

Max Weber's Theory of Rationality and the Messaging of Soviet and American Cold War Space Programs

Lama Mansour Bandar Abdulaziz Al-Saud

**Dissertation submitted in partial fulfilment of a Master of Arts in Cultural Astronomy
University of Wales Trinity Saint David
2023**



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Acknowledgements

In the name of Allah, the Most Merciful, whose words have always been my tether:

‘He it is Who has made for you the stars, that you might be guided by them amid the darkness of land and Sea’ (*sūrat l-an‘ām*, 6:97).¹

Finding my way in this academic journey has been like navigating by the night sky; I would have been lost without the light of many:

To my ancestors, the natives of the Arabian Peninsula, for whom the heavens brought direction, divine knowledge, and a canvas for storytelling;

To Dr. Nicholas Campion, who lit the way with his lectures, books and gracious guidance—it is because of people like him that the world still feels like a wondrous magical place;

To the faculty of the Sophia Centre, specifically Drs. Clynes, Gunzburg, Brady, and Taylor—it has been an honour to have been mentored by such inspiring women in the field;

To my friends Sarah, Tamara, Abeer, Haya, Ali, and Omar who believe in me no matter how singular my thoughts may seem;

To my cousins Mish and Noufy who have cheered me on selflessly throughout these past two years;

To my sister Dimah who has continuously supported and encouraged all my curious endeavours without speculation;

To Dodo, who has taken care of me relentlessly and who has shaped the person I am today by nurturing my curiosity with books and stories from a very young age;

And to Edmunds, thank you for being the pole star throughout my academic journey thus far—I simply could not have done this without you.

I save my warmest love and appreciation for my parents:

To my father, my hero, from whom I’ve inherited my love for the skies and a fearless outlook towards a future where one can dream of a place far above the clouds;

And my mother, my greatest role model, from whom I’ve inherited a deep understanding and respect for the past, and the essential role culture plays in any evolving society.

¹ *The Study Qur’an: A New Translation and Commentary*, translated by Seyyed Hossein Nasr (New York: HarperOne, 2015), p. 376.

Abstract

By measuring intentionality through social action, Weber's Theory of Rationality can reveal the motivations behind the message. Examining the messaging of Cold War space programs through this theoretical framework can reveal hidden layers of complexity, adding richness to our understanding of their meanings. The Soviet and American manned missions culminating in Project Apollo stressed ideology over exploration; spaceflight was a delivery mechanism for state-sponsored propaganda. However, NASA's post-Apollo, un-manned scientific missions became opportunities to find meaning in the cosmos; they sought knowledge of the universe and offered some in return for audiences they could only hypothesize.

The superpower space race was conducted in a context of political and existential threat that manifested in the messaging. Using rhetoric to disguise their intentions, their messaging provides layers of meaning concealed by nationalistic narratives. Weber's model illustrates that a 'value narrative' broadcast by space programs with the goal to deceive or manipulate reveals the pragmatic rationality of the sender and the message.

After Apollo, NASA's scientific missions reversed the messaging dynamic of the manned missions. The messages exist as manifestations of their belief in the intrinsic value of humanity, and a desire to create meaning in the cosmos. Weber's model reveals that messaging sent out to space with little or no chance of engagement reflects the belief, and value-rationality, of its senders. Determining intentionality is critical to meaningfully decipher the message.

Weber's model reveals the superpowers' cynical use of value narratives to achieve calculated outcomes, subsuming science and exploration into opportunities to manipulate or control. It also reveals the value-rationality of NASA's later scientific missions which sought deeper understanding—the 'conscious belief in the value for its own sake'—to bring meaning to the cosmos. Thus, by revealing the concealed, Weber's Theory of Rationality provides a valuable framework for understanding truth in messaging.

Introduction: Space Messaging through the Lens of Max Weber

Using Max Weber's Theory of Rationality as a theoretical framework, this project will examine the messaging of the space programmes of the Soviet Union and the United States during the Cold War era of the twentieth century (1945-1989). These rival nations, locked into a decades-long political standoff and struggling to dominate the international stage, parlayed their programmes into a proxy war that profoundly affected their respective societies.

The Cold War period is generally recognized to begin with the warnings Winston Churchill posed in a 1946 speech:

An iron curtain has descended across the Continent. Behind that line lie all the capitals of the ancient states of Central and Eastern Europe. . . . [which] lie in what I must call the Soviet sphere . . . subject to . . . control from Moscow.²

According to Alexander Bick, this political division essentially split Europe into 'a crude geometry of geopolitical blocs' which kept one another in check with 'mutual hostility' so profound that it threatened the existence of the entire planet.³ By the middle of the 1950s the Cold War had settled into a kind of brittle 'equipoise' that required the constant threat of force to maintain.⁴ This 'balance of terror' was kept by the concept of mutually assured destruction; both sides contained sufficient nuclear weapons to destroy the world, and counted on this deterrence to forestall military aggression.⁵

The Space Race (1955-1969)

It is in this socio-political context that the rival nations conducted their space programmes, adopting the same strategy of technological escalation with their launch vehicles. Because their 'civilian' rockets were based on intercontinental ballistic missiles of the sort used with nuclear weapons, a more advanced rocket raised the stakes and

² The National Archives, *Iron Curtain Speech*, <<https://www.nationalarchives.gov.uk/education/resources/cold-war-on-file/iron-curtain-speech/>> [accessed 15 November, 2022].

³ Alexander Bick, and others, *Twentieth Century*, ed. by Seth Center and Emma Bates, (Center for Strategic and International Studies (CSIS), 2020), p. 41 <<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/resrep26045.6>> [accessed 28 November, 2022].

⁴ Bick, and others, *Twentieth Century*, p. 41.

⁵ Brent J. Talbot, 'Getting Deterrence Right; the Case for Stratified Deterrence', *Journal of Strategic Security*, 13 (2020), 26-40, p. 26 <<https://www.jstor-org.ezproxy.uwtsd.ac.uk/stable/26907411>> [accessed 26 November, 2022].

threatened the fragile balance. The 1957 Soviet launch of the first artificial satellite *Sputnik I* suggested unanticipated levels of technological sophistication which was interpreted as a provocation by the United States and answered with its first satellite, Project Vanguard (1958), thus transferring the strategy of the arms race to a new sphere: space.⁶ Yuri Gagarin was answered with Alan Shepherd, *Vostok* with Saturn V and so on, both sides waging a bloodless battle that never truly ended until the fall of the Berlin Wall decades later.

The escalating arms race with its burgeoning nuclear stockpiles gave birth to an entirely new type of eschatological fear: a 'secular apocalypse' brought not by natural or supernatural forces, but by human hands. The long-term psychological impact of potential annihilation led some scientists to reach out beyond our world to contact another; they devised messages for extra-terrestrials for inspiration, hope, and in case we fail to outgrow our technological adolescence, to leave our trace lingering in the stars.⁷

Max Weber's Model of Rationality

In his book entitled *Wirtschaft und Gesellschaft: Grundriss der Verstehenden Soziologie*, the German sociologist Max Weber (1864-1920) described a method of characterising what he identified as the four types of social action based on their specific motivations:

1. instrumentally rational (*zweckrational*), that is, determined by expectations as to the behavior of objects in the environment and other human beings; these expectations are used as "conditions" or "means" for the attainment of the actor's own rationally pursued and calculated ends;
2. value-rational (*wertrational*), that is, determined by a conscious belief in the value for its own sake of some ethical, aesthetic, religious, or other form of behavior, independently of its prospects of success;
3. affectual (especially emotional), that is, determined by the actor's specific affects and feeling states;
4. traditional, that is, determined by ingrained habituation.⁸

⁶ Yanek Mieczkowski, 'What was the Sputnik "Panic"?', in *Eisenhower's Sputnik Moment* (Cornell University Press, 2013), p. 12 <<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/10.7591/j.ctt1xx4xh.5>> [accessed 8 November, 2022].

⁷ Carl Sagan, 'The Quest for Extraterrestrial Intelligence', *Cosmic Search*, 1.2 (1979).

⁸ Max Weber, *Economy and Society*, ed. Guenther Roth and Claus Wittich. (Berkeley: University of California Press, 1978), pp. 24-25 <<https://archive.org/details/MaxWeberEconomyAndSociety/page/n133/mode/1up?view=theater>> [accessed 3 January, 2023].

The first two types (the *zweckrational* and the *wertrational*) describe negotiated processes between the individual and others, and the second two (affectual and traditional) are non-negotiated, describing the extant emotional states or habitual (unthinking) action of an individual. Because of their participatory nature, the first two elements of Weber's Model of Rationality (*zweckrational*, hereafter referred to as 'practical', 'instrumental', or 'pragmatic rationality', and *wertrational*, hereafter referred to as 'theoretical' or 'value rationality') reflect intentionality; one's goals (not one's language) determine whether the rationality is practical or theoretical.

The spectrum of social action described by Weber's Model of Rationality is bookended by the opposing notions of utility and belief. As noted, in *Wirtschaft und Gesellschaft* he wrote that whereas practical rationality motivates individuals and organizations to act to achieve 'calculated ends', value rationality motivates through conscious belief, 'independent of its prospect of success'.⁹ In the words of Guy Oakes,

instrumental rationality requires a consideration of relative advantages and disadvantages of objectives achieved in comparison with alternative objectives. Instrumentally rational actors are utilitarians.¹⁰

In contrast, Weber suggested that value rationality motivates through 'conscious belief in the value for its own sake'.¹¹ Weber's spectrum is not one of practical versus theoretical motivations, *per se*, but one of results versus faith. Kalberg emphasized the notion that value rationalization does not motivate towards a specific outcome:

Unlike the means-end rational action that provides the foundation for purely adaptive practical rationality, theoretical rationalization processes are undergirded and given their momentum . . . by the natural "metaphysical need" and "irrepressible quest" of thinkers and systematizers to transcend sheer given routine and to supply the random events of everyday life with a coherent meaning.¹²

In this conception, Weber characterised value rationality as a type of intellectual sincerity whose purpose is to tease the meaning from the seeming disorder of existence. Oakes reiterated this requirement of sincerity and belief:

⁹ Weber, *Economy and Society*, pp. 24-25.

¹⁰ Guy Oakes, 'Max Weber on Value Rationality and Value Spheres', *Journal of Classical Sociology*, 3 (2003), 27-45, (38) <<https://doi-org.ezproxy.uwtsd.ac.uk/10.1177/1468795X03003001693>> [accessed 3 January, 2023].

¹¹ Weber, *Economy and Society*, pp. 24-25.

¹² Stephen Kalberg, 'Max Weber's Types of Rationality: Cornerstones for the Analysis of Rationalization Processes in History', *American Journal of Sociology*, 85 (1980), pp. 1145-1179 <<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/2778894>> [accessed 23 December, 2022].

Value rational action is defined *by the conviction of actors* that a binding or exigent value can be ascribed to the act: *a 'conscious belief in the unconditional intrinsic value* - interpreted in ethical, aesthetic, religious, or other terms - of a specific act purely as such and independent of the outcome' . . . The hallmark of value rationality *is the authenticity of the actor's commitments*, expressed in Kierkegaard's dictum that purity of heart is to will one thing - the one thing required by actors' *convictions concerning their ultimate obligations* [my emphasis].¹³

For Weber, value rationality is rooted in conviction; unlike its pragmatic sibling for whom actions are taken depending on a calculus of their potential success, value-rationality is distinguished by its fidelity to the abstractions it professes. In this conception, a cynical appeal for an abstraction such as 'Party' or 'freedom' is not a value rationalization; instead, its rationale is pragmatic because the stated concept is merely a tool to achieve the specific goal of compliance or support.

Weber, Campion, and Space Exploration

The application of Weber's model to space exploration was first proposed by Nicholas Campion in his introduction to *Heavenly Discourses*, where he wrote of the usefulness of 'theoretical frameworks for understanding humanity's relationship with the sky', and proposed Weber's Theory of Rationality as an expedient method to examine 'competing narratives in the exploration of space'.¹⁴ In Campion's words, 'practical, technical rationality can be described as 'means-end', designed to achieve specific goals, while theoretical rationality is 'value-rational', expressing wider narratives rather than practical goals.'¹⁵ Together these rationalities create an oppositional spectrum of human motivation, featuring the notions of practical / technical on one pole, and value / theoretical on the other.

Campion began his application of Weber's theory to space exploration by asking the questions, 'what value do we put on space exploration?', and 'how does it express our values?'¹⁶ The narratives of space exploration which emerge from the broader society provide some answers to these questions. For example, Campion argued that President

¹³ Oakes, 'Max Weber', p. 38.

¹⁴ Nicholas Campion, 'Introduction: Discoursing with the Heavens', in *Heavenly Discourses: The Proceedings of the Heavenly Discourses: Myth, Astronomy and Culture Conference Held in Bristol, UK 14-16 October, 2011* (Bristol: Sophia Centre Press, 2016).

¹⁵ Kalberg, 'Max Weber', p. 1148.

Campion, 'Introduction', p. xviii.

¹⁶ Campion, 'Introduction', p. xviii.

Kennedy's appeal for funding from Congress in May of 1961 illustrates 'The contrast between pragmatic, practical, technical rationality and value-rich, story-telling rationality'.¹⁷ Kennedy's rhetoric included appeals to both the practical and the theoretical, beginning by outlining the need for 'accelerating the development of . . . lunar space craft . . . [and] alternate liquid and solid fuel boosters' and concluding with, in Campion's words, 'a brilliantly rhetorical evocation of the American dream, of America as the repository of freedom and hope for the future.'¹⁸ This speech illustrates Kennedy's understanding that practical language lacks the emotional appeal of narratives evoking rhetorical abstractions.

Campion argued that NASA made further value-rational appeals after the successful Moon landing in 1969 to ensure continued public support for the space programme.¹⁹ One such appeal involved the evangelical preacher Billy Graham who 'lent his support and offered a synthesis of Christian theology and belief in extra-terrestrial visitation' where he conflated extra-terrestrials with beings intimately associated with Christianity:

It is hard to believe that we earthlings are alone in this spacious and wonderful Universe. Already we have received visits by creatures from outer space, including many angels, and Jesus Christ.²⁰

Graham's message was based on the notion that space exploration would bring humanity closer to God—an appeal that added new dimensions to a scientific and technological programme. Campion argued that these, as well as other narratives from non-NASA affiliated sources, illustrate the dichotomy that exists between the practical and theoretical poles of Weber's model.

Campion cited Soviet Premier Nikita Khrushchev's 1961 speech commemorating the world's first manned spaceflight, illustrating that the Soviets utilised value narratives to describe their space programmes as well. They had little choice; because their practical

¹⁷ Campion, 'Introduction', p. xviii.

¹⁸ John F. Kennedy, 'Special Message to Congress on Urgent National Needs, 25 May 1961', John F. Kennedy Presidential Library and Museum, <<http://www.jfklibrary.org/Asset-Viewer/Archives/JFKWHA-032.aspx>> [accessed 11 January, 2023].

Campion, 'Introduction', p. xviii.

¹⁹ Campion, 'Introduction', p. xix.

²⁰ Campion, 'Introduction', p. xix.

Billy Graham speaking in 1969, praising the Apollo Moon programme, cited in Kendrick Oliver, *To Touch the Face of God: The Sacred, the Profane, and the American Space Program, 1957-1975* (Baltimore, MD: Johns Hopkins University Press, 2013), p. 53.

narratives were limited by their official policy of secrecy (which I will discuss in Section I of this dissertation), their messaging was restricted to the theoretical:

[Gagarin] displayed noble moral traits: courage, self-possession, and valor. . . . Yuri Alexeyevich Gagarin is our pioneer in space flights. He is the first to have orbited our globe. If the name of Columbus, who crossed the Atlantic Ocean and discovered America, has lived on through the ages, what can be said about our wonderful hero, Comrade Gagarin, who penetrated into outer space, circled the entire terrestrial globe, and safely returned to earth! His name will be immortal in the history of mankind.²¹

It is notable that his speech is built around the notions of discovery and legacy (using diction strongly associated with American etiological mythology) instead of the extraordinary technical feat such a flight represented, illustrating the Soviet preference for theoretical narrative.

Campion cited Donald Spence to account for one possible explanation for the preponderance of value-narratives which he suggests are 'persuasive not because of their evidential value but because of their rhetorical appeal'.²² Considering these messages are generated to motivate and / or manipulate, there is often greater utility to be found in a value motivation whose appeal to emotion and identity (instead of insider knowledge) assures a broader audience base.

My Research

As measures of intent, practical and theoretical rationalities are useful to illustrate the oppositional motivations of Cold War space programme narratives. This project will examine these communications in the framework provided by Weber's model and will examine whether Weber's model assists our understanding of space messaging. In Weber's own words, this model characterizes 'social action', not language.²³ It is not a static lens through which to describe semantics, but a model of dynamic action, characterizing the reasoning or rationality of the choices people make. In this sense, a 'value narrative' broadcast with the goal to manipulate behaviour reveals the pragmatic rationality of the sender. I believe that Campion's analysis of space exploration using Weber's framework

²¹ Campion, 'Introduction', p. xvi.

²² Campion, 'Introduction', p. xviii.

Donald Spence, *Narrative Truth and Historical Truth: Meaning and Interpretation in Psychoanalysis* (London: W.W. Norton & Co., 1982), p. 32.

²³ Weber, *Economy and Society*, p. 24.

might be enriched by a closer look at the intentionality inherent in the messaging of these space programmes; I will attempt this through an examination of the messaging of the Space Race in Section I, and NASA's later unmanned scientific missions in Section II.

Section I

A *Zweck* in *Wert's* Clothing: The Cynicism of Space Messaging from Sputnik to Apollo

In the early years of the Cold War, the space program messaging of the Soviet Union and the United States stressed ideology over exploration; spaceflight was a delivery mechanism for state-sponsored propaganda. From the moment *Sputnik I* began orbiting the Earth, spacecraft became stand-ins for political systems, their pilots the embodiment of national character. Each nation used its success as proof and confirmation of ideology; strengths were exaggerated and weaknesses concealed as they used rockets to jockey for position on the world's stage. In the language of the superpower, technology equalled strength; to disguise a show of force, the nations resorted to their militaries for design and support of their 'peaceful' space programs. Their pilots were active-duty officers, and their launch vehicles were modified from military stock.²⁴ According to Karsten Werth, successful rocket launches 'gave more tangible proof of power . . . than naked statistics of nuclear warheads or hardened missile bases. The country that could launch the heaviest satellites had the most powerful rockets.'²⁵ The space programs were pursued internally for practical / technological dominance over their rivals but sold to the public with narratives expressing nationalistic and political values. Each nation adopted opposing methods to redirect the public's attention from their military ambitions: the Soviets through official secrecy, and the Americans by flooding the media with alternate messaging.

Applying Weber's framework to these space programs reveals that the 'value-rich' language of both nations was employed with a specific goal or goals in mind. By Weber's definition, goal-oriented messaging, however theoretical in form, is pragmatic in nature.²⁶ He wrote in *Wirtschaft und Gesellschaft* that practical rationality motivates individuals and organizations to act to achieve 'calculated ends'.²⁷ This is in contrast to value rationality, which, according to Kalberg, is motivated by the 'metaphysical need' to find meaning in 'everyday life'.²⁸ The official statements of both superpower space programs illustrate

²⁴ Karsten Werth, 'A Surrogate for War—The U.S. Space Program in the 1960s', *Amerikastudien / American Studies*, 49 (2004), p. 564 <<http://www.jstor.org/stable/41158096>> [accessed 11 November, 2022].

²⁵ Werth, 'A Surrogate', p. 564.

²⁶ Weber, *Economy and Society*, p. 24.

²⁷ Weber, *Economy and Society*, pp. 24-25.

²⁸ Kalberg, 'Max Weber', p. 1153.

calculation; their messages, even those with richly evocative rhetorical abstractions like ‘nation’ and ‘Party’, were intentionally crafted to motivate and manipulate.

The ‘Triumphal Socialism’ of the Soviet Union

The Soviets crafted complex and extensive messaging to conceal the practical / military rationalities for its space program. Their public narrative was built on the appealing rhetoric of building a Socialistic utopia through selfless, collective endeavour. However, since this messaging was designed to ensure compliance in its domestic audience and reinforce military deterrence for its international, its use was manipulative and propagandistic. Despite its emotive, nationalistic appeals, by Weber’s definition the messaging of the space program of the Soviet Union was pragmatic and utilitarian.

Nikita Khrushchev

First Secretary Nikita Khrushchev served as Soviet head of state from 1953—1964.²⁹ The nation had suffered decades of political terror under his predecessor Josef Stalin, and Cathleen Lewis stated the new leader set out to make radical changes in the government, ‘dismantling Stalin’s cult of personality and replac[ing] it with a cult of the Communist Party’.³⁰ Khrushchev accomplished this by disguising his rationally pragmatically intentions with an appealing ‘value-narrative’ as a means to exert control. In real terms, Lewis suggested, little changed; the people merely replaced Party for Personality in a system that required perfect loyalty and effaced individuality in favour of the collective. In this context, the focus of the space program was not the achievements of its individuals; their talent and hard work were subsumed by the Party, to whom they were required to thank for ‘the opportunity to demonstrate Soviet superiority’.³¹ Even the most significant contributors such as the program’s founder and chief rocket scientist Sergei Korolev were total

²⁹ Michael G. Kort, *The Soviet Colossus*, 7th ed edn (New York: Routledge, 2010), pp. 286, 313 <https://archive.org/details/sovietcolossushi0000kort_m1i8/page/286/mode/2up?view=theater> [accessed 9 November, 2022].

³⁰ Cathleen Susan Lewis, *The Red Stuff: A History of the Public and Material Culture of Early Human Spaceflight in the U.S.S.R.* (Unpublished Ph.D. diss., The George Washington University, 2008), p. 99 <<https://www.proquest.com/dissertations-theses/red-stuff-history-public-material-culture-early/docview/304647483/se-2>> [accessed 10 November, 2022].

³¹ Lewis, *The Red Stuff*, p. 99.

unknowns; their names were kept secret and their achievements attributed to the Party.³² The cosmonauts, who became international celebrities, were equally not exempt from personal effacement; in the words of Lewis, 'Cosmonaut stories and their culture were about the Soviet state'.³³

Disguised by a widely disseminated value narrative designed to manipulate, the Soviet space program was a domestic and foreign policy tool existing chiefly to glorify nation and Party for domestic and international audiences. According to Lewis, Khrushchev understood the potential of the program to reinforce his 'military-technological challenge to America and political appeal to Western Europe and the developing world', thus positioning Khrushchev's intentions as rationally pragmatic on Weber's scale.³⁴ The program set about achieving an unprecedented series of 'firsts' such as *Sputnik*, *Laika*, and Yuri Gagarin, designed to shock the world with Soviet technological sophistication. The Soviets pursued these achievements to illustrate important aspects of their national narrative, seeking, according to Asif Siddiqi, to 'promote the space program as much as possible, aided by rhetoric that repeatedly connected the triumphs of the space program with the power of socialism'.³⁵ In this light, the Soviet space program represents 'an ultimate expression of technological utopianism', an idea traceable to what Slava Gerovitch called the 'tradition of Cosmism'—a cultural movement which 'attached spiritual meaning to the colonization of space'.³⁶ Plotted on Weber's model, Soviet space messaging, however evocative of political and social abstractions like Socialism or Cosmism, is pragmatic because it was designed to serve Khrushchev's ambitions for the country.

The Soviets' policy of secrecy both complicated their messaging and purged it of practical content, confining it to value language designed to misdirect and conceal. Stripped of any objective truth, the rationality of this messaging is entirely pragmatic according to Weber's model. Secrecy, overseen by the main censorship body *Glavlit*, encompassed the

³² Asif A. Siddiqi, 'Cosmic Contradictions: Popular Enthusiasm and Secrecy in the Soviet Space Program', in *Into the Cosmos*, ed. by Asif A. Siddiqi and James T. Andrews (University of Pittsburgh Press, 2011), pp. 47-76, (55) <<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/j.ctt6wrcn2.7>> [accessed 10 August, 2022].

³³ Lewis, *The Red Stuff*, p. 99.

³⁴ Lewis, *The Red Stuff*, pp. 116-117.

³⁵ Siddiqi, 'Cosmic Contradictions', p. 49.

³⁶ Slava Gerovitch, "'Why Are We Telling Lies?': The Construction of Soviet Space History Myths", in *Soviet Space Mythologies* (University of Pittsburgh Press, 2015), pp. 1-26, (4) <<https://www.jstor.org/stable/j.ctt15nmjd1.5>> [accessed 21 July, 2022].

entirety of Soviet government. 'Embedded throughout the Soviet media apparatus', *Glavlit* operated by censoring the media exposure of any potentially problematic Soviet social data, as well as any information that might privilege the West.³⁷ Their methodology relied heavily on censorship, misdirection, and the enforcement of secrecy. According to Siddiqi, Soviet secrecy was used to protect both the strengths (most often military) and weaknesses (most often economic or social) of the State.³⁸ In the words of the Russian journalist Iaroslav Golovanov, 'Secrecy was necessary so that no one would overtake us. But later when they did overtake us, we maintained secrecy so that no one knew that we had been overtaken'.³⁹ Because Glavlit prohibited expressing objective truth, all Soviet messaging was essentially fiction; created entirely for effect, it represents what Kalberg described as the 'means-end rational action' of pragmatic rationality.⁴⁰ In Gerovitch's words, one of *Glavlit's* challenges was to conceal the fact that 'the public face of the Soviet space program was just the tip of a giant iceberg whose main body was buried deeply in the bowels of the military-industrial complex.'⁴¹ However, because the optics of a military space program were at odds with the master narrative being constructed by *Glavlit* at the time, the program's military roots were concealed with counterintelligence, misdirection, and the creation of an alternative narrative to be effective: Gerovitch stated, 'lies were not really lies so long as they upheld political power. And truths were not really true so long as they jeopardized political control.'⁴²

The Soviet space program's rush for 'firsts', according to Jenks, 'heightened the perceived need for duplicity in the service of the state' because it depended upon the element of surprise to eliminate direct competition.⁴³ To compound matters, as a military enterprise, the space program was 'shrouded in an *extra* layer of secrecy' [my emphasis].⁴⁴ This data blackout provoked a great deal of supposition on the part of outside observers;

³⁷ Siddiqi, 'Cosmic Contradictions', pp. 49-51.

³⁸ Siddiqi, 'Cosmic Contradictions', p. 54.

³⁹ Siddiqi, 'Cosmic Contradictions', p. 54.

⁴⁰ Kalberg, 'Max Weber', p. 1152.

⁴¹ Gerovitch, 'Why Are We', p. 11.

⁴² Andrew L. Jenks, 'Sacred Lies, Profane Truths', in *The Cosmonaut Who Couldn't Stop Smiling* (Cornell University Press, 2014), pp. 225-254 (227) <<https://www.jstor.org/stable/10.7591/j.ctv180h6n2.13>> [accessed 8 November, 2022].

⁴³ Jenks, 'Sacred Lies', p. 229.

⁴⁴ Siddiqi, 'Cosmic Contradictions', p. 55.

indeed, Siddiqi wrote, 'In the early 1960s so much of [the Soviet program] was shrouded in secrecy that it seemed that the program could be capable of anything, and its future appeared boundless. The less we knew, the more seemed possible'.⁴⁵

However successful their efforts internationally, Siddiqi suggested that *Glavlit's* 'obfuscation was meant more for a domestic audience than a foreign one. Soviet citizens were to believe that their space program had purely civilian purposes while the American one had belligerent intentions.'⁴⁶ However, Jenks suggested this narrative of flawless 'civilian' engineering was designed to suggest a greater, unspoken 'truth':

The Soviets insisted that their space program pursued civilian and scientific goals, but its underlying logic and chief rationale was strategic: to provide the appearance of technological leadership and thereby create the impression of a highly advanced military capability that the Soviet ballistics program in fact lacked.⁴⁷

Thus, by virtue of the absence of any hard data, *Glavlit* could use these successes to suggest superiority not only in rocketry, but in military and economic power as well.⁴⁸ *Glavlit's* lack of narrative became a narrative in itself—one which was designed with pragmatic, calculated results in mind.

Werth wrote that Khrushchev's strategy of misdirection proved effective as a mechanism to assert the superiority of the Soviet political system over capitalism, especially in light of the then-faltering US space program.⁴⁹ According to Lewis, by 1961 'Gagarin's flight reinforced the public impression that the Earth's first artificial satellite, *Sputnik*, had made three-and-a-half years earlier: the Soviet Union was equal or superior to the United States in technological sophistication'.⁵⁰ However, the Soviets struggled to reconcile the conflicting functions of secrecy and publicity with such a high-profile project; they sought to connect its successes with socialism, while simultaneously maintaining strict operational secrecy throughout.⁵¹ Siddiqi suggested that this unresolved 'rhetorical tension' was 'amplified by the frequently ambiguous messages about the program's goals, successes, and values' and impaired the ultimate effectiveness of the message.⁵² For example, to claim an

⁴⁵ Siddiqi, 'Cosmic Contradictions', p. 48.

⁴⁶ Siddiqi, 'Cosmic Contradictions', p. 58.

⁴⁷ Jenks, 'Sacred Lies', p. 229.

⁴⁸ Werth, 'A Surrogate', p. 569.

⁴⁹ Werth, 'A Surrogate', p. 569.

⁵⁰ Lewis, *The Red Stuff*, p. 4.

⁵¹ Siddiqi, 'Cosmic Contradictions', p. 49.

⁵² Siddiqi, 'Cosmic Contradictions', p. 49.

international world record for flight distance for Gagarin's mission, the Soviets created a fictional cosmodrome they called Baikonur to conceal the real one in Tiura-Tam, 300 kms away; although the award was another 'first' for the Party, they could not reveal any secrets when filing for it.⁵³ A further example of the Soviet's rhetorical tension stemmed from what Gerovitch called their desire to 'imprint the space triumphs in cultural memory, to turn them into powerful historical myths, and to suppress any interfering counter-memories'.⁵⁴ Barred from using facts, journalists were forced into vagueness and cliché, producing 'sugary streams of enthusiastic text' instead of meaningful copy.⁵⁵ Siddiqi suggested that official secrecy rendered these stories unproductive, leading to 'low promotional effectiveness' for the public.⁵⁶ For example, the language they preferred to describe activities in space, '*покорение* (conquering) and *освоение* (mastering)' suggests not striving, but command.⁵⁷ If the task is effortless and the result a foregone conclusion, there is no narrative tension or excitement in the pursuit of space. Significantly, Gerovitch stated that this official version 'often clashed with counter-memories that circulated privately among cosmonauts and space engineers', suggesting that the real stories were interesting enough to be shared, even if at personal risk to those involved.⁵⁸

One of the most potent examples of Soviet pragmatic intentionality illustrates their use of appealing value rhetoric in their pursuit to elevate the Party above the personal—and effect dramatic social change. The Soviets introduced a new concept called the 'New Man' to its space program messaging as the result of a new platform introduced in the Twenty-Second Party Congress of October 1961.⁵⁹ The idea was novel and designed to create a moral and physical blueprint for the ideal Soviet citizen 'who would harmoniously combine spiritual wealth, moral purity, and a perfect physique'.⁶⁰ The goal of this messaging was, in part, to transform the cosmonauts into 'symbols of communism itself', demonstrating the Soviets' cynical use of theoretical language to produce practical results.⁶¹ To essentially

⁵³ Siddiqi, 'Cosmic Contradictions', pp. 57-58.

⁵⁴ Gerovitch, 'Why Are We', p. 4.

⁵⁵ Siddiqi, 'Cosmic Contradictions', p. 62.

⁵⁶ Siddiqi, 'Cosmic Contradictions', p. 62.

⁵⁷ Gerovitch, 'Why Are We', p. 4.

⁵⁸ Gerovitch, 'Why Are We', p. 4.

⁵⁹ Gerovitch, 'Why Are We', pp. 11-12.

⁶⁰ Gerovitch, 'Why Are We', pp. 11-12.

⁶¹ Gerovitch, 'Why Are We', pp. 11-12.

remake them in the Soviet New Man's image, the 'New Man' schema subjected the cosmonauts to strict secrecy rules and provided them with scripts to use in public. For example, before his flight, Gagarin's name was suppressed and his biographical details altered to fit the Party's New Man message.⁶² Gerovitch wrote that before releasing his name, the Soviets had 'combed through the archives and confiscated family mementos to remove any evidence contradicting [his] idealized public image'.⁶³ In later years 'anything that might shed light on the real as opposed to the mythological Gagarin' was removed from archives and classified as Top Secret.⁶⁴ The smallest detail was adjusted in their quest for perfection: walking the red carpet on his triumphal return to Moscow after his flight, witnesses reported that Gagarin's right shoelace had become untied; the photographs of that event were subsequently retouched to remove this imperfection.⁶⁵

The great effort of the Soviets to maintain their 'New Man' narrative demonstrates the full extent of their pragmatic rationality; their mythmaking, concentrating on the perfectibility of human nature, did not permit fallibility.⁶⁶ The regime was challenged with some real-time editing when their cosmonauts fell short. Andrew Jenks related the story of a drunken Gagarin falling and sustaining a head injury that required surgery and weeks of hospitalization: 'for three weeks after the incident something unprecedented happened: the most photographed person in the world vanished from public view' without a word of explanation.⁶⁷ Unable to maintain their pragmatic fiction with a visibly injured Gagarin, the Soviets simply removed him from view. Similarly, on nights out, the cosmonauts were shadowed by KGB agents who confiscated the film of anyone attempting to take a photo. As reported by a fellow guest, 'Gagarin remarked: "That's a KGB guy. There will be no photographs.... It's not permitted to show me drunk."⁶⁸ Instead, what the public was presented with closely resembled the socialist superman described by Twenty-Second Party Congress: '[Gagarin] is a real, living, flesh-and-blood *new man*, who demonstrates in action

⁶² Andrew L. Jenks, 'Yuri Gagarin and the Many Faces of Modern Russia', in *The Cosmonaut Who Couldn't Stop Smiling* (Cornell University Press, 2014), pp. 3-26 (21) <<https://www.jstor.org/stable/10.7591/j.ctv180h6n2.4>> [accessed 8 November, 2022].

⁶³ Gerovitch, 'Why Are We', pp. 12-13.

⁶⁴ Jenks, 'Yuri Gagarin', p. 20.

⁶⁵ Gerovitch, 'Why Are We', p. 2.

⁶⁶ Jenks, 'Sacred Lies', p. 237.

⁶⁷ Jenks, 'Sacred Lies', pp. 235-236.

⁶⁸ Jenks, 'Sacred Lies', p. 239.

all the invaluable qualities of the Soviet character, which Lenin's Party has been cultivating for decades'.⁶⁹ Despite its evocative rhetoric, this messaging exists solely to promote the Soviet master narrative; as such, it is pragmatic in character.

Soviet messaging had a distinct, pragmatic goal: to portray the Soviet political system as superior to the Western model. In order to achieve this, the professional lives of all participants in the space program were subject to the same rules: follow the scripts and play the role the State had manufactured.⁷⁰ Cosmonauts were not permitted to describe or be photographed in their spacecraft, they could not mention the names of other cosmonauts unless they had already flown a publicized mission, and they were not to speak of future missions. The latter two of these prohibitions were in place in case of mission failure or cancellation. Similarly, anyone or anything outside of the master narrative was airbrushed out: 'military personnel were routinely erased from publicly released photographs to present the Soviet space program to the world as entirely civilian and peaceful', and photographs of cosmonauts before launch were retouched to eliminate other people, resulting in images stripped of their context.⁷¹ This lack of context became an opportunity; *Glavlit* used this absence to create alternate meaning that reinforced their pragmatic value-narrative. For example, *Figure 1* is the photograph released to the media showing Gagarin on the bus taking him to his historic flight; we can see only his helmeted head. As seen in *Figure 2*, the setting originally included men in military uniform, as well as the cosmonaut Grigori Neilubov who was cropped out because he never subsequently flew a mission. According to Siddiqi, a grounded cosmonaut was at odds with the triumphal 'New Man' narrative, so Neilubov was removed from the story completely.⁷²

⁶⁹ Gerovitch, 'Why Are We', p. 12.

⁷⁰ Siddiqi, 'Cosmic Contradictions', p. 70.

⁷¹ Gerovitch, 'Why Are We', p. 2.

⁷² Siddiqi, 'Cosmic Contradictions', p. 71.



Fig. 1: Yuri Gagarin [Photograph] (1961) <<https://lcn.loc.gov/2004670142>> [accessed July 12, 2022].



Fig. 2: Yuri Gagarin [Photograph] (1961) <<https://www.britannica.com/biography/Yuri-Gagarin/images-videos#/media/1/223437/112294>> [accessed July 12, 2022].

Soviet Materiel

The materiel of space programs provides a valuable opportunity to examine motivations and messaging in the objects intimately associated with the launches themselves. Soviet materiel illustrates practical intentionality by reinforcing value narratives; specifically the elevation of Socialism above Democracy and the Party above the individual. With a technically advanced endeavour such as a space program, the equipment itself can become celebrated. For the Soviet space program, however, the machinery that made space accessible was kept secret: media released to the public was wiped of all visual

traces of Soviet technology, and decoys were created and staged to misdirect.⁷³ Gerovitch stated, 'Cosmonauts were routinely portrayed with imaginary rockets in the background'.⁷⁴ For example, *Figure 3* purportedly illustrates a *Vostok* spacecraft, the sort that took Gagarin aloft, at a 1961 air show in Russia. The object pictured contains a fin detail that was designed as a deliberate misdirection to throw off foreign intelligence. That these visual falsehoods were promoted by the Soviets is confirmed by postage stamps issued by the government contemporaneously, a fact which illustrates the degree to which the entire state colluded in the misinformation campaign. One such stamp (*Figure 4*) shows a radically different design for *Vostok I* than the finned decoy of *Figure 3*. Both can be seen to be false when compared with an historically accurate scale model of *Vostok I* (*Figure 5*) which bears no similarity to the images released to the public at the time.



Fig. 3: Siddiqi, Asif A., 'Cosmic Contradictions: Popular Enthusiasm and Secrecy in the Soviet Space Program', *Into the Cosmos*, ed. by Asif A. Siddiqi and James T. Andrews (University of Pittsburgh Press, 2011), p. 73, illus.



Fig. 4: U.S.S.R. Ministerstvo Sviaz, *Chelovek strany sovetov v kosmose*, 10 k, in Moscow, USSR [Postage stamp] (1961), Smithsonian Institution National Air and Space Museum.

⁷³ Gerovitch, 'Why Are We', p. 2.

⁷⁴ Gerovitch, 'Why Are We', p. 11.



Fig. 5: Korolov, Sergei Pavlovich, Vostok 1 capsule [1:6 Scale model] (1961)
 <<https://www.jstor.org/stable/community.26291667>> [accessed July 30, 2022].

The spare embellishment of space materiel is evidence of Soviet pragmatic rationality and its collectivist narrative. The Soviets did not create, nor permit participants to create, the sort of rich iconography that is associated with their American rivals, whose spacecraft and flight suits were adorned with flags, logos, and mottos. Characteristically, the sole emblem on Soviet space materiel was the Cyrillic acronym 'СССР', indicating *Союз Советских Социалистических Республик* (USSR: Union of Soviet Socialist Republics).⁷⁵ Figure 6 shows Gagarin's flight suit on display at the Moscow headquarters of Zvezda (the manufacturer of life-support equipment for cosmonauts) with these helmet markings. However even this singular marking was a later addition. Multiple pre-flight photographs of Gagarin exist with a helmet and flight suit entirely bare of adornment, such as Figure 7:

⁷⁵ Ulrich Lehmann, 'Dialectics in C.C.P', in *Fashion and Materialism* (Edinburgh University Press, 2018), pp. 160-196, (192) <<http://www.jstor.org/stable/10.3366/j.ctv7n09c6.10>> [accessed 6 November, 2022].



Fig. 6: Sidina, Natalina: Yuri Gagarin's spacesuit SK1 on display at NPP Zvezda [Photograph] <<http://dx.doi.org/10.15180/150406/017>> [accessed 30 July, 2022].



Fig. 7: Yuri Gagarin (1961) [Photograph] <<https://web.archive.org/web/20200905045538/>> [accessed 30 July, 2022].

The rockets and other equipment were similarly unmarked. Of course, since the rockets were top secret and censored from view, any markings would have been superfluous. With the lack of any other embellishment, the 'CCCP' marking the materiel illustrates the Soviet ideal of party over program or individual; the acronym was a signal that all participants were working towards a singular, selfless goal: the elevation of the Soviet State.

The Soviet Union's push for 'firsts' disguised their ongoing drive for military dominance with the rhetoric of utopian Socialism; although their early successes were designed to suggest the possibility of strategic threat, their messaging campaigns stressed the peaceful superiority of their political ideology. This apparent contradiction of war versus peace illustrates the pragmatic intentionality of the Soviets. In Oakes' words,

Value rational and instrumentally rational actions are distinguished by *orientations or intentions* that Weber regards as mutually exclusive: commitment to a binding conviction in the former case, commitment to calculability in the latter [my emphasis].⁷⁶

The Soviets, however committed they might have been to their convictions, were wielding them with a demonstrable intent: to expand the escalations and posturing of the arms race—and by extension their legitimacy on the World's stage—in the new theatre of space. On Weber's scale, their Cold War messaging is exclusively pragmatic.

The 'Aspirational Optimism' of The United States

Unlike the Soviets who used a 'stick' approach—pragmatic space narratives utilized to enforce widespread social change—the U.S. space program had to be a 'carrot', appealing enough to win funding from Congress and support from the American people. Yet by using this appealing rhetoric to manipulate, on Weber's scale the American space program was equally pragmatic in its rationality. In its earliest days, space program messaging focused on the products and technologies it might provide; with the acceleration of the Space Race, the messaging shifted to more manipulative narratives such as the superiority of the American system of individual excellence over the Soviet collective. As the Russian threat dissipated in later years, American space messaging culminated in a triumphant expression of the Apollo program's victory in the race for the Moon.

Like the Soviets, the Americans used value language to disguise pragmatic intentions. Despite this use of emotive rhetoric, their messaging does not describe what Kalberg called, the 'natural 'metaphysical need' and 'irrepressible quest' of thinkers and systematizers to transcend sheer given routine and to supply the random events of everyday life with a coherent 'meaning'.⁷⁷ Because it does not, it is not consistent with value rationality. Instead, it adheres to what Weber described as 'means for the attainment of the actor's own rationally pursued and calculated ends', characterizing it as pragmatic rationality.⁷⁸

President Dwight D. Eisenhower

⁷⁶ Oakes, 'Max Weber', p. 38.

⁷⁷ Kalberg, 'Max Weber', p. 1153.

⁷⁸ Weber, *Economy and Society*, pp. 24-25.

At the outset of the space program, Eisenhower actively resisted using the program as anything other than a tool to provide specific, limited outcomes. According to Callahan and Greenstein, Eisenhower was a free-market conservative who viewed his duty in the White House as ‘contain[ing] the growth of government expenditures . . . [believing] that budgets should be balanced and frequently warn[ing] about the perilous consequences of not achieving this goal’.⁷⁹ Sceptical about the enormous cost of manned spaceflights, he convened an ad-hoc panel to examine the issue; the panel justified his misgivings, testifying before Congress that manned spacecraft had ‘about the same technical value as the circus stunt of shooting the young lady from the gun’ and lacked any scientific merit.⁸⁰ Thus, his approach to the American involvement in space was fiscally conservative and grounded in the idea that the push for space would create value for Americans, in terms of scientific and technical achievements that could be used to better American industry and society. He rejected the notion of a ‘space race’ because such a competition would be conducted purely for prestige, and he resisted the view that space ‘represented a challenging new forum for cold war competition’.⁸¹

Initially, Eisenhower’s pragmatic rationality was sincere because it concealed no wider agenda. His design for the space program was built on the notion of deliverables and clear practical objectives. America’s first satellite program, Project Vanguard, was not designed to be the first to launch; instead, its primary objectives were military research and establishing a legal precedent for satellite overflight of foreign countries.⁸² Suspicious of the amount of money the program cost, Eisenhower placed it behind what he considered ‘more urgent Pentagon programs’ in priority. He even diverted resources from Project Vanguard to the Air Force program developing ICBM technology, a matter he considered more urgent.⁸³

However, on October 4, 1957, the social and political climate changed for Eisenhower with the Soviet launch of the world’s first artificial satellite. Its official name, ‘*Iskustvennyi Sputnik Zemli*, ‘artificial fellow traveller around the earth’ was shortened to

⁷⁹ David Callahan and Fred I. Greenstein, ‘The Reluctant Racer: Eisenhower and U.S. Space Policy’, in *Spaceflight and the Myth of Presidential Leadership* (Chicago: University of Illinois Press, 1997), p. 17.

⁸⁰ Michael R. Beschloss, ‘Kennedy and the Decision to go to the Moon’, in *Spaceflight and the Myth of Presidential Leadership* (Chicago: University of Illinois Press, 1997), p. 54.

⁸¹ Callahan and Greenstein, ‘The Reluctant Racer’, pp. 17, 21.

⁸² Callahan and Greenstein, ‘The Reluctant Racer’, p. 22.

⁸³ Callahan and Greenstein, ‘The Reluctant Racer’, p. 22.

Sputnik by the world's press.⁸⁴ *Sputnik I* was an event of such magnitude that it was likened to Pearl Harbour, and both shocked and accelerated the American space program.⁸⁵ Its effects on the national consciousness were immediate. In the words of the White House science advisor James Killian,

Sputnik I created a crisis of confidence that swept the country like a windblown forest fire. Overnight there developed a widespread fear that the country lay at the mercy of the Russian military machine and that our government and its military arm had abruptly lost the power to defend the homeland itself, much less to maintain US prestige and leadership in the international arena. Confidence in American science, technology, and education suddenly evaporated.⁸⁶

A similar sentiment was shared by George Reedy, later press secretary to President Lyndon Johnson, who reported that *Sputnik's* launch was 'like a brick through a plate-glass window, shattering into tiny slivers the American illusion of technical superiority over the Soviet Union'.⁸⁷ Callahan and Greenstein stated, '*Sputnik* was not true proof of a Soviet advantage in ICBM development, but it *appeared* to be—and this idea was terrifying to many in the United States'.⁸⁸ Significantly, with his extensive military background and access to classified materials, President Eisenhower had a clearer picture than the public of the Soviet Union's actual level of technological development and thus did not share in the crisis of confidence gripping his nation. He continued to believe that America was secure and did not think *Sputnik* should 'be allowed to trigger sweeping changes in national policy'.⁸⁹ Unlike his successor, he chose not to capitalize on the public panic for political gain and resolved to keep to his original timeline with the Vanguard satellite.

America's apparent lack of urgency was taken advantage of by the Soviets who, twenty-nine days later, launched the dog Laika in *Sputnik II*, earning the Soviets another 'first'. Five weeks later, on December 6th, Eisenhower's Vanguard satellite exploded on the launch pad. America keenly felt the loss of prestige and feared the Soviets' ability to launch

⁸⁴ Yanek Mieczkowski, 'What was the Sputnik "Panic"?', in *Eisenhower's Sputnik Moment* (Cornell University Press, 2013), p. 12 <<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/10.7591/j.ctt1xx4xh.5>> [accessed 8 November, 2022].

⁸⁵ Callahan and Greenstein, 'The Reluctant Racer', p. 26.

⁸⁶ James R. Killian, *Sputnik, Scientists, and Eisenhower: A Memoir of the First Special Assistant to the President for Science and Technology* (Cambridge, Mass: MIT Press, 1977), p. 7.

⁸⁷ Mieczkowski, 'Sputnik Panic', p. 13.

⁸⁸ Callahan and Greenstein, 'The Reluctant Racer', p. 26.

⁸⁹ Callahan and Greenstein, 'The Reluctant Racer', p. 27.

long-range ballistic weapons.⁹⁰ Even though the United States military was still by far the world's strongest, Werth stated 'a world impressed by the Soviet space feat was led to believe that America had fallen back technologically and, therefore, militarily'.⁹¹ The appearance of weakness was considered dangerous to American standing internationally. Then-senator Lyndon Johnson echoed this sentiment, stating that the nation that controlled the "high ground" of outer space had the capacity to rule the world'.⁹² By inference then, a flagging America risked becoming subject to the air and space superiority of the Soviets.

Although Eisenhower's first win came just a few months later, February 1958, with the launch of Explorer I, it was followed by two more failures. These losses highlight the advantages of Soviet secrecy on public opinion. The American failures were as widely reported in the press as the successes and compared to the seemingly flawless performance of the Russians, made the Americans look technologically inferior. In response to overwhelming public pressure to rectify the issues, Callahan and Greenstein stated that 'Eisenhower [was] forced to create NASA to carry out space exploration as an independent civilian agency'.⁹³ The president devised a plan to convert The National Advisory Committee for Aeronautics, (NACA) into the National Aeronautics and Space Administration, (NASA). Congress signed this into law on 29 July, 1958, just ten months from the shock of Sputnik.⁹⁴ Callahan and Greenstein stated that although initially resistant to the government expansion a new agency would entail,

Eisenhower came to see that two space programs would be better than one: a vigorous military space program would receive top priority and spearhead America's missile and spy satellite programs; a civilian program would be the public face of American space exploration, undertaking those operations that had only propagandistic or scientific value.⁹⁵

The president was forced by circumstances to expand the significance of the space program not because America was directly threatened by the Russians, but because of the widespread appearance that they were. Even from the outset, NASA was more than its technology; it was founded to help shape the public perception of the United States, a fact

⁹⁰ Callahan and Greenstein, 'The Reluctant Racer', p. 26.

⁹¹ Werth, 'A Surrogate', p. 570.

⁹² Beschloss, 'Kennedy and the Decision', p. 57.

⁹³ Callahan and Greenstein, 'The Reluctant Racer', p. 42.

⁹⁴ Callahan and Greenstein, 'The Reluctant Racer', pp. 37-38.

⁹⁵ Callahan and Greenstein, 'The Reluctant Racer', p. 37.

that becomes evident in its subsequent messaging. Despite both the formation of NASA and the country's desperation for a decisive win, however, Eisenhower resisted any attempt to actively participate in the Space Race, a decision his political successor would make use of for his own political advantage.

President John F. Kennedy

Kennedy was inaugurated on January 20th, 1961, inheriting a Cold War and an eroded public confidence in his nation's future. Sensing an opportunity, the new president saw the race for space as a surrogate for war with the Soviet Union: a chance to capture world interest and to demonstrate American military and political superiority without firing a shot. He felt that 'winning' was not only important for the nation's international image, it was crucial for its survival.⁹⁶ His administration was predicated on the idea of restoring international prestige through military and economic strength, a position that required him to publicly admit American shortcomings in these areas. Unlike the Soviets who concealed any actual or perceived weaknesses, the Democratic president was able to parlay the supposed failings of his Republican predecessor to his political advantage.⁹⁷ One benefit of the push for space was the simultaneous advances in the technology and production of military ICBMs, though this fact was not included in the White House's messaging.⁹⁸

Kennedy saw the propaganda potential in adding a face to space missions. He chose to include astronauts to the flights—even though doing so would add greatly to their complexity and cost—to sell the idea more effectively to Congress and the American people.⁹⁹ By complicating the operation in this way, Kennedy placed the message above the mission; he overrode Eisenhower's misgivings in favour of the greater utility he could mine from a value narrative that appealed to public sentiment, despite higher costs and potential danger to the astronauts. His decision profoundly changed the space program by scrapping cheaper, safer, 'useful' missions in exchange for a showier race for 'firsts'. In time, NASA's messaging would grow to resemble the emotive rhetoric utilized by the Soviets: communications designed to influence and control.

⁹⁶ Werth, 'A Surrogate', pp. 572-573.

⁹⁷ Beschloss, 'Kennedy and the Decision', p. 51.

⁹⁸ Beschloss, 'Kennedy and the Decision', p. 51.

⁹⁹ Beschloss, 'Kennedy and the Decision', p. 53.

Kennedy's decision to add manned missions was prescient because once again the United States was caught off-guard by the Soviet's policy of secrecy. On April 12th, eighty-two days after Kennedy's inauguration, the Soviets launched Gagarin into space. Just days later, Kennedy suffered a serious political backlash with the unsuccessful Bay of Pigs invasion of Cuba. The failure of the CIA operation cast doubt on the new President's leadership and fitness for the job. According to Michael R. Beschloss, Kennedy sought to accelerate the manned space program to 'divert the attention of the public and identify him with a cause that would unify [the public] behind his administration':¹⁰⁰

The Bay of Pigs fiasco suggested that Americans had voted for a president who was inexperienced, if not incompetent, in foreign affairs. . . . Kennedy needed to channel public interest away from these issues quickly. . . . The conquest of space . . . looked like a promising solution.¹⁰¹

The goal of Kennedy's accelerated program was Project Apollo—a race for the Moon conducted within the larger race for space. Project Apollo provided unprecedented opportunities for misdirection and distraction, allowing Kennedy to dodge the worst effects of his foreign policy failure. Eisenhower recognized that Kennedy's rebranding of the space program was self-serving. He spoke out against Kennedy's cynical reorganization, considering it a threat to the viability of the program:

the [Apollo] Moon program was drastically revised and expanded just after the Bay of Pigs fiasco. . . . It immediately took one single project or experiment out of a thoroughly planned and continuing program . . . and gave the highest priority—unfortunate in my opinion—to a race, in other words, a stunt.¹⁰²

Beschloss suggested that 'Kennedy's desire for a quick, theatrical reversal of his new administration's flagging position . . . is a more potent explanation of his Apollo decision than any other.'¹⁰³ Although both presidents were motivated by practical rationality—Eisenhower for the military, scientific and technological possibilities the space program could offer, and Kennedy for the opportunity to change the national and international narratives about his presidency and his country—only Kennedy was willing to complicate the mission, inflate the costs, and endanger his countrymen to do so.

¹⁰⁰ Beschloss, 'Kennedy and the Decision', p. 56.

¹⁰¹ Werth, 'A Surrogate', p. 577.

¹⁰² Beschloss, 'Kennedy and the Decision', p. 61.

¹⁰³ Beschloss, 'Kennedy and the Decision', p. 63.

NASA Messaging

Because the American space program required the active support of the people and the government, it was critical that social engagement with its meta-narrative to remain high. Illustrating its pragmatic rationality, NASA created its message to be as appealing as possible. Unlike the bland stories being printed in the Soviet Union, 'space' made for very good copy in the Western media. The Associated Press declared space the top story of 1961, and later in the decade, not even the assassinations of Robert Kennedy or Martin Luther King got more media attention.¹⁰⁴ Perhaps because of this extensive coverage, Werth asserted, 'NASA had no difficulty convincing taxpayers of the necessity of its extensive operations. Patriotism reinforced the coalition of interests behind the space program and rendered serious criticism ineffective.'¹⁰⁵ It was a time of synergy that energized both the agency and the media that covered it. Gerovitch stated,

NASA skillfully used the media to create and disseminate a favorable public image of the U.S. space program, and at the same time space technologies engendered a technological revolution in visual media, making electronic communications truly real-time and global.¹⁰⁶

NASA's use of messaging in this way illustrates that it was not merely for the dissemination of factual content about space missions; the agency used messaging as a tool to achieve its goals of funding and public support.

In its earliest days, NASA's first administrator Dr. T. Keith Glennan oversaw efforts to create a public relations strategy, seeking a way to maintain the level of interest engendered by the *Sputnik I* launch over the long term. According to Kim McQuaid, he 'opted for a Cold War global prestige-based rationale for NASA centred on the Mercury, Gemini and Apollo manned spaceflight programmes.'¹⁰⁷ Selling the program by highlighting its practical results—the future technology or deliverables it might provide—was less effective than using an emotive rhetoric that focused on the excitements that astronauts and adventure could provide. Like Kennedy, Glennan was aware of the messaging potential

¹⁰⁴ Werth, 'A Surrogate', p. 577.

¹⁰⁵ Werth, 'A Surrogate', p. 577.

¹⁰⁶ Gerovitch, 'Why Are We', p. 5.

¹⁰⁷ Kim McQuaid, 'Selling the Space Age: NASA and Earth's Environment, 1958-1990', *Environment and History*, 12 (2006), 127-163, (129) <<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/20723571>> [accessed 11 August, 2022].

of such a program, even if the addition of astronauts provided little or no benefit scientifically. This type of messaging spoke directly to something primal in humankind—the striving to explore, endure, and prevail:

In the earliest days of the Mercury program, [astronauts] weren't needed to pilot the Mercury space capsules . . . so some critics thought of them as mere passengers, thoroughly unheroic. This attitude disappeared the moment Alan Shepard rocketed off the Earth. It then became clear that the push to space wasn't just about machines or technological brilliance: it was about guts and glory, about the endurance of the human body and soul in the deadly void.¹⁰⁸

The American approach differed from the Soviets' utopian messaging through its celebration of individual heroism in the face of danger and uncertainty. Where Soviets strapped idealized cosmonauts into mechanically perfect rockets for missions with a one-hundred percent chance of success, NASA celebrated its astronauts for their optimism and bravery for agreeing to be the first in a very dangerous endeavour that put their lives at risk. Unlike 'New Man' cosmonauts, astronauts were not interchangeable; they were portrayed as unique individuals, the best of America. Their singular achievements and excellence, so central to NASA's messaging, further differentiated them from the Soviet 'other' they were competing with. The truth is, astronauts and cosmonauts were essentially interchangeable as tools of manipulation. Their presence increased the complexity and costs of their programs, and their inclusion on rockets was not necessary to perform mission tasks. They were not there for reasons of science or exploration, or because they were perfect or brave; they were there to serve as the embodiment of the national narrative. They became the message.

By the time the first crewed Apollo mission launched, five years had passed since the assassination of President Kennedy, during which time it became evident that the Soviets had dropped out of the race to the moon. The Apollo program was no longer a competition, but a coronation of sorts, forever branding the moon shots as uniquely American. It was the culmination of NASA's pragmatic narrative, but instead of changing their message to a value rationality in the absence of Soviet competition, the Americans maintained their pragmatic rationality to reinforce their narrative of American exceptionalism.

Beschloss stated:

¹⁰⁸ Keiper, Adam, 'A New Vision for NASA', *The New Atlantis*, (2003), 3-22, (19) <<http://www.jstor.org/stable/43152047>> [accessed 11 August, 2022].

We now know that the reason the Soviet Union gave up in that struggle [for the moon] was that it recognized that it could not compete with Western economies . . . the tens of billions of dollars spent in the 1960s *on what Kennedy essentially thought of as world propaganda* could probably have been better devoted to U.S. defense or the domestic American economy, and that might have convinced the Soviets more quickly of the fruitlessness of the tragic conflict with the United States [my emphasis].¹⁰⁹

Without competition, the push for the moon devolved into a way to, in Dallek's words, 'honor Kennedy's memory' and 'to gain the [Johnson] administration considerable political credit with the public'.¹¹⁰ Without the Soviets as antagonists, the theoretical narrative of American exceptionalism became Apollo's primary message.

American Materiel

The materiel of the American space program provides ample evidence of NASA's intentionality; an examination of the insignias, logos, and mottos of its Mercury, Gemini, and Apollo space programs reveals NASA's dominant narrative. In Weber's definition, this materiel represents pragmatic rationality because it exists to achieve a specific, calculated effect: the promotion of the value narrative of American individuality as the bulwark to counter Soviet collectivism. Materiel offered a valuable opportunity to fulfil NASA's narrative objectives by providing it priceless 'real estate' for its motifs, and by encouraging astronauts to add their personal contributions to uniform patches or spacecraft. The 'value-rich', evocative messaging of NASA materiel was designed and utilised as an instrumental part of its rivalry with Russia. This abundance of materiel adornment exists for the same reason that the Soviets' was bare but for 'CCCP': the messaging reflects the national narrative. America was a collection of many voices. The Soviet Union was a collective of one.

Spacecraft

Unlike the Soviets, NASA made a point of placing its technology on centre stage. Arguably as famous as their pilots, the Mercury capsules (1958-1963) were named by their astronauts and personalized with painted logos that were clearly visible in press photographs. As the missions progressed, these logos evolved from simple block capitals to

¹⁰⁹ Beschloss, 'Kennedy and the Decision', p. 63.

¹¹⁰ Robert Dallek, 'Johnson, Project Apollo, and the Politics of Space Program Planning', in *Spaceflight and the Myth of Presidential Leadership* (Chicago: University of Illinois Press, 1997), p. 76.

images with decorative fonts [Figure 8]. Their use of emotive language such as freedom, liberty, friendship, and faith and prominent position on the capsule exteriors illustrate their significance in the creation and reinforcement of the NASA pragmatic narrative [Figure 9].



Fig. 8: Lama Al-Saud: Composite of Mercury Capsule Logos [Digital File] (2022).



Fig. 9: Astronaut Alan Shepard with the 'Freedom 7' Spacecraft [Photograph] (1961) <https://siarchives.si.edu/collections/siris_sic_7746-.TqQzS6Ycv6A> [accessed 3 July, 2022].

Mercury's first named spacecraft, Freedom 7, was also its first manned mission. It flew on May 5th, 1961, just twenty-three days after Gagarin's historic flight. The messaging of Freedom 7, attributed by NASA to its astronaut Alan Shepard, created the paradigm for the rest of Project Mercury. According to Shepard,

Pilots have always named their planes. It's a tradition. It never occurred to me not to name the capsule. . . . I talked it over with my wife and with John Glenn, who was my backup pilot. We all liked [the name Freedom].¹¹¹

The story of Shepard's personal initiative in naming his capsule stands in stark contrast to the role of scripted cosmonauts. The name he chose, 'Freedom 7', was rich with connotations for his contemporary domestic audience who associated the word 'freedom' with their political system. This choice suggests messaging designed to both unite patriotic

¹¹¹ Dick Lattimer, *All We Did was FLY TO THE MOON: By the Astronauts, as Told to Dick Lattimer* (Alachua: The Whispering Eagle Press, 1985), p. 7.

Americans and underscore their perceived differences with its chief political and technological rival, the USSR. However, Shepard's autonomy was illusory; his narrative was subsequently revised by NASA to tell a different story—one that helped create a popular and widely disseminated mythology of the first American astronauts. According to Dick Lattimer, Shepard added the '7' to his capsule name because it was the seventh Mercury model built. However, NASA claimed that the '7' represented the original Mercury Seven astronauts instead, and ensured that all subsequent Mercury missions included the number for that reason.¹¹² NASA's Project Mercury logo reflects this redirection; the design features a '7' integrated into the upper portion of Mercury's caduceus [Figure 10]. The shifting meaning of Shepard's '7' illustrates NASA's hand in controlling the message. Despite its master narrative of celebrating the heroic individualism of its participants, NASA, like the Russians, maintained ultimate control over the message.



Fig. 10: Project Mercury [Mission logo] (1958)

<https://www.nasa.gov/mission_pages/mercury/missions/manned_flights.html> [accessed 3 July, 2022].

Mission Patches

NASA recognized the narrative value of mission patches after the conclusion of Project Mercury. Designed for each mission by the astronauts who flew it, they bore elements and iconography relevant to each launch. Like the names of the Mercury capsule, NASA held final control over their design. These artifacts illustrate Weber's notion of practical intentionality; because they were created by astronauts for the missions they flew, they were potent delivery vehicles for NASA'S master narrative of individual exceptionalism.

Their use arose from a change in procedures; in 1965, the agency discontinued astronaut naming of the spacecraft, opting instead for a sequential naming system for

¹¹² Lattimer, *All We Did*, p. 7.

upcoming missions.¹¹³ Removing the popular capsule names also removed a valuable opportunity for NASA to control the narrative. Thus, the agency resumed astronaut contributions, but moved them from the fuselage to the bodies of the pilots themselves where they would appear in official photographs and media sources. This way, the messages would be associated with faces instead of capsules, further cementing NASA's narrative of individuality.



Fig. 11: Lama Al-Saud: *Composite Image of Gemini Mission Patches* [Digital file] (2022).

Early mission patches were personalized with the names of the astronauts, and most had elements depicting the duties they performed [Figure 11]. These details served to associate each astronaut with the objectives of his mission and underscored their personal contributions to NASA's success.¹¹⁴ Lantry wrote that the mission patches were symbolic of the patriotism of the Cold War space race and celebrated the qualities that made NASA successful: ingenuity and achievement.¹¹⁵ All of the patches displayed NASA's master narrative used to resist the Soviet collective: American exceptionalism through individual excellence.

The founding objective of Project Apollo was not the Moon; instead, it was redirecting public attention from Kennedy's failing foreign policy by winning the space race. Having succeeded, Apollo became the representation of American exceptionalism. Its mission patches are boldly patriotic and show a strongly America-centred aesthetic which effectively eliminates any mention of other nations or peoples. Its first patch memorialised Apollo I, a mission that never flew due to the fatal accident that claimed the lives of all three astronauts [Figure 12]. The design focuses the discussion on just two elements: Americans

¹¹³ Lattimer, *All We Did*, p. 25.

¹¹⁴ Clayton C. Anderson and Nevada Barr, 'Sign of the Times', in *The Ordinary Spaceman* (University of Nebraska Press, 2015), pp. 181-192, (184) <<https://www.jstor.org/stable/j.ctt1d9nj0s.17>> [accessed 20 July, 2022].

¹¹⁵ Douglas N. Lantry, 'Man in Machine: Apollo-Era Space Suits as Artifacts of Technology and Culture', *Winterthur Portfolio*, 30 (1995), 203-230, (219) <<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/4618514>> [accessed 20 July, 2022].

and the Moon. The patch consists of a framing outer circle with a background of the American flag, an inset circle of gold listing the astronaut surnames and mission designation, and a central image which features the earth, the moon, and the spacecraft traveling between the two. The Earth is zoomed in to focus on Florida, the site of the Kennedy Space Centre, thus cropping out the rest of the world. This, coupled with the flag imagery, the composite image illustrates a profoundly American bias; this is not a juxtaposition of the moon with Earth, it is the moon with America. The winners of the race claim the moon for their own, thereby reinforcing the mythology of America's singularity.



Fig. 12: Apollo 1 [Uniform patch] (1967) <https://www.history.nasa.gov/apollo_patches.html> [accessed 14 July, 2022].

Similarly, the Apollo XI patch embodies American pragmatic rationality by advancing its strategic narrative of American exceptionalism [Figure 13]. Apollo XI successfully brought human beings to another world for the first time. Although this marked an unprecedented triumph for the human species, NASA made sure to compartmentalize the victory, reserving the credit specifically for *American* humans. NASA's messaging can be seen in the mission patch which shows a North American Bald Eagle, wings outstretched, coming in for a landing on the surface of the moon. 'Eagle' in this instance refers both to the American national symbol and the unofficial nickname of NASA's lunar lander. The Bald Eagle is used here as a symbol of exclusivity—of American people and technology only. But this patch design underwent a significant edit before it was approved. To fulfil its original charter as devised by Eisenhower, NASA had to disguise and redirect the military aspects of the space program. The first eagle design was rejected because the olive branch was held in the eagle's beak, leaving its sharp talons exposed. According to Lattimer,

NASA disapproved the original design as too hostile and warlike because of the eagle's powerful talons extended stiffly below him. . . . then someone had a

brainstorm; just transfer the olive branch from beak to claw and all menace disappeared.¹¹⁶

Above all, even in triumph, America's space mission had to be portrayed as peaceful to remain in compliance with NASA's master narrative.



Fig. 13: Apollo XI [Uniform patch] (1969) <https://www.history.nasa.gov/apollo_patches.html> [accessed 14 July, 2022].

By analysing the superpowers' space race through the framework of Weber's model, their motivations are revealed as utilitarian and results-oriented: instead of bringing meaning through science or exploration, they competed for national and international returns such as power and control. From the moment *Sputnik I* radioed its first pulse to the world, the two superpowers were caught up in a type of escalating mania. The Cold War was fought through unrealised threat and the deterrence of their rivals' technological equivalence. As proxies to the weapons of war, their rockets and space programs were publicly rebranded to announce national ambitions, reinforce political ideology, and redirect attention from political failures and military insecurities. Although both space programs were motivated by the need to assert their technological dominance, their messaging did not reflect this, emphasizing instead their national and political values.

The Soviets developed a complex and extensive messaging campaign to hide the practical and military motivations behind its space program. Presented as a collective effort towards building a Socialist utopia, Soviet messaging was ultimately motivated by practical and utilitarian considerations. Similarly, the United States used value language to disguise its pragmatic intentions, creating and reinforcing a message of national and individual exceptionalism squarely in opposition to the Russian collective. For both nations, messaging was a tool to ensure compliance or support, indicating that it is driven by pragmatic

¹¹⁶ Lattimer, *All We Did*, p. 65.

rationality. As such, their messaging does not align with value rationality in Weber's conception.

In time, the sprint for 'firsts' in their race for space became a test of endurance that resulted in a decisive victory; the country that could pay the most could plant their flag on the moon. By virtue of a better economy and NASA's carefully crafted media campaigns that ensured congressional funding and public support, the United States was able to outlast Russia long enough to see Apollo through. The material benefits of the billions spent by both sides are harder to quantify.

Section II

Post Apollo: Sincerity and Belief in NASA's Un-manned Scientific Missions

Weber's Value-Rationality as the Search for Meaning

As noted, Weber defined value-rational as 'conscious belief in the value for its own sake of some ethical, aesthetic, religious, or other form of behavior, independently of its prospects of success'.¹¹⁷ Because Weber's model examines intentionality through social action, it distinguishes pragmatic from value rationality by the choices one makes. According to Julie Langer, theoretical rationality:

stems from a "metaphysical need" by "thinkers" to give ordinary life events a coherent meaning. Through abstract processes of rationalization reinforced by logic and science, these "thinkers" develop increasingly precise concepts, which are used to deduce patterns of action and make sense of ones' reality . . . [and] to give meaning to the cosmos.¹¹⁸

Theoretical rationality is motivated by the expression of principles or beliefs rather than by purely technical or practical considerations; individuals or organizations will pursue a course of action to explore or express intellectual abstractions instead of specific outcomes or objectives.

This section will examine the messaging of NASA's unmanned space missions of the 1970s and the change in social context that upended the messaging paradigm of the Space Race. I will contend that this messaging represents value rationality; instead of being delivery systems for propaganda, space missions became opportunities to find meaning in the cosmos. NASA's intentions were neither expedient nor results-oriented, but meaningful; they sought knowledge of the universe and offered some in return for audiences they could only hypothesize.

The Secular Apocalyptic

In the United States, the twentieth century was a time of complex political and social challenges exemplified by events such as the Cold War stalemates lasting from 1945 to 1989, the social turmoil of the civil rights movement of the late 1950s to the late 1960s, and

¹¹⁷ Weber, *Economy and Society*, p. 24.

¹¹⁸ Julie Langer, 'Bureaucracy and the Imaginal Realm: Max Weber, Rationality and the Substantive Basis of Public Administration', *Perspectives on Public Management and Governance*, Volume 5, Issue 2, June 2022, pp. 122–134, (123) <<https://doi.org/10.1093/ppmgov/gvab033>> [accessed 23 December, 2022].

the anti-war Vietnam movement of the mid-1960s to the early 1970s.¹¹⁹ Perhaps the most significant challenge facing the country was the threat of nuclear annihilation as embodied by the superpowers' weapons stockpiles.¹²⁰ This period saw the rise of what has been called the 'secular apocalyptic', which Lisa Vox defined as the general acceptance that the world could end—not from a supernatural cause, but from humanity itself.¹²¹ She claimed the atomic bomb 'brought the scientific apocalyptic to the forefront of popular culture [making] the end of the world more likely than ever before.'¹²²

Writing in 1990, Michael Barkun stated: 'For the last quarter-century, America has been saturated with apocalyptic themes. . . . scenarios range from secular forecasts of nuclear war to environmental collapse.'¹²³ Popular novels and films such as *On the Beach*, *Failsafe*, and *Dr. Strangelove* made the portrayals of global destruction commonplace, President Kennedy advocated that Americans build bomb shelters in 1961, and there was an impression that humanity could not be trusted to prevail in the long-term.¹²⁴ Eva Horn wrote:

The twentieth century was under the spell of an apocalyptic vision that was claimed to be both 'absolutely real' and 'quite close'. This vision found its expression in a single image: the nuclear explosion. The radiant flash of light, the mushroom cloud and a destroyed landscape reaching up to the horizon visualised the possibility of the extinction of all mankind, something . . . fantasies of the end of the world had [never before] pictured in this way.¹²⁵

In his 1950 speech to the Nobel Prize committee, William Faulkner epitomizes this trend; he recognized the peril but did not give in to it. His speech began by addressing the global

¹¹⁹ Thomas Borstelmann, and Charles Reagan Wilson, 'Cold War', in *The New Encyclopedia of Southern Culture*, ed. by James W. Ely and Bradley G. Bond (University of North Carolina Press, 2008), pp. 167-169, (167) <http://www.jstor.org/stable/10.5149/9781469616742_ely.66> [accessed 6 December, 2022].

Adam Fairclough, 'Historians and the Civil Rights Movement', *Journal of American Studies*, 24 (1990), 387-398, (387) <<http://www.jstor.org/stable/27555365>> [accessed 6 December, 2022].

Mitchell K. Hall, 'The Vietnam Era Antiwar Movement', *OAH Magazine of History*, 18 (2004), 13-17 (14-16) <<http://www.jstor.org/stable/25163716>> [accessed 6 December, 2022].

¹²⁰ Lisa Vox, 'Postnuclear Fantasies', in *Existential Threats* (University of Pennsylvania Press, 2017), pp. 55-87, (69) <<https://www.jstor.org/stable/j.ctv2t4cz4.6>> [accessed 14 November, 2022].

¹²¹ Lisa Vox, 'Secularizing the Apocalypse', in *Existential Threats* (University of Pennsylvania Press, 2017), pp. 1-18, (1) <<https://www.jstor.org/stable/j.ctv2t4cz4.4>> [accessed 14 November, 2022].

¹²² Vox, 'Postnuclear Fantasies', p. 56.

¹²³ Michael Barkun, 'Racist Apocalypse: Millennialism on the Far Right', *American Studies*, 31 (1990), p. 121 <<http://www.jstor.org/stable/40642392>> [accessed 17 November, 2022].

¹²⁴ Vox, 'Postnuclear Fantasies', pp. 68, 73.

¹²⁵ Eva Horn, 'The Apocalyptic Fiction: Shaping the Future in the Cold War', in *Understanding the Imaginary War*, ed. by Matthew Grant and Benjamin Ziemann, 1st edn (Manchester University Press, 2016), p. 30 <<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/j.ctvnb7n1g.7>> [accessed 16 November, 2022].

malaise brought by the threat of nuclear war: 'Our tragedy today is a general and universal physical fear . . . There is only the question: When will I be blown up?'¹²⁶ Mark LaVoie elucidated the state of mind Faulkner described: 'atomic war meant global destruction. All people were susceptible to nuclear attack and death, and . . . it seemed inevitable'.¹²⁷ However, Faulkner rejected the seeming inevitability of humankind's destruction, instead imagining us prevailing until Earth's final hours: 'in the last red and dying evening, even then there will still be one more sound: that of [man's] puny inexhaustible voice, still talking'.¹²⁸ Faulkner's alternate ending for the world was coloured with a guarded hopefulness that reflected the growing trend of academics and scientists calling for action to save the world from destruction. For example, fellow Nobel Prize winner Linus Pauling called for support of international agreements to end nuclear testing for fear that increased atmospheric radiation would mutate the 'human germ plasm in such a way that the human species would not survive'.¹²⁹ Similarly, the physician and activist Helen Caldicott warned of the medical and environmental hazards posed by the atmospheric testing of nuclear weapons, specifically the degree to which food and water had already been contaminated by them.¹³⁰ These people of science were motivated to act because they believed that change was possible and that the self-destruction of humankind was not preordained.

Weber and the Meaningful Cosmos

The secular apocalyptic overturned the notion of a winnable war between the superpowers. Should the threat be realized, there would be no one left to win. Citing additional issues such as population growth, economic disparity, resource shortages, and environmental destruction, the astronomer Carl Sagan considered Earth to be in a type of 'technological adolescence' and suggested the possibility that, 'it is the fate of all such

¹²⁶ William Faulkner, 'William Faulkner's Nobel Prize Acceptance Speech', *Southern Cultures*, 12 (2006), 71 <https://librarysearch.uwtsd.ac.uk/permalink/44WHELP_UWTSO/1ir6fgh/cdi_projectmuse_journals_194432_S1534148806100719> [accessed 17 November, 2022].

¹²⁷ Mark LaVoie, 'William Faulkner's "Speech Accepting the Nobel Prize in Literature": A Language for Ameliorating Atomic Anxiety', *Rhetoric and Public Affairs*, 17 (2014), p. 203 <<http://www.jstor.org/stable/10.14321/rhetpublaffa.17.2.0199>> [accessed 17 November, 2022].

¹²⁸ LaVoie, 'William Faulkner's Speech', p. 209. Faulkner, 'Nobel Prize', p. 71.

¹²⁹ Vox, 'Postnuclear Fantasies', p. 68.

¹³⁰ 'Helen Caldicott', *Encyclopedia Britannica*, 3 Aug. 2022 <<https://www.britannica.com/biography/Helen-Broinowski-Caldicott>> [accessed 18 November, 2022].

[interstellar] civilizations to destroy themselves before they are much further along'.¹³¹

However, he felt that annihilation was not inevitable and believed that communication was the key to survival:

it is certainly possible that the future of human civilization depends on the receipt and decoding of interstellar messages. . . . It may be that civilizations are divided into two great classes, those which make such an effort, achieve contact and become new members of a loosely tied federation of galactic communities, and those which cannot or choose not to make such an effort . . . and who in consequence soon decay and vanish.¹³²

Recognizing the physical restraints impeding 'real-time conversations' with distant societies, he nonetheless suggested that 'a single message from space will show that it is possible to live through technological adolescence.'¹³³ NASA's subsequent messaging as seen on the Pioneer, LAGEOS, and Voyager missions is directed to the unknowable 'other' in hope of communicating some rudimentary facts about humanity. This messaging is consistent with value rationality because it demonstrates a focus on meaning over results. According to Kalberg,

Theoretical rationalization processes are undergirded and given their momentum . . . by the natural "metaphysical need" and "irrepressible quest" of thinkers and systematizers to . . . supply the random events of everyday life with a coherent "meaning".¹³⁴

The people involved in this messaging epitomize the 'thinkers and systematizers' striving for meaning in the cosmos.¹³⁵

NASA's unmanned scientific missions were built after the Space Race, at a time when scientific exploration displaced superpower posturing. Unlike their manned predecessors, these missions were not undertaken to broadcast national narratives; they were launched in search of greater knowledge of the Earth and solar system. As consultant and adviser to NASA from the 1950s, Sagan was instrumental in devising the messaging for otherwise practical, scientific missions: a satellite with a stable Earth orbit and four probes designed to

¹³¹ Carl Sagan, 'The Quest for Extraterrestrial Intelligence', *Cosmic Search*, 1.2 (1979) <<http://www.bigear.org/vol1no2/sagan.htm>> [accessed 27 November, 2022].

¹³² Sagan, 'The Quest'.

¹³³ Sagan, 'The Quest'.

¹³⁴ Kalberg, 'Max Weber', p. 1153.

¹³⁵ Kalberg, 'Max Weber', p. 1153.

travel through interstellar space.¹³⁶ The messages have delivery times calculated not in days or years, but in millennia, and their attenuated content asks no questions, requests no action, and shares no technology; instead, these simple existential declarations spell out just three things about us: *what*, *when*, and *where*. These messages can theoretically endure without end, potentially providing witness for humanity's existence long after it has disappeared.¹³⁷

Pioneer 10 and 11

NASA's first message to extra-terrestrial life was essentially a last-minute addition, conceived, designed, and completed just weeks before the launch of the probe.¹³⁸ The fact that the message was not a mission-critical element of the spacecraft is significant because it inverts the messaging dynamic of the Cold War manned missions; whereas those missions existed primarily to create and reinforce the national narratives of the Soviets and Americans, Pioneer was very close to being launched without any message at all. Its primary function was to gather information, not dispense it.

Pioneer 10's long lifespan and interstellar trajectory made it ideal to carry NASA's first extra-terrestrial communication: in Sagan's words, an 'interstellar postcard that included little more than the senders and our address'.¹³⁹ The plaque had to serve as a complete thought because any response was expected to come after the natural lifespans of its writers, and possibly even humanity as a whole.¹⁴⁰ Representing a useful example of Weber's value-rationality, the plaque was designed for an imagined audience whose reactions would likely never be known. It made no attempt to manipulate or appeal, produce or create a desired effect, or serve any utilitarian function. It was born, in Weber's words, of the 'conscious belief in the value for its own sake'.¹⁴¹

¹³⁶ National Aeronautics and Space Administration, *Carl Sagan (1934-1996)*, (2001) <<https://solarsystem.nasa.gov/people/660/carl-sagan-1934-1996/>> [accessed 2 December, 2022]. Carl Sagan and others, *Murmurs of Earth: The Voyager Interstellar Record* (New York: Random House, 1978), pp. 9, 56.

¹³⁷ D. G. Kehl, 'The Graffitiist and the Belletrist', *CEA Critic*, 40 (1978), p. 31 <<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/44376860>> [accessed 17 November, 2022].

¹³⁸ Carl Sagan, Linda Salzman-Sagan and Frank Drake, 'A Message from Earth', *Science*, 175 (1972), p. 881 <<http://www.jstor.org/stable/1733664>> [accessed 21 April, 2021].

¹³⁹ Paglen, 'Friends of Space', p. 10. Sagan and others, *Murmurs of Earth*, p. 9.

¹⁴⁰ Paglen, 'Friends of Space', p. 10.

¹⁴¹ Weber, *Economy and Society*, pp. 24-25.

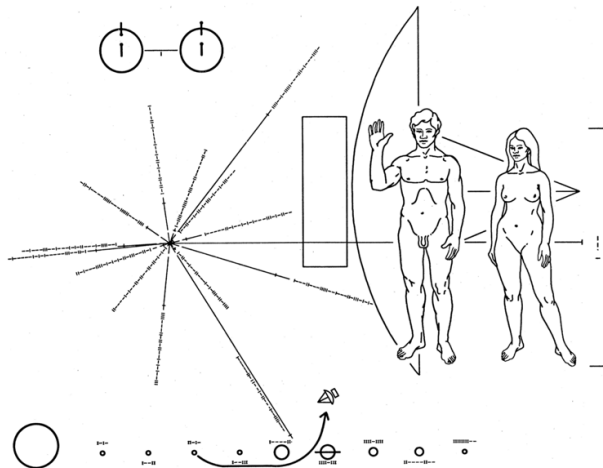


Fig. 14: NASA Pioneer Project Office, *Pioneer Plaque*, 1972. Image: Carl Sagan.

