Contents

1

European Astrofuturism, Cosmic Provincialism: Historicizing the Space Age

Alexander C. T. Geppert

'Outer Space' is an expanding subject.
D. J. Gibson, British Foreign Office (26 October 1959)[1]

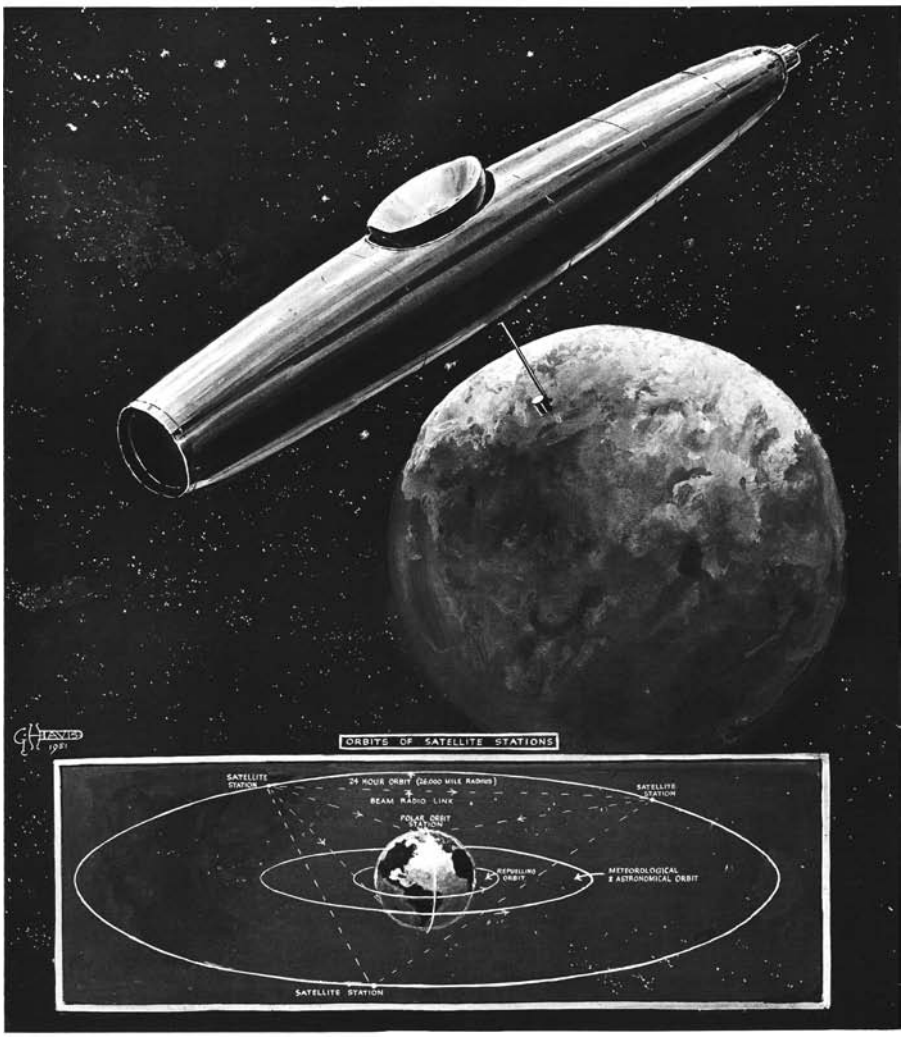
Ubiquitous, limitless and ever-expanding as it may be, outer space has a history too. Over the course of the twentieth century, the dark, infinite and unfamiliar vastness that surrounds us has stimulated the human imagination to an extent hitherto unknown. Numerous ventures to 'explore,' 'conquer' and 'colonize' the depths of the universe in both fact and fiction must be read as attempts to counter the prevailing *horror vacui*, the fear of empty spaