquering, and progress. Interesting is particularly Kennedy's use. "As we set sail we ask God's blessing on the most hazardous and dangerous and greatest adventure on which man has ever embarked" (JFK, #181f.), as the same could have been and may well be said about any explorative manned mission to follow. The destiny lives on, and will keep on living, even if Mars is reached by humans one day. The idea of the expansionist destiny is itself potentially infinitely expandable and tailored to give substance to the idea of 'carrying man forward into

the universe'. For political narratives, the past has to be constructed in 'careful, general detail', and so it is for the future. Conquering space is a goal specific enough to be followed by political and technoscientific action, yet unspecific enough to deny its worthwhileness with certainty. Through romance and simplicity, the future as well as the past become something incontestably.

To conclude this section, in the talks the supposed American identity is depicted as deeply exceptional, holding on to the overarching idea of American exceptionalism. This exceptional self-understanding and self-depiction are being carried by ideas of cultural homogeneity, and illustrated by American mythology, cornerstones of the inevitability that the resulting American destiny is laden with. Serving its rather specific purpose, in the talks, spaceflight is presented not only as appropriate, but as *unavoidable* technological means to live up to the inherited national destiny and desire to expand. It is the proper way to prove to others and itself, how America is exceptional.

Now, in the last sections we explored how four themes in the talks were apparent; national unity, national values, its historical grounding, and the inferred national destiny. All this does not only say something about the US, but also about how the US presidents position the country in the world, continually invoking the fifth common aspect I want to explore: hierarchy.

7.6.5. Hierarchy: America in the World

"It is the policy of the United States to seek and support the growth of democratic movements and institutions in every nation and culture, with the ultimate goal of ending tyranny in our world" is a quote of George W. Bush from his 2005 inauguration speech (Inaugural Address, 2005). However, it could probably have come from any other president as well, and quickly reveals a much-discussed part of American self-understanding: the tendency to develop a protective instinct out of the perceived cultural superiority that we have already discussed at length. This superior self-understanding, rooted in American exceptionalism, can be seen as one root of today's postcolonial circumstances. President Obama may illustrate the overarching postcolonial thinking. He first normalised a hierarchical mindset in Kennedy's era: "Americans were dumbfounded [by Sputnik]. The Soviets, it was perceived, had taken the lead in a race for which we were not yet fully prepared" (BO, #743f.). He confirmed the legitimate US expectations to, first, always be prepared for (technological) races, and, second, always lead them. Kennedy, in his talk during the politically heated space race, actually had one quote that induces cultural hierarchy and perceived superiority of values or motives in the most unambiguous way:

> *"We set sail on this new sea because there [are] new rights to be won, and they must be won and used for the progress of all people. For space science, like nuclear science and all technology, has no conscience of its own. Whether it will become a force for good or ill depends on man, and only if the United States occupies a position of preeminence*

> *can we help decide whether this new ocean will be a sea of peace or a new terrifying theater of war"* (JFK, #69ff.)

I have mentioned in the individual analysis the social constructivism enclosed in this quote, and it linking the social in an interesting way with the national, valuing different nations and cultures very dualistically; the good and the bad; the theatre of war and the sea of peace; the US and everyone else (although in Kennedy's situation, primarily the US and the Soviet Union). Even Nixon, although he reminded the audience of "the imperatives of universal brotherhood and global ecology" (RN, #262f.), and proposed "learning to think and act as guardians of one tiny blue and green island in the trackless oceans of the universe" (RN, #263f.), is far from being a perfect exception of hierarchical invocations. He still constructs an exceptional US, naturally spearheading others, as he concludes his talk stating that spaceflight is "a voyage the United States of America has led and still shall lead" (RN, #271f.). One might think that particularly Kennedy's above quote was heavily informed by the space race, and that, as time went on, rhetorics would become less hierarchy-inducing. And yet, the opposite is the case. Although perhaps a little subtler, George Bush for example took a very similar avenue, claiming that "[Meriwether and Lewis] made that journey in the spirit of discovery, [...] and to chart a way *for others to follow*" (GB, #530ff., my emphasis) - just what the US is to do in space. The exceptional self-image of the country, its history, and thus its future leads to a metaphor in which the imagined US community exercises power by taking decisions and actual steps *for* others, instead of *with* them. This very strong demarcation of who is good, rightful, and able, ultimately re-invokes the century-old idea of the US being 'the world's best hope'. The original idea of the world's best hope was reduced on the US political system. Today, however, it is *techno*political leadership, that is being technologically superior to all other nations in space, that becomes the driving force to speak of the world's best hope, and also the means to represent and embody that (not further defined) hope. As Kennedy said: "[O]nly if the United States occupies a position of pre-eminence can we help decide whether this new ocean will be a sea of peace or a new terrifying theater of war" (JFK, #73ff.). Moreover, it is not just that this unsolicited assumption of responsibility is seen as natural through superiority. It is also conveyed as undoubtedly *righteous*. The first humans on the moon, the Apollo 11 crew left a plaque there, which reads "Here men from the planet Earth first set foot upon the moon. July 1969 A.D. We came in peace *for all mankind*" (Boen, 2009, my emphasis). In the end, these words may be taken in the most literal way: Americans had come *to* the moon *for* the others, in their mind embodying "the best of all mankind" (JFK, #82f.).

All this, though, does not follow the classic colonial scheme. After all, in space there does not exist any culture to be oppressed by another, invading culture. To use Bush's inauguration talk; there is no 'tyranny' to end in space. The hierarchies are evoked and lived differently. They come to be not by exploiting, but by *excluding*. What the talks obviously declare a goal is the conquering and establishing of new *lebensraum* through making space habitable. NASA's goal is declared to make people to "live safely beyond the Earth for extended periods of time, ultimately in ways that are more sustainable and

even *indefinite*" (BO, #962f., my emphasis). This conquering yet does not happen in particularly democratic and equal ways. The US-focused spirit becomes very clear by Barack Obama's rationale to "not only extend humanity's reach in space [but to] strengthen America's leadership here on Earth" (BO, #964f.). With NASA as institutional, sociotechnical agent, the nation comes together under the stars and stripes, to do good for the world *through doing good for itself*. Or, as George Bush put it, to 'chart a way for others to follow' - instead of walking the path together. Hence, the (post-)colonialism can well be observed in both, earlier and current approaches to spaceflight, perhaps most vividly apparent in the American flag that was put in the moon's soil in 1969. Especially when taking into consideration that they had 'come for all mankind', as Armstrong said on the moon, the astronauts could have left there any other object (or flag), yet it was an American flag that they planted there. And what is a flag rammed into untouched soil a sign for, if not for at a least a discreet claim of ownership and thoughts of having conquered something for a specific nation? Obama, in his talk, asked why to do spaceflight at all, providing the answer himself; spaceflight is "not an afterthought in America's quest for a brighter future - it is an essential part of that quest" (BO, #771f.). What that 'quest' means in and for the community of states, however, is neglected, subordinated under the impetus of American progress.

Decades after colonialism was (officially, or formally) brought to an end, the enforcement of own values, narratives, and rationales on other cultures lives on, and the speeches introducing space US policies are, at times, very 'postcolonial moments' (see Verran, 2002). However, in spaceflight, the issue is not exactly exploitation, but exclusion. The US approach to spaceflight proposed in the talks is actively silencing voices of other nations and cultures. Although claiming democracy to be one seminal part of the US, and although the origin of the idea of 'exceptionalism' is even to be found in the American interpretation of democracy, democracy seems to lose value for the US once low earth orbit is left behind.

7.6.6. Trajectory: Of Logical Paths

We have discussed already before the plausible history that is constructed around the nation as such. The last common narrative within the talks that I want to touch upon is that of the stable and unalterable *trajectory*, which not only US spaceflight, but the entire US is supposedly following from its founding days on. Literally describing the history of NASA as a 'story', Obama announced that "today, I'd like to talk about the *next chapter* in this story" (BO, #773, my emphasis). Time itself, and all the sociotechnical developments taking place within them, add up to one stringent storyline, in which everything has its own, specific, very much established and adamant place. In terms of traceability and reasonableness, history and future become symmetric. While the past is thought to be merely the ideological origin, the present is upvalued to constitute the factual origin of all that is to happen after it, dictating the future in (careful, but general) detail. As George Bush put it: "We cannot take the next giant leap for mankind tomorrow unless we take a single step today" (GB, #461f.), leading every

president to the same desired future, namely one in which the US 'leads'. The planned 'ramping up of capabilities' "[i]s how we will ensure that our leadership in space is even stronger in this new century than it was in the last" (BO, #928f.). Through this thinking and argumentation, spaceflight is objectified and, as a dynamic system, very much simplified. Through ideas of trajectory, spaceflight becomes something plannable, and hence culture becomes plannable, controllable and expressible through future technological means. These means, however not existent yet, are constructed to be perfectly foreseeable.

Springing from this thinking, timeframes can be chosen exclusively to evoke urgency. Kennedy's goal, for example, was to send men to the moon "before the decade is out" (JFK, #162f.), flattening out any possible drawbacks in that given timeframe. Then, it worked. But even as time went on, and goals became more and more diverse, dependent on more and more factors, the timeframes and temporal reasonings remained simple, and very much plannable. Kennedy, for instance, went back far in time, and included several past developments to convey a logical future that was to be decided on *today*:

> *"Those who came before us made certain that this country rode the first waves of the industrial revolution, the first waves of modern invention, and the first wave of nuclear power, and this generation does not intend to founder in the backwash of the coming age of space"* (JFK, #54ff.)

For George Bush, 'entering a new century' is an actual reason to undertake something. Not having developed an explorational vehicle 'for almost 25 years' means that "it is time for America to take the next steps" (GB, #560). 'Entering the next century' is something to prepare for, chiefly by progressing in spaceflight technology. This way, very much constructed points in time, time spans and rhythmicities are turned into specific and logical reasons to take great investments, fuelled by thinking in terms of a traceable temporal trajectory. The basic temporal paradigm when introducing space policies may be expressed best by president Obama, who closed his speech with the following words: "[T]he question for us now is whether that was the beginning of something or the end of something. I choose to believe it was only the beginning" (BO, #992ff.). The now, embedded in past and future, is always the beginning, bearing the future, allowing it to gain momentum through simple ideological, temporal logic, and urgency.

These techniques now allow the speakers to construct very credible versions of the future, as objectifying time also includes objectifying and principally operationalising spaceflight as well as American values and the idea of being American. Current Americanness is the logical consequence of past Americanness, just as today's actions will ensure that future Americanness will not differ much from both. Technologically, this means, that time will necessarily lead to an "extended human presence on the moon" (GWB, #600), and to people "living and working in space" (GWB, #594). It also does not matter a lot, that space is inherently "hostile to human beings" (GWB, #569), as technology *will make* it habitable. In that, space is neither exactly something to fight against, nor is it actively cooperating. It

is similar to how Turner described aspects of the myth of the West: "at the frontier the environment is at first too strong for the man. He must accept the conditions which it furnishes, or perish" (as cited in Paul, 2014, p. 324). The alleged American characteristic to strive, adapt, and conquer, which is deeply rooted in national lore, is now projected into the future, into space. But in the temporal perceptions put forward in the talks, all this is something in that the US inherently cannot fail, partly through its very nature, partly because plans put forward are simply too conclusive to fail. Hence, in their proposals, all presidents to some extent fall victim to the fallacy of a controllable step-by-step logic. This is not to say that no goals set could be achieved, project Apollo and its moon landings impressively prove the opposite. However, perceiving spaceflight not as merely technical, but as a great *socio*technical endeavour, the technologised trajectories presented in the talks were very much prone to be defeated by reality right from the beginning.

In Felts work (2015), she writes of participants who "recalled past nuclear futures — an activity Brown and Michael aptly call 'retrospecting prospects'— in order to demonstrate the limited anticipatory capacity of policy makers and to argue for the legitimacy of questioning such developments" (Brown & Michaels, 2003, p. 106). At several moments in my material, the presidents are doing just that, or something very similar - they recall not only the past, but past futures, or *retrospecting prospects*. In contrast to Felt's participants, though, the president use this technique in a simplifying rather than in a complicating way. Instead of "acknowledging the complexity and uncertainty linked to any activity of 'futuring'" (Adam & Groves, 2007, p. 11), they did in fact conceptualise the future as "an empty space waiting to be filled with our desire, to be shaped, traded or formed according to rational plans and blueprints, holding the promise that it can be what we want it to be" (ibid.). There is no future without rockets, the presidents suppose, and there must not be a space filled with rockets without the US partaking.

8. Conquering Space: Conclusions

Jasanoff described one aim of STS as "[b]ringing social thickness and complexity back into the appreciation of technological systems" (2015a, p. 2). While the part of bringing it 'back' may be discussed, my work shares that greater goal of acknowledging the complexity of our world, rather than gullibly believing in eventual simplicity. In the study, I could demonstrate how spaceflight is far from a merely technical endeavour. It is very much guided and fuelled by political and social rationales, together producing both the technical and social realities tied to spaceflight. Thus, on the most general level, I showed how a divide between the technological and the sociocultural is not only useless but may very much be counterproductive when trying to understand developments in both of them. The realms are deeply interwoven and can only be understood when looking at them *together*. With this study, I highlighted how the presidents embed the 'super technology' systems involved in spaceflight within the social, subtly invoking reciprocal relationships of reinforcement: spaceflight serves to prove higher, very

sociocultural conditions, and, vice versa, sociocultural beliefs serve to reason technological progress in spaceflight. These findings very much support what for example Hecht found out about French identity making. Whereas she looked at nuclear technologies, in the US it was spaceflight that was "establish[ed] as an arena for defining [the nation's] future and identity" (Hecht, 2009, p. 331).

In contributing to the sociotechnical imaginary of conquering space, the study showed how the presidents, aware of the emotional power of language, were using a strategic language of power. Knowing the position they were speaking from, and the influence their words could have, they carefully framed spaceflight in very specific ways, embedding it in carefully constructed and very much socially informed narratives; each one in their own, yet all grounded on the same conceptual root: an inherited, historically verifiable, cultural exceptionalism. In this last chapter, I will summarise and further clarify what my analysis has revealed. To that end, I will divide it into three parts. The first part will discuss the technocultural identity of the US as presented in the talks. Building on that, the second section will be concerned with the actual sociotechnical imaginary of conquering space. I will close this work with some short reflections, additional thoughts and implications.

8.1. Technologies and Nations: Technocultural Identities

"From out there on the moon, international politics looks so petty.
You want to grab a politician by the scruff of the neck and
drag him a quarter of a million miles out and say,
'Look at that, you son of a bitch.'"
Edgar Mitchell, Apollo 14 astronaut (Edgar Mitchell's Strange Voyage, 1974)

Following Yuval-Davis (2006), identities eventually *are* narratives, and throughout the speeches American identity is equally evoked and rehearsed narratively. It becomes illustrated through little stories and past heroes, all part of the carefully crafted greater narrative of the US' place and meaning in space and time. This one traceable as well as projectable America includes and supposedly describes all American citizens of the past, present, and future, as the country's history becomes rendered into one steady, linear narrative itself. I have described or characterised the US as 'US-tronaut' before in a quite condensed manner. 'It' consisted of words and expressions that have been explicitly used in the talks. I now want to take a step back and see what this US-tronaut, the presidentially crafted version of American identity, can tell us about the overarching US American *technocultural identity*. In other words: How is the American tied to the technological? To understand that, we shall first quickly recapitulate what was found out about the depiction of an American identity.

8.1.1. America

On the most general level, I found the presidents repeatedly drawing on a shared national history that yields a shared national identity. Drawing on history supposedly proves that being *American* is to be put synonymous with being *exceptional*. To effectively let the conquest of space appear as national

necessity, hundreds of millions of people want to be united and mobilised. Subtly, the existence of an imagined community gets declared. The evocation of an imagined community and the confirmation of American exceptionalism is one great cornerstone of the American president's version of the sociotechnical imaginary of conquering space. The US population is constructed as clear-cut community, exactly what Anderson (2006) titled an imagined community. It is not a real community of people knowing each other, but a loose number of people who draw on the same ideological and historical resources. In this case, the presidents draw on different myths (Columbus, the West, Apollo) and themes (discovery, unity, courage, ingenuity), many of them already being widely accepted proofs for Americanness (see my characterisation in section 7.6.2.). The myths, amplified by a number of historical quotes and figures (see table 3 and 4) provide context for and constitute the 'repeated assembly of a cultural model' (see Šabanović, 2014). The cultural model, traversed by these classic themes evoked in the inside worlds of the talks, justifies the US' universal cultural validity. In that, however, it is striking how not necessarily the same, but very comparable cultural resources are drawn upon, and how, as a result, basically convertible lines of arguments and characterisations of the US emerge. Together with the heredity and cultural continuity that is evoked through historical references, the American technoscientific identity becomes one of eternal, natural, and hence inevitable, progress. In the talks, the US inherited urge for progress is the most basic tenet and reason that individuals and collectives likewise have to consider facing technoscientific decisions. Accompanied with courage and logical ingenuity, progress is both, reason and outcome of the cultural superiority that dominates the technoscientific self-representation in the talks introducing new space policies.

It is not only those presidents I focused on that refer to myths when it comes to spaceflight technology, who define the US' technoscientific identity through carefully selected past incidents. For example, in a nationally broadcasted address just hours after the Challenger disaster, Ronald Reagan claimed that "[i]n his lifetime the great frontiers were the oceans, and an historian later said, 'He lived by the sea, died on it, and was buried in it.' Well, today we can say of the Challenger crew: Their dedication was, like Drake's, complete" (as quoted by Garber, 2004). Just as Kennedy's reference, George Mallory, Drake was an Englishman, yet is chosen for the same reasons: it fits American values. Additionally, 'dedication', here, is to be understood in two accounts: first, a supposed personal dedication towards sailing and discovering, and second, dedication towards the expansion of English territory and sphere of influence. Drake, as well, is someone who 'pushed frontiers' via the then most advanced technological means of transportation (for a detailed analysis of this Reagan address see Stuckey, 2006). As legitimate successors of the great adventurers, astronauts are constructed to be living a life that could not be more American. They embody a more contemporary version of those once moving west, into a then unsure but eventually (and supposedly naturally) prosperous future.

The US technoscientific identity is reflected in past and present technology. By nature of the material, we were able to follow the repeated assembly of a specific cultural model and how it gets tied

to a specific technology. Other than Šabanović, however, this case followed actors who are central for the technological development as well as for its societal embedding (see Šabanović, 2014). Technology and inventions (see table 3) become elevated from mere objects to mythically reasoned, traditionally grounded, and almost magical things. American inventions, and others who fit the criteria as well, become carriers of values and basic ideas, they let ideals materialise and, literally, travel through space and time.

8.1.2. Developments

Despite being given over a time span of several decades, the five talks can be seen as one continuing, convergent argumentation. The general characterisation of the US and hence the imagined future endures. However, I want to point out some differences, or rather, developments, in this ongoing presidential argumentation for spaceflight and conquering space. Namely, taking a step back, it becomes clear how external, politico-societal circumstances serve as interpretive filter when situating the traditional(ised) knowledge collectively produced over the past decades/centuries.

Kennedy's rhetoric was inspired greatly by the Cold War, being very drastic and dualistic. He needed to emotionally charge the topic of spaceflight to use it as political statement. The world, for him, is at crossroads and in bad need of the US as saviour and hero. Nixon's approach and rhetoric, in contrast, made clear that the US 'won' the space race, a circumstance that automatically dismissed an American-ensured world peace as primary reason to keep conquering space in a similarly explorational manner. Instead, he suggested a more practical, non-explorative, and less symbolic approach. The Cold War still influenced technopolitical decision making, but specifically the continuing war in Vietnam, which had almost led to budget cuts in Apollo already, made money a scarce resource. Eventually, there was no immediate narrative like the space race in which further Apollo-like investments could be embedded in and justified with. The flag on the moon was planted; in the early 1970s, space, so it felt, was indeed conquered by the US. Fifteen years onwards, George Bush considered the US 'prosperous and at peace' - a strange assessment to be made, as it was still somewhat disconnected from global political, Cold War informed, circumstances. His strikingly romantic account was even more surprising as NASA was still emotionally recovering from the Challenger accident and is hence more to be seen as a rhetoric feat of simplistic romanticism in actual times of doubt and crisis. George W. Bush was then influenced by two catastrophic events, the attacks on the World Trade Center and the disintegration of the Challenger shuttle, and, similarly to his father inferred cultural obligation and stirred up hope for a better world, which is to be achieved by spaceflight technology. A few years later, Barack Obama had to face a devastating economic crisis, which he also instrumentalised by particularly stressing NASA's *cultural* worth and value, as well as evoking general overhauls - in society, politics, *and* spaceflight. Thus, the political situations naturally differed, but crises as well as suggested states of 'prosperity and peace' are reflected and turned into arguments for technoscientific decision making. Symbolically, spaceflight gives the nation a direction, either out of the crisis, and/or further into an (even) brighter future.

These observations strongly point at the significance of co-productionist principles. Science, in this case spaceflight, is inherently part of politics and culture, just as spaceflight works as politicum and cultural carrier, altering the political landscapes and cultural self-understanding; technoscientific entanglements again prove to be always multilateral. Due to the US' technoscientific identity, and as proof for this very identity, the sociotechnical solution for all situations stays the same: conquering space.

8.1.3. Rockets

I have worked with the presumption, that especially ex*pansive* spaceflight is also quite ex*pensive*, and that it is expensive even for the "richest nation on earth" (GB, #387). Hence, the general assumption, here, is, that spaceflight cannot be done just for the sake of it. It can also only hardly be justified as "a [general] spiritual quest in the broadest sense, one promising a revitalization of [all] humanity and a rebirth of hope", as former astronaut Buzz Aldrin and author Wyn Wachhorst (2004, p. 38) described it in the scholarly journal *Mechanical Engineering*. However, it is being done nevertheless, because for the US and NASA, rockets afford to embody a vivid technoscientific expression of an exceptionalist, superior and singular US American identity. Rockets, for the presidents, are constructed as the culmination of American technoscientific ingenuity and hence cultural superiority. The urge to express and prove the own identity, the values ascribed to the imagined community, is reason and benefit enough to invest the monies necessary. It leaves the country, government and citizens, with no alternative but to favour the conquest of space.

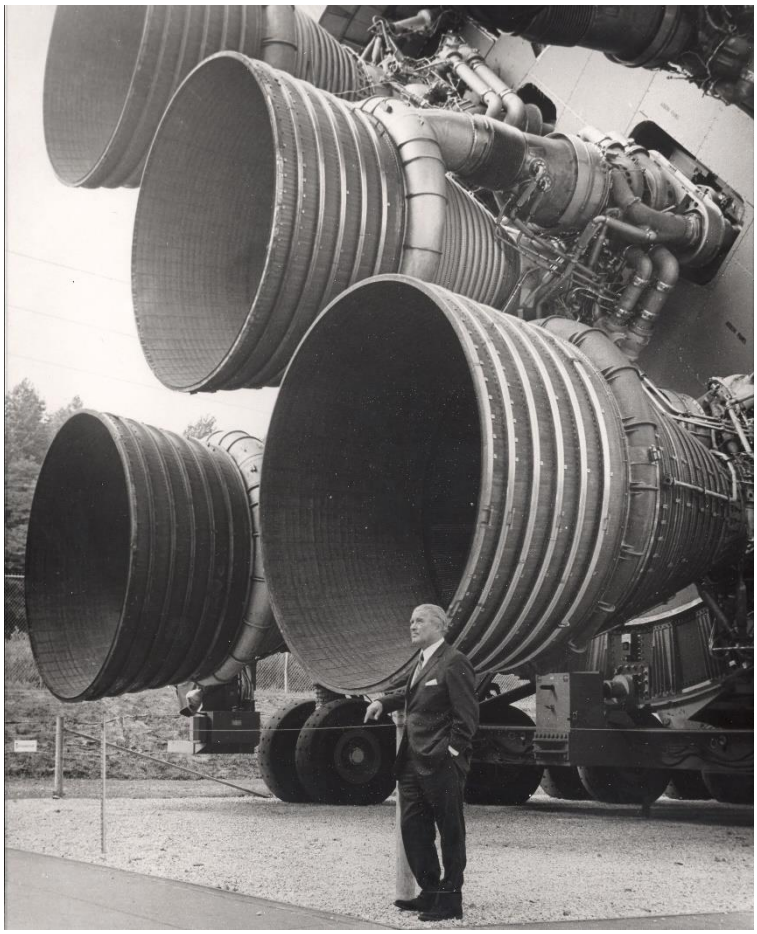

Figure 6: Aerospace engineer Wernher von Braun in front of the Saturn V. NASA, 2004.

The analysis spanning over several decades nicely showed the "continually rearticulated awareness of order in social life [...] and a resulting commitment to that order's coherence and continuity" (Jasanoff, 2015a, p. 26). The American society is ordered around a desired future in which space is conquered, in which living in space is somewhat normal (note that I will look at the problems

of the term ‘conquering’ in section 8.2.2.). In their talks, the presidents do not simply evoke the general American (technoscientific) identity, but they closely tie it to spaceflight and rocketry. Jordan already noted, that the “symbolic flagship of a lunar landing depended as much on rhetorical as on technological ingenuity” (Jordan, 2003, p. 211), which can be said just as much on all other missions and goals proposed in the talks of this analysis. Rockets, thus, first rhetorically, then factually, become a metaphor for America itself. Their boosters also ‘boost’ US American cultural self-confidence. In a sense, the noun also turns into an adjective; spaceflight is typically American, but America also *is spaceflight*. In that, practical spaceflight may be seen to be represented on three levels: a technological (rockets), an organisational (NASA), and an iconical (astronauts), all of them being narratively rooted in the US culture and its ideals. Obama called Apollo 11, which includes technology, astronauts and NASA, “one of the greatest achievements in human history” (BO, #990f.). The wording ‘achievement’ alone is interesting here, because even compared to other (unmanned) missions Apollo effectively did not produce much. Although some rocks were collected, and some measurements taken, in all argumentations the scientific part of the mission seldomly made the central part of the moon landing (see chapter 5). It is the mere *achievement* of it, and hence the confirmation of the mere *capability,* the proof of an identity standing the test of time.

8.2. Columbus and the Mars Mission: Sociotechnical Imaginaries

“It’s not where you take things from - it’s where you take them to.”
Jean-Luc Godard (*1930), film director

8.2.1 Origin & Embedding

We will now finally discuss concisely the specificities of the imaginary, and particularly how the talks embed rockets, that is spaceflight, in society. To begin with, the real origins of an imaginary are notoriously difficult to identify, but Jasanoff herself finds that "[t]echnological innovation often follows on the heels of science fiction” (2015a, p. 1). I have briefly shown above, how this may well be applicable on spaceflight, too. Early experiments were not taken quite seriously, but only when the possibility of rocketry, of actually entering and one day possibly conquering space, found its way in popular culture, it was finally taken as indeed a technological possibility (see Kirby, 2010). We may conceive of these processes already as some early and non-institutional ways of embedding. The eventual institutional embedding of the imaginary in the US, however, may be seen in the founding date of NASA in 1957, factually the starting point of this study.

Jasanoff describes “imagining as a social practice” (2015a, p. 322f.), and the talks may be seen as socially informed imagining of both, pasts and futures. The president’s talks are socially informed practices in two respects. First, through giving a speech to which audiences are actively listening and reacting, and, second, through how the technological decisions to be made are framed, namely, as we have seen, as very much socially/culturally grounded. The speakers all invite their audiences to imagine

worlds *with the* speaker. Particularly in the context of spaceflight it may really be described vividly as a "saga of an imagined and invented world" (Jasanoff, 2015a, p. 24). Inherently, defined as "visions of desirable futures" (Jasanoff, 2015a, p. 4), sociotechnical imaginaries are a way of world making (see Goodman, 1978), and future making, practices laying the conceptual groundwork for the futures collectively imagined. Are current and future worlds imagined in peaceful ways? Are they endangered? Both is apparent in the speeches I analysed here. Kennedy's future world is in great danger, threatened by a clear-cut enemy, although a peaceful (American dominated) future is possible. Especially George Bush's world, in contrast, is imagined peaceful and idyllic. In principle, however, the entire future, either desirable or undesirable, is heavily characterised, if not dependent, by the technological and manned conquest of space. Most basically, this is the way rockets are embedded in society and its future, the way society gets conceptually ordered. The solution to any *desirable* imagination of tomorrow, however, is, that the US must invest in spaceflight, and take over technological leadership. My point, as I have stated above, now, is, that we are still in the phase of (institutional) embedding. We have not yet seen a phase of "complete and radical transformation" (Jasanoff, 2015b, p. 330) regarding the general approach to spaceflight and the idea to 'conquer space'. The talks may thus be seen as what Paul (2014) called a 'ritualistic enactment' of exceptionalism, ideologically sustaining the imaginary, smoothly (re-) embedding it in societal contexts. But what exactly is constructed through the imaginary, what underlies the imaginary, and what does it stand for? In other words: What is the imaginary actually embedded in?

Felt (2015) showed in her investigation on the relationship of Austrianness and the nuclear, how the flexibility of an existing ideological foundation could be exploited to reify the very foundation itself. As Jasanoff concluded: "Embedding also occurs through [...] remembered pasts and desired futures" (2015b, p. 328). Throughout the decades that this study covered, the master narrative of American exceptionalism, rooted in pasts remembered together, was found to be perfectly supportive of the imaginary of conquering space. In Felt's study, the Austrian people achieved to "becom[e] distinctive as a nation precisely by refusing to embrace" (Felt, 2015, p. 104), whereas in in this study, the presidents achieve to promote the nation's distinctiveness by warmly embracing a technology - a way of embedding spaceflight clearly informed by US American self-understanding. Similarly, as "[t]he Chinese government [which] draws on its own long history of state-sponsored rice cultivation when it buys into a genomic vision of plant breeding" (Jasanoff, 2015b, p. 327), the US government draws on its (constructed) own long history of exceptionalism, courage, and discovery, when it promotes explorational spaceflight, that is the idea of conquering space. The socio*technical* imaginary hence is at the same time very much a socio*cultural* imaginary. Technology is one tangible means to express the culture's identity, and through its capabilities, position the nation and its united technoculture within a dynamic political world.

The 'collective remembering' in order to make sense of the future to be realised, that Jasanoff stated to be central for the phase of embedding, happens - unexceptionally - in all talks, achieving to

arrive at a 'usable past'. This collectively remembered and usable past is fuelled by myths, past stories, and its heroes. They allow the presidents to depict spaceflight as a modern interpretation of the myth of the West, with the most basic goal to conquer land and expand. As Obama said about the idea of the moon as destination: "I just have to say pretty bluntly here: We've been there before. Buzz [Aldrin] has been there. There's a lot more of space to explore, and a lot more to learn when we do" (BO, #922ff.). The idea of conquering space hence is to be seen as a reinterpretation and narrative sequel of ancient American myths. When the spaceflight movies of the 1920s and 1930s were often simply about *surviving* a visit in space, institutional efforts from the 1960s on achieve the general idea of going to space to be translated in completely new, and yet old, cultural contexts. The nation as such becomes one stringent narrative, that has always pointed at the conquest of space. The cultural trajectory began centuries ago, and it leads to space, achieving spaceflight, in essence, to be traditionalised. Considering the 'politics of discovery' here, is important: Columbus, for example, believed himself to be "an extension and an expression of the Spanish royal authority that he simply assumes" (Paul, 2014, p. 47). Spaceflight in a sense is the next logical step that has to follow if America is to stay true to its history and therefore to their mythically derived unique character, that is superior and singular. At heart, the American presidents in their talks claim that the nation owes explorational spaceflight to the history and its figures. Casually put, the United States owe Christopher Columbus a mission to Mars. And, indeed interestingly, it seems to be not only those presidents I could retrieve talks of, that refer to history and myths when it comes to spaceflight and identity. We have seen Ronald Reagan's account, and also Donald Trump already went down that narrative avenue (The White House, 2017).

Imaginaries, or the technologies that they entail, are said to be able to "generate economic or social value" (Jasanoff, 2015b, p. 327) when they enter the stage of embedding. Considering the risk and costs that conquering space brings with it, the necessary explorative manned spaceflight seems to generate primarily social value, in that it proves American ways and is tried to be constructed as something that allows cultural belonging through evoking a supposed cultural heredity. Only who supports spaceflight can be truly American. These findings also correspond with those of similar studies in other technological fields. As Burri has shown, "American policy documents assessed the presumed benefits of nanotechnology more highly than possible negative consequences and put great[...] emphasis on achieving economic and political leadership" (Burri in Jasanoff, 2015, p. 334). In the talks that I analysed, presidents often promise both, economic and social benefits, but at least partially in remarkably nebulous ways: "We may discover resources on the moon or Mars that will boggle the imagination, that will test our limits to dream" (GWB, #627ff.). As in Burri's analysis, claiming leadership is another strong driving force utilised in American spaceflight.

8.2.2. Resistance & Extension

But let us turn towards a (supposed) stage of resistance. After all, sending people to space may be happening regularly nowadays, but launching rockets still is not a 'normal' thing. Not yet official

numbers suggest that, internationally, of about 100 rocket launches in 2018, three have been failures or partial failures, including one manned Russian rocket. The numbers of 2017 are even worse. Every launch still is to be described as experimental, and explorative manned missions have not been taking place since the Apollo days at all. While acknowledging the problem of defining 'conquest', one could also argue that resistance against the imaginary of conquering space is taking place since the end of Apollo through insufficient funding. In that case, once government institutions achieve missions to Mars, the imaginary may also be taken as in the state of extension. Obviously, stages of imaginaries can best, or even *only*, be described in hindsight, so perhaps only time can tell. However, until now, no greater and specific societal act of resistance against spaceflight or expansion to the planets took place. The only 'resistance' are potentially expressed through the allocation of budgets that cannot afford for manned missions 'to worlds beyond our own'.

Hence, the question of resistance also depends on one's definition of 'conquering'. Does a continuous presence in low earth orbit equal the conquest of space? Or can you only speak of a culture/species having conquered space when it engages in interplanetary endeavours? Do colonies have to be founded perhaps? If conquering space means colonising it, then president Nixon may actually be seen as representative of a stage of resistance against the imaginary. Although he also funded NASA intensively, he did it differently, as did out of necessity some of his other successors. Especially the Challenger and Columbia incidents may be seen as moments in which resistance could have come about, yet did not. Rocketry, in both instances, was embedded well enough in different cultural contexts, so that the exceptionally strong narrative it was weaved in, and the remarkably strong political weight it was given *through* this narrative embedding, did not allow for fundamentally doubting the imaginary of conquering space. There may have been *discussions* along the way, yet *resistance* almost always happened out of necessity, and was of financial rather than principally ideological nature. Investments in the scale of Apollo have not been widely neglected because of what it *is*, what it would *be*, but because of what it would *cost*. Resistance is hence only exerted against very specific former plans, not against the idea, and always informed by current political, social, and financial circumstances. One pivotal contribution of the presidents may thus be the avoidance of serious resistance against the sociotechnical imaginary of conquering space through their continuous exceptional embedding work. They have turned every situation and crisis, in spaceflight and beyond, into a reason to move on with following the essentially same goal by essentially the same means. This was achieved by making acts that would rather be located in the stage of embedding, sound like acts located in extension. Obama said that, "we can't just keep on doing the same old things that we've been doing and thinking that somehow is going to get us to where we want to go" (BO, #887ff.), but, with a certain amount of reserve, they did in fact keep on doing 'the same old things'. The seamless embedding of the idea of conquering space into national mythology and history prevents the US and NASA from essentially new approaches to spaceflight, and especially from more cooperative steps in actually conquering space. All this may be equally true for

other space agencies and even private companies, that also aim at being 'the world's best hope', yet this is beyond the scope of this study. Current spaceflight is still in the phase of embedding, primarily because structural resistance is not permitted. Following Jasanoff, "it is institutions of governance that operate as some of the most effective agents of extension" (Jasanoff, 2015b, p. 333), meaning that actual extension of the imaginary of conquering space is dependent of the narratives NASA and the government will employ in the future.

8.3. Implications, Thoughts, Next Steps

"Unus pro omnibus, omnes pro uno."
Alexandre Dumas in *The Three Musketeers*

There are still some things left to say, some implications that I see in the study, and some things to reflect upon. This last section will be dedicated to those additional aspects. First, social science work, as probably all scientific work, has something fractal-esque to it: regardless of how far one zooms in, never will the outcome be perfectly well-rounded and absolutely terminal. There will always be something to 'zoom in' on even closer. Probably, there never is *the* one eventual core to be identified and described, and the same is true for my analysis. There are infinite ways to tackle the material I chose; my way is just one of them. I left out some aspects and focused on others. The material may be tackled in the most various ways, with numerous conceptual foundations, each for sure having its own *raison d'être*. I could have focused on Asdal's and Moser's 'contexting', on Commager's 'usable pasts', or Goodman's holistic 'world making', on 'retrospecting prospects' and others, as each of them certainly would have generated different, yet equally interesting and valid insights. I stressed some points and questions, while not bringing up others, as obvious they might be. Hence, all in all, this study does not claim to have found the 'truth' about American spaceflight, and not even about the talks. While acknowledging the insights it generated, at the same time it also highlighted the great potential for even more research on this and related topics.

As part of that, much more theorising is possible in future studies. What is conquering? How is the space conceptualised? Also, what power structures become apparent and how? How are metaphors and other rhetorical means exactly used? However, I believe some follow-up studies to be particularly interesting to consider. Especially having mind that, just as this study showed, "the centrality of science and technology in the making and stabilizing of collectives" (Jasanoff, 2015a, p. 5), opens up similar questions about different cultures. How are similar processes observable in other countries and cultures? Obviously, Russia would serve as fruitful site to study, but just as interesting are emerging spaceflight nations, primarily India and China. What kind of framing is taking place there? Does it differ from the US framing? Additionally, comparative studies with the European space agency ESA are promising, as ESA unites 22 European states within one agency - purely nationalist agendas as pushed through by the US are barely possible here. It is also worth noting that I have touched upon differences between the

talks in terms of language, rationales, and political/cultural circumstances, yet only so far as it was necessary for my overall argument, which in the end rather focused on the similarities. There are certainly more nuanced ways to investigate differences, and other interesting arguments to make based on that, differences that may also be fruitful in cross-cultural and comparative studies. Related to that, and especially due to the specific foci I had, this study's goal was never to analyse eventual public uptake and sense-making with what is politically communicated in the talks. That also implies that *resistance* against the imaginary put forward is out of the scope of this study. Identifying and studying it through the lens of sociotechnical imaginaries, though, can be immensely rewarding, as several scholars have shown before (not only Felt, but also Moon and Barker, all in Jasanoff & Kim, 2015). Future research may also turn towards this aspect of (not only) American spaceflight.

All these things may just as well, in the form of comparative studies, be conducted for other sets of (super) technologies. How are (national) narratives employed in central accounts of realms like biotech, food production, mobility, information technology, (renewable) energy (see Hecht, 2009), health, and perhaps particularly technologies of (national) defence and security. In any case, the concept of the sociotechnical imaginary, with the overarching idea of co-production promises valuable insights. Finally, the general role of science and technology in the stabilising of collectives is an inherently infinite process. We will not experience the 'end of history' (see Fukuyama, 1989) until we experience the end of society (see Kuzmics & Mörth, 1991). The topic that I investigated here, and those I just suggested, will stay just as fruitful over time as they are today.

Furthermore, Neil Armstrong took his 'giant leap' on the moon, Columbus may be said to have taken his somewhere in the Caribbean. Someone will probably take another giant leap on Mars one day. Still, the question remains: Why conquering space at all? 'Because it is there' may be seen as an argument, but one that calls for a wider societal consent. Hence, it should be investigated why and how spaceflight achieves to spark that much imagination, and what this imagination and inspiration really entails from a socio-psychological perspective, and how that knowledge is getting situated in time and society. Here, rather than investigating documents, more fieldwork seems sensible, for instance interviewing those who enjoy the newly emerging online services offered by state agencies. Do their narratives resemble those put forward in politics, or do they differ? Are identical versions of 'desirable futures' apparent?

Finally, although not being included in the study, current US president Donald Trump seems to follow the same ideological path his predecessors paved:

> *"In that magnificent moment [of the 1969 moon landing], the American astronaut embodied the incredible spirit of America: the confidence of a cowboy, the skill of a fighter pilot, the ambition of a scientist, and the courage of a true, true, brilliant, tough warrior. They bounded fearlessly into the unknown to be there first. They did the impossible because they knew that, together,*

> *there is absolutely nothing Americans can't do. When we get together, there's nobody even close."* (The White House, 2018)

Trump, however, in the same remark on his Space Policy Directive 3, announced something else. Namely, the foundation of a 'Space Force', intended as the 'the sixth branch of the armed forces', somewhat challenging article IV of the United Nations Treaties and Principles on Outer Space (see United Nations, 2002), which forbids the placing of weapons of mass destruction in outer space or on celestial bodies (see also Bourbonnière & Lee, 2008). It was perhaps the most officially announced step towards a weaponised space and is reviving aspects of the imaginary of conquering space that have been apparent lastly in immediate times of the Cold War. In light of that, we need new and more fundamental discourses about spaceflight, and discourses about the sociotechnical imaginaries that spaceflight, and conquering space, is part of. That is, we need a discourse that does not only ask about the fundamental *what*, the *where* and the technical *hows*, but about the general *whys*, as well as the structural and systemic *hows*. If the conquering of space is to follow globally democratic and pacific ideals, spaceflight will have to be reconsidered and put into new contexts. In a nutshell, also spaceflight as super technology needs to become a 'technology of humility', that is, a technology regarding which we can sufficiently answer the following four fundamental questions: "what is the purpose [of the technology]; who will be hurt; who benefits; and how can we know?" (Jasanoff, 2003, p. 240). Only then, it may be justifiable, and only possible even, to explore space simply 'because it is there'.

Figure 7: Astronaut Edgar D. Mitchell planting the American flag on the moon during the Apollo 14 mission. NASA, 1971.

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10. Abstracts

English Abstract

If you want to break down this work to a – indeed abridging – message, it would probably be this: the implementation of spaceflight programmes, and especially of manned, explorative spaceflight, requires much more than overcoming challenges of purely technological nature. That is because, just like any other technology, spaceflight is deeply intertwined with socio-political and socio-cultural processes. Extensively analysing the US-American narratives activated in US-American spaceflight politics, this study examines just this inherent entanglement of the social with the technical. The conceptual starting point is the idea of the *sociotechnical imaginary* (see Jasanoff & Kim, 2015), which enables one to examine the narrative *embedding* of technology in social contexts. This work also builds on additional literature taken from the American as well as the postcolonial studies.

In the analysis of five talks delivered by five different American presidents, I basically identify primarily nationally oriented narratives, within which the existence of one very specific and timeless US American culture is being assumed, oftentimes nourished by American myths and folklore. The analysis shines a light on how these narratives over decades stay quite congruent. Over the time span the study covers, we can see how the institutionally communicated version of "the" US culture serves as qualitative foundation for US politics. The narrative footing, constituted by unity, exceptionality, history, destiny, hierarchy, and trajectory, allows political actors to use emotion in order to rationalise, legitimise, over time naturalise and ultimately render their actions/spaceflight an inevitable end in itself. Or, as the title already suggests: since NASA was founded, the sociocultural and narrative resources of American presidents make (explorative) spaceflight appear in a way, that it seems like the United States of America owe Christopher Columbus a mission to Mars.

Keywords: spaceflight; narratives; politics; nation states; United States of America

German Abstract

Wenn man diese Arbeit auf eine – sicherlich stark verkürzende – Botschaft herunterbrechen möchte, dann wäre es wohl diese: Die Implementierung von Raumfahrtprogrammen, und insbesondere von bemannter, explorativer Raumfahrt, erfordert weit mehr als die Bewältigung von Herausforderungen rein technologischer Natur. Denn wie jede (Super-)Technologie ist auch Raumfahrt tief in sozialpolitische und -kulturelle Prozesse integriert. Die vorliegende Arbeit setzt sich nun anhand einer ausführlichen Analyse von im US amerikanischen Politikbetrieb aktivierten Narrative eben anhand des Beispiels Raumfahrt mit dem Prozess der Verflechtung des Technologischen mit des Sozialen auseinander. Genutzt wird hierzu das Konzept des „Sociotechnical Imaginary", mithilfe dessen die narrative „Einbettung" von Technologie in soziokulturelle Kontexte (nach Jasanoff & Kim, 2015) untersucht und nachvollzogen werden kann. Zudem werden auch theoretische Grundlagen aus den Amerika-Studien herangezogen und in dem Zuge auch postkolonialistische Aspekte beleuchtet.

In der Analyse von fünf Reden fünf verschiedener US-Präsidenten wurden grundsätzlich vor allem national ausgerichtete Narrative identifiziert, innerhalb derer das Vorhandensein einer sehr spezifischen und zeitlosen US-Kultur angenommen wird, oftmals getragen von „klassischen" amerikanischen Mythen und amerikanischer Folklore. Die Analyse zeigt auf, wie kongruent die in den Reden gezeichneten Bilder der US-Kultur über Jahrzehnte bleiben. Über den gesamten Zeitraum kann so die institutionell kommunizierte Version „der" amerikanischen Kultur als qualitative Grundlage für Raumfahrt und damit für US-Politik dienen. Das narrative Fundament, bestehend u.a. aus Einheit, Exzeptionalität, Geschichte, Schicksal, Hierarchie und einer in sich logischen Zeitschiene, erlaubt es politischen Akteuren, ihre Handlungen/Raumfahrt im Grunde über Emotion zu rationalisieren, zu legitimieren, im Laufe der Zeit zu naturalisieren und letztendlich aus gesamtgesellschaftlicher Sicht quasi zum unangreifbaren Selbstzweck zu machen. Oder, wie der Titel bereits sagt: Die narrativen bzw. soziokulturellen Ressourcen amerikanischer Präsidenten präsentieren (explorative) Raumfahrt seit

Gründung der NASA auf eine Art und Weise, dass es scheint, als schuldeten die Vereinigten Staaten von Amerika Christoph Columbus eine Mission zum Mars.

Keywords: Raumfahrt; Narrative; Politik; Nationalstaaten; Vereinigte Staaten von Amerika

- *The End* -