The plaque is a pictorial diagram inscribed on a metal plate which was bolted to an antenna strut.¹⁴² It depicts a hydrogen atom, a pulsar map, two human figures posed before the probe, and a linear diagram of the solar system (*Figure 14*). This is not a singular narrative; each section functions individually.¹⁴³

The message is a theoretical exercise. By using the hydrogen atom to provide the unit for measuring time, dimension, and distance, the composition relies on relatively complex strategies to communicate the most basic of messages: the *when*, *where*, and *who* of the probe. The 'when' can be determined by the pulsar map; since pulsars are astronomical entities, they remain active for millions of years. Calculating the rate of change in the rhythm of the pulsars over time makes it possible to date the probe with some accuracy. The 'where' of the probe is answered twice; by the pulsar map, and by the solar system diagram. The map provides a durable method to locate Earth in the galaxy. Fourteen radiating lines, each differentially cross-hatched to represent a particular pulsar, converge on a single point; by triangulating as few as three of these pulsars, Earth's position can be plotted.¹⁴⁴ The diagram zooms in closer to the solar system itself, providing a more granular *where* than the pulsar map could provide; but in this diagram the planets are out of scale

¹⁴² Sagan, 'A Message', p. 881.

¹⁴³ Sagan, 'A Message', p. 881.

¹⁴⁴ Douglas A. Vakoch, 'Signs of Life Beyond Earth: A Semiotic Analysis of Interstellar Messages', *Leonardo*, 31 (1998), 313-319, (314) <<http://www.istor.org/stable/1576671>> [accessed 20 March, 2021].

and uniformly in line with the sun. It was hoped that Earth would be understandable as the birthplace of the probe as indicated by the curve tracking the path of a tiny Pioneer.¹⁴⁵ The image of the human figures provides the 'who'; they were naked to eliminate the confusion that clothing might cause and situated before Pioneer for scale. Sagan hoped these figures would be recognisable as the organic entities that created the probe, but he warned, 'it seems likely, if the interceptor society has not had previous contact with organisms similar to human beings, that many of the body characteristics shown will prove deeply mysterious'.¹⁴⁶

The message of the Pioneer plaque does not require an answer. It is not question, a request, or a demand. The people who created it in 'conscious belief in the value for its own sake' hoped that it might one day be read but imagined that this would occur in a time beyond their own.¹⁴⁷ In Langer's words, the plaque 'stems from a "metaphysical need" by "thinkers" to give ordinary life events a coherent meaning', which marks it as theoretical rationality according to Weber's model.¹⁴⁸ Where the probe was meant to take meaning from the cosmos, the plaque was meant to share it. Its presence on the probe elevates the mission from practical scientific exploration to a theoretical contemplation of identity, existence, and connection.

The LAGEOS Satellite

Like Pioneer, the LAGEOS (LAsER GEOdynamics Satellite) is a purpose-built, specialized device that provides a valuable utility for the scientists for whom it was constructed. It also contains an attached message that is extraneous to its function, designed for an earthly audience in the distant future. LAGEOS was launched by NASA in 1976 as the 'first spacecraft dedicated exclusively to high-precision laser ranging'.¹⁴⁹ LAGEOS is an important scientific innovation because its stable orbit of 5,900 kilometres places it above the drag of the atmosphere where it can remain aloft for a long as ten million

¹⁴⁵ John H. Holloway, 'Visual Order in Visual Art and Visual Representations in Science', *Leonardo*, 14 (1981), p. 314 <<http://www.jstor.org/stable/1574613>> [accessed 22 March, 2021].

¹⁴⁶ Sagan, 'A Message', p. 883.

¹⁴⁷ Weber, *Economy and Society*, pp. 24-25.

¹⁴⁸ Langer, 'Bureaucracy', p. 123.

¹⁴⁹ International Laser Ranging Service, 'General: Mission Objectives', <https://ilrs.gsfc.nasa.gov/missions/satellite_missions/current_missions/lag1_general.html> [accessed 22 July, 2022].

years.¹⁵⁰ Unpowered and without equipment, there is nothing to repair and no need to refuel; with a weight of over four hundred kilograms, the satellite is sturdily constructed to provide protection from space-born hazards.

Sagan's message is bolted to the interior of the satellite. Like Pioneer's, the LAGEOS plaque is a further example of Weber's theoretical rationality: representing 'conscious belief in the value for its own sake', it does not seek a result or a response.¹⁵¹ Instead, by virtue of it being the product of pure intellectual exploration, the message is an indication that its creators sought 'a meaningful cosmos' by finding a way to communicate with the 'other': a terrestrial audience of the deep future.¹⁵²

Sagan's rationale for creating the message was to share information without reciprocation—in Langer's words, to 'make sense of ones' reality . . . [and] to give meaning to the cosmos.¹⁵³ Sagan wrote, '[the plaque] should serve to give the discoverers of LAGEOS an idea of the origins of what they have found. Whoever is inhabiting our planet in that distant epoch . . . may appreciate a little greeting card from the remote past'.¹⁵⁴ However, this 'greeting card' has no real greeting; because the speculative nature of the language restricts its scope, the message is simplified to a single theme: the object's 'when'.

The challenge of the message was to find a method of communicating without the use of written language.¹⁵⁵ The LAGEOS message is composed of 6 elements [Figure 15]. The only language on the plaque is the satellite name in English, paired with an image of the probe. These appear in the top (left-right) section of the plaque, along with the string of binary numerals serving as a legend throughout the composition, and a simple diagram of the Earth in orbit around the Sun. The lower section of the plaque is composed of three ovoid maps that each cite binary numbers to suggest time. The first map depicts the Earth 225 million years ago, illustrating the single continent of Pangea before the drift of plate tectonics, with numerals and a left-facing arrow indicating the past. The second depicts

¹⁵⁰ International Laser Ranging Service, 'General: Mission Objectives'.

¹⁵¹ Weber, *Economy and Society*, pp. 24-25.

¹⁵² 'An Orbiting Message for the Future', *Science News*, 109 (1976), p. 248.

<<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/3961087>> [accessed 19 July, 2022].

¹⁵³ Langer, 'Bureaucracy', p. 123.

¹⁵⁴ 'An Orbiting Message', p. 248.

¹⁵⁵ 'An Orbiting Message', p. 248.

estimated by comparing the bottom two maps.¹⁵⁶ Of course, The plaque assumes that numbers and visual representations of geographic land masses will hold meaning to future earth sentience. Should a future species decode the entire complex accumulation of data on the plaque, they would have just one piece of information, its 'when'.

LAGEOS represents pure practical rationality; its function is entirely scientific. However, being built during a time of existential uncertainty, it was appended with a theoretical message that was designed for Earth's very distant future. As a prime example of Weber's concept of value rationality, this message 'through abstract processes of rationalization reinforced by logic and science,' attempts to 'make sense of ones' reality'.¹⁵⁷ The plaque transformed a practical object into a theoretical one; its engagement with time created the opportunity to imagine the survival of our species and the future of Earthly sentience during a time when the secular apocalypse felt inevitable.

Voyager 1 and 2

The Voyager probes of 1977 completed their original missions to survey the outer planets by 1981. Since then, their separate trajectories have taken them into interstellar space where Sagan suggested they could survive indefinitely:

Billions of years from now . . . Voyager will still be largely intact, in some other remote region of the Milky Way galaxy, preserving a murmur of an ancient civilization that once flourished . . . on the distant planet Earth.¹⁵⁸

Like Pioneer, the Voyager mission was practical and scientific, but carried messages that added an additional theoretical dimension to the probe's pragmatic rationality. The messages were stored on a high-density, gold-plated copper phonograph record that contains sound, images, and video, many of which were the contributions of the general public. The messaging was initiated by project manager John Casani in 1974, who tasked Carl Sagan to recruit a team of academics, scientists, artists, and business leaders to help create it.¹⁵⁹ Their goal was to appeal not only to extra-terrestrial sentience, but also to humanity. B. M Oliver wrote,

¹⁵⁶ International Laser Ranging Service, 'General: Mission Instrumentation'.

¹⁵⁷ Langer, 'Bureaucracy', p. 123.

¹⁵⁸ Sagan and others, 'Murmurs of Earth', p. 42.

¹⁵⁹ Chris Impey, and Holly Henry, 'Voyager: Grand Tour of the Solar System', in *Dreams of Other Worlds*, Revised edn (Princeton University Press, 2013), pp. 74-110 (92)
<<http://www.jstor.org.ezproxy.uwtsd.ac.uk/stable/j.ctt1pd2k9k.6>> [accessed 18 July, 2022].

There is only an infinitesimal chance that the plaque will ever be seen by a single extra-terrestrial, but it will certainly be seen by billions of terrestrials. Its real function, therefore, is to appeal to and expand the human spirit, and to make contact with extra-terrestrial intelligence a welcome expectation of mankind.¹⁶⁰

Like Pioneer and LAGEOS, Voyager's messages were designed for the 'other'; unlike them however, NASA involved the public in their creation, widely publicised their contents, and ensured their inclusion from the outset of mission planning. As a result, Voyager's messages differ somewhat from those attached to Pioneer or LAGEOS. They are not the hermetic musings of a few 'thinkers and systematizers' like Sagan and Drake, but part of a highly curated public relations campaign designed for wide dissemination. For NASA's primary earthly audience, they are pragmatically rational. But there is a deeper complexity at work: the subtlety here is that the messages were devised for two entirely separate audiences, and with separate rationality for each. Should these messages ever be found by their secondary audience of extra-terrestrials, NASA's nationalistic agenda would be irrelevant; severed from Earth's social and political context, the messages embody the value-rationality of creating meaning in the cosmos.

The protective aluminium cover of the record recalls the intellectual / theoretical rationality of the Pioneer and LAGEOS plaques. The information found there displays no agenda beyond providing biographical data and operating instructions for the record within. It exists as a way to bring meaning to the contents, by describing where they came from and how to access them. Electroplated with the isotope uranium-238, it functions as an atomic clock to reveal the age of the probe in the distant future.¹⁶¹ This cover is inscribed with an image that recalls the Pioneer plaque and reuses two of its elements: the hydrogen atom legend and the pulsar map, which perform the same functions here [Figure 16]. In addition, there are four images which provide instructions for the playing and calibration of the record within. The upper and centre left illustrate the proper use of the stylus and indicate playback speed, and the upper and centre right illustrate the correct calibration of the embedded videos. This composition is chiefly designed to be instructional—how to play the record which could remain playable for a billion years.¹⁶²

¹⁶⁰ Sagan and others, *'Murmurs of Earth'*, p. 11.

¹⁶¹ National Aeronautics and Space Administration, 'Making of the Golden Record', <<https://voyager.jpl.nasa.gov/golden-record/making-of-the-golden-record/>> [accessed 15 March, 2022].

¹⁶² Impey and Henry, 'Voyager: Grand Tour', pp. 92-93.

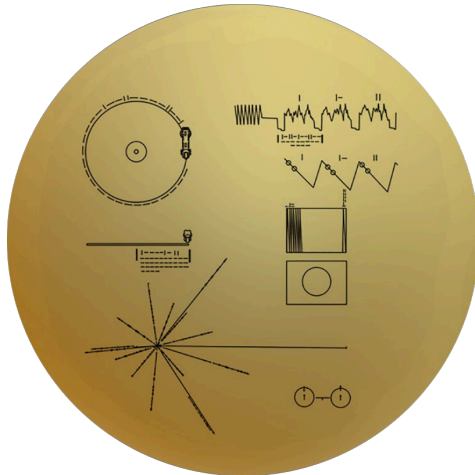


Fig. 16: NASA Jet Propulsion Laboratory, *The Voyager Golden Record Cover*, 1977. Image: NASA/JPL.

By contrast, NASA's practical rationality is immediately evident after opening the cover. The surface of the record itself is inscribed with messages designed for the Earthly audience: an image of Earth with a label that reads: 'THE SOUNDS OF EARTH / SIDE 1 / NASA / THE UNITED STATES OF AMERICA / PLANET EARTH' [Figure 17].¹⁶³ These words reveal the agency's intentions; crediting only NASA and the USA reduces a global identity to an American one—a choice reminiscent of the Apollo I and XI mission patches discussed in Section I [Figures 12-13].

¹⁶³ Sagan and others, 'Murmurs of Earth', p. 40.



Fig. 17: NASA Jet Propulsion Laboratory, *The Voyager Golden Record*, 1977. Image: NASA/JPL.

Unlike Pioneer's silent wave, Voyager's messaging is rich and complex. It illustrates a sincere attempt to address an extra-terrestrial audience. The record uses a variety of visual and auditory content curated to provide a glimpse of Earth, including a twelve-minute 'sound essay', images related to nature, science, and human activities, recorded greetings in more than fifty languages, and ninety-minutes of music.¹⁶⁴ Impey and Henry described the sound essay as an imaginative composition loosely tracing earth's history from early creation to humanity's path to the stars. It concluded with the electro-magnetic waves of human brain activity juxtaposed with those of a pulsar. Druyan, the subject whose brain waves were recorded, wrote,

My . . . life signs sound a little like recorded radio static from the depths of space.

The electrical signatures of a human being and a star seemed, in such recordings, not so different, and symbolized our relatedness and indebtedness to the cosmos.¹⁶⁵

To reflect the diversity of human culture, the record also included greetings from people with commonly spoken languages such as English, French, and Arabic, and ancient ones such as Akkadian, Sumerian, and Hittite.¹⁶⁶ The messages were not standardized but left to the volunteers to compose.¹⁶⁷ The committee also included music because they believed it

¹⁶⁴ Impey and Henry, 'Voyager: Grand Tour', pp. 92-93.

¹⁶⁵ Impey and Henry, 'Voyager: Grand Tour', pp. 92-93.

¹⁶⁶ Impey and Henry, 'Voyager: Grand Tour', p. 95.

¹⁶⁷ Impey and Henry, 'Voyager: Grand Tour', p. 97.

'expresses a potentially universal, mathematical language'.¹⁶⁸ The curatorial process for the music was challenging because it was allotted only ninety minutes on the record. Ann Druyan wrote, 'We felt like we were on the committee for Noah's Ark, . . . deciding which pieces of music and which sounds of Earth would be given eternal life, really a thousand million years. We took it as a kind of sacred and joyful task'.¹⁶⁹ In addition to indigenous music from countries such as Java, Zaire, Japan, India, Peru, and New Guinea among others, there was also jazz, rock and roll, and classical:

In researching Beethoven's Cavatina, Druyan found on the score of an adjacent opus that the composer had written: 'What will they think of my music on Uranus? How will they know me?' Beethoven apparently . . . toyed with the thought that his music might leave [our] planet.¹⁷⁰

Fittingly, Voyager 2 did indeed pass by Uranus carrying Beethoven's music with it.

NASA actively curated these messages to create the desired effect. They were subject to two types of censorship: to preserve NASA's image from a terrestrial audience, and to preserve Earth's image from an extra-terrestrial one. For example, the committee rejected one image to 'protect' earthlings: it displayed a pregnant woman and a man, with a diagram indicating the position of her foetus. NASA administrator Herbert Rowe reported, 'we felt [it] was not appropriate for inclusion . . . that some people might get the wrong idea from the picture. This artifact . . . would be reflecting on NASA and the federal government'.¹⁷¹ This sort of amelioration also occurred with images familiar to the human public, but NASA felt was inappropriate for extra-terrestrial eyes:

The group had been prepared to show evidence of the unhappier facts of human existence, such as war, crime, and suffering. "But everyone acted like a typical human family and wanted to put the best foot forward," says Drake. A beautiful picture of a nuclear explosion was 'instinctively rejected'.¹⁷²

NASA's choice to create an idealised picture of humanity illustrates that it was motivated by the anticipation of a response (whether terrestrial or extra-terrestrial) to these messages; their manipulation of the data to produce a specific outcome both tempered the accuracy of the information and revealed their rationale as pragmatic.

¹⁶⁸ Impey and Henry, 'Voyager: Grand Tour', p. 94.

¹⁶⁹ Impey and Henry, 'Voyager: Grand Tour', pp. 92-93.

¹⁷⁰ Impey and Henry, 'Voyager: Grand Tour', p. 94.

¹⁷¹ Wade, Nicholas, 'NASA Bans Sex from Outer Space', *Science*, 197 (1977), pp. 1163-65, (1163) <<https://www.jstor.org/stable/1744539>> [accessed 18 July, 2022].

¹⁷² Wade, 'NASA Bans Sex', p. 1164.

Like its predecessors Pioneer and LAGEOS, Voyager was launched into space bearing messages. Unlike them, however, Voyager's were designed for two entirely distinct audiences. By force of this divergence, NASA was able to act with dual rationality: value-rationally with extra-terrestrials and pragmatically with earthlings. With only belief to motivate them, the record committee's 'thinkers and systematizers' designed Voyager's record to speak to the 'other' with sound, language, and images. Once divorced of its terrestrial context, the disk would provide its finders with a rich record of human culture, adding a little more meaning to the cosmos. NASA's primary audience, however, was contemporary humanity, for whom the record, by singling out the USA over all other countries, reinforced the notion of American exceptionalism.

Sending messages to space with little reasonable expectation of their ever being found is an act of faith. Such an action is not performed for profit or utility; it requires the guiding belief that the act itself has value because it brings meaning. As such, NASA's unmanned spacecraft accurately represent value rationality as described by Weber: 'conscious belief in the value for its own sake . . . independent of its prospects of success'.¹⁷³ Their long journeys promise them near immortality; designed for scientific exploration, with the attachment of rudimentary messages they became opportunities for theoretical investigation. The irony that these messengers will likely long outlast their senders was not lost on those who devised the messages during that era of unprecedented existential uncertainty; their very existence suggests that the enervation of the secular apocalyptic was not universal. These probes were beacons of hope—tangible proof of humankind's ability to overcome the seeming inevitability of annihilation, and failing that, to announce to the world that we were here, and we mattered. The spacecraft, like their messages, signified belief in the value of humanity, and their creation helped to bring some meaning to the cosmos.

¹⁷³ Weber, *Economy and Society*, p. 24.

Conclusion

It can be fruitful to examine messaging through the theoretical framework of Weber's Theory of Rationality because, by measuring intentionality through social action, it can reveal the motivations behind the message. These motivations can reveal hidden layers of complexity, adding richness to our understanding. Weber's theory describes four types of social action based on specific motivations: pragmatically rational, value-rational, affectual, and traditional. Of these four, two types (affectual and traditional) are non-negotiated, describing the extant emotional states or habitual (unthinking) action of an individual and thus are not useful to determine intentionality. Pragmatically rational and value-rational, however, are useful to apply to messaging because they describe negotiated processes between the individual / organization and others. These social actions reflect intentionality; one's goals (not one's language) determine whether the rationality is practical or value.

Practical rationality involves making decisions based on the most efficient means to achieve a specific goal, motivated by factors such as data, evidence, and the desire to achieve an objective. On the other hand, theoretical rationality involves pursuing a course of action to explore or express intellectual abstractions, motivated by principles or beliefs rather than practical considerations. In Weber's conception, a cynical appeal for an abstraction such as 'Party' or 'freedom' is not a value rationalization; instead, its rationale is pragmatic because the stated concept is merely a tool to deceive or manipulate to achieve a calculated outcome. Thus, Weber's model pivots on authenticity; by his definition, the cynical use of value narratives to achieve calculated outcomes is pragmatic rationality, and the sincere use of value narratives to seek deeper understanding, the 'conscious belief in the value for its own sake', is theoretical rationality.

Nicholas Campion applied Weber's Theory of Rationality to the study of space exploration in his work, *Heavenly Discourses*. He used the model to analyse various narratives of space exploration such as Kennedy's 1961 speech to Congress, Billy Graham's support for NASA based on his belief in celestial beings, and Khrushchev's speech honouring Yuri Gagarin to evaluate their level of pragmatism or value-rationality. Through his analysis, Campion sought to understand the values and motivations behind the messaging surrounding space exploration.

However, since Weber's model is designed to characterize social action and intentionality, not semantics, I have attempted to enrich the discussion by re-examining the social actions and intentions of Cold War space programs of the Soviet Union and the United States with Weber's model. This will allow a look beyond the words themselves, to reveal the motivations behind them. I suggest a 'value narrative' broadcast with the goal to deceive or manipulate reveals the pragmatic rationality of the sender and his message, just as messaging sent out to space with little or no chance of engagement reflects the belief, and value-rationality, of its senders. Determining intentionality is critical to meaningfully decipher the message.

The Pragmatic Rationality of the Space Race

The Cold War space programs of the Soviet Union and the United States were conducted in a context of political and existential threat that manifested in their messaging. Europe was split into a binary opposition of East versus West—the former, controlled by Moscow, squared off against its chief rival, the United States. These ideologically opposed nations signalled dominance by engaging in an arms race which used the threat of technological superiority as a proxy to real conflict. Their stockpiling of weapons of mass destruction and combative posturing with ever-evolving tools of war had a profound effect on their respective societies.

Because their militaries were too powerful to be utilized, this was a Cold War fought with words and semiotics. By the late 1950s, the superpowers had extended the arms race to space. The rockets which bore satellites and later human beings were ICBMs which could also carry nuclear warheads. The messaging of the superpowers' space programs shaped, and was shaped by, the Cold War, and provides layers of meaning concealed by appealing nationalistic narratives. The Cold War space programs often employed this rhetoric to disguise their intentions to manipulate and control. Using Weber's model, an examination of intentionality can unpack these messages to show what they *meant*, versus what they *said*. This framework reveals that the 'value-rich' language of both nations was employed with a specific goal or goals in mind, making it, by Weber's definition, pragmatic in nature.¹⁷⁴ The official statements of both superpower space programs illustrate calculation; their

¹⁷⁴ Weber, *Economy and Society*, p. 24.

messages, even those with richly evocative rhetorical abstractions like 'nation' and 'Party', were intentionally crafted to motivate or manipulate.

In his drive to elevate Party above the personal, Khrushchev presented the vital ingredient of his Socialist utopia: the 'New Man', a paradigm of the perfect comrade built through collective, selfless endeavour. According to Soviet messaging, his space program was portrayed with 'perfect' technology piloted by 'perfect' citizens almost effortlessly achieving a long list of 'firsts'. Muzzled by *Glavlit*, this messaging was pure, fabricated rhetoric extolling the glorious achievements of the Soviet state. However, because this messaging was meant to ensure compliance of its domestic audience and deter other countries militarily, it was manipulative and propagandistic.

Like the Soviets, the Americans used value language to disguise pragmatic intentions and sell their space program to Congress and the public. In the early days President Eisenhower's messaging was sincere—he trusted that science, exploration, and potential deliverables would sell the space program. After the *Sputnik* shock of 1957, however, the reluctant president was pressured into creating NASA to manipulate public opinion. His successor Kennedy chose to add astronauts and a moon shot to create a powerful narrative to bolster his flagging presidency and redirect attention from his foreign policy failings. To differentiate from the Soviet collective, NASA's messaging described a nation of independent, high-achieving individuals, but controlled and curated their contributions to the public discourse. The astronauts were part of missions for the value of their faces as purveyors of the message, not their contributions to science or exploration.

The Cold War was fought via unrealised threat and the deterrence of their rivals' technological equivalence. As proxies to the weapons of war, their rockets and space programs were publicly rebranded to announce national ambitions, reinforce political ideology, and redirect attention from political failures and military insecurities. Although both space programs were motivated by the need to assert their technological dominance, their messaging did not reflect this, emphasizing instead their national and political values. An examination of these motivations through Weber's model illustrates the pragmatic intentionality of the superpowers, signalling that their messaging is more complex than it first appears.

The Theoretical Rationality of NASA's Un-manned Missions

After Apollo, NASA's unmanned missions were very different in character. They were not launched in competition, they enjoyed a much lower public profile, and instead of using a strategic narrative to push the notions of collectivism or exceptionalism, they were designed for science and exploration.

Like their predecessors, however, they were products of the Cold War, and their messaging reflects a concern with the secular apocalyptic—the cultural notion that the human species was not only capable of destroying itself, it was likely to. This realization, becoming pervasive throughout society from William Faulkner's Nobel Prize speech to popular films such as *On the Beach* and *Dr. Strangelove*, opened discussions about the definition of humanity and the nature of existence.

NASA's new missions were long-duration, interstellar, and likely to outlast their creators. As a result, they provided the opportunity to experiment with novel forms of communication which elevated the missions from practical scientific investigations to existential explorations of identity and connection. Three of these missions: Pioneer, LAGEOS, and Voyager contained messages to non-human sentience that could bear witness to human existence even if the threats of the secular apocalyptic were realised. Although moderated somewhat by NASA's dual rationales with Voyager, the messaging of these missions is value-rational in Weber's model, indicating 'a conscious belief in the value for its own sake' and independent of its prospects of success'.¹⁷⁵ Driven by a desire for knowledge and a need to understand the universe, their intention was to find meaning in the cosmos.

The Pioneer and LAGEOS messages were composed by small groups of people and were attached to missions as non-essential afterthoughts. This is significant because it reverses the messaging dynamic of Cold War manned missions whose primary function was not exploration or science but to promote and strengthen the national narratives of the Soviet Union and the United States. The primary purpose of Pioneer and LAGEOS was to gather information, not dispense it.

Pioneer was launched in 1972 bearing a small, inscribed plaque with four thematically distinct sections describing the 'where' and 'when' and 'who' of our existence.

¹⁷⁵ Weber, *Economy and Society*, pp. 24-25.

This message was designed for a suppositional extra-terrestrial audience and had no agenda other than offering a self-portrait, a post-mark of time and place, and a greeting. It expects nothing and demands nothing, and there was no calculable benefit for its inclusion other than the belief in its value for its own sake. Its presence on the probes elevates the mission from practical scientific exploration to a theoretical contemplation of identity, existence, and connection.

Similarly, the LAGEOS satellite carries a message to the 'other', in this case who or whatever might be on earth in eight to ten million years. Like Pioneer, this was a message to an unimaginable being, sent purely because NASA believed it had value for its own sake. Because designing a message for unknown recipients is overwhelmingly complicated, the plaque restricts its subject matter to placing the object in time; it does not include any information about the object's function, leaving the finders to determine its purpose and meaning on their own. There is no mention even of its senders. The LAGEOS plaque asks nothing of its recipients, instead offering them a 'when' of the object. Weber's model determines that because NASA was not motivated for pragmatic reasons and acted in belief of the value of the concept, this message is theoretically rational.

Voyager, like Pioneer and LAGEOS, was designed for scientific exploration; however, it bore messages that illustrate dual rationality on the part of NASA. This discrepancy was made possible by the absolute sequestration of its two audiences: the earthly and the extra-terrestrial. NASA recruited members of the sciences, industry, the arts, and the public for contributions. For Earth, Voyager's golden record was heavily publicised in part to spread a nationalist message by associating the project with a single country, the USA, even though the probe bore witness to our species as a whole. By Weber's model, this agenda represents NASA's instrumentally rational expectations that these actions would create an outcome favourable to them. In contrast, NASA's nationalistic agenda would be incomprehensible to an extra-terrestrial audience. Instead, NASA's large team of contributors devised messages, chose images and music, and created a sound essay, knowing that they would likely never receive an answer. With no agenda or expectations, their belief in the project for its own sake reflects their value-rationality.

Weber's Theory of Rationality enhances the analysis of intentionality. By revealing the motives behind the words, one can see past the given to discover a wealth of new meanings. This is particularly useful when applied to the messaging of the space race, for it

reveals that the Soviet Union and the United States devised manned space missions for the express purpose of serving as delivery mechanisms for their national narratives. Because science and exploration were subsumed by the superpowers' cynical need to manipulate or control, their messaging embodies Weber's notion of instrumental rationality. The opposing notion of Weber's model, value-rationality, is exemplified by NASA's post-Apollo scientific missions. These missions were purely practical in design and scope, but contained extraneous messages bolted to their fuselages. Asking for nothing and expecting no reply, this messaging was not calculated to produce an effect; it was born of a conscious belief in its value for its own sake. Such messaging elevated practical missions to the theoretical by engaging new audiences with new discussions. Probes designed to survey the outer planets were suddenly imbued with a metaphysical significance that exceeded national and cultural boundaries. Thus, by revealing the concealed and by divining truth, Weber's Theory of Rationality provides a valuable framework for understanding truth in messaging.

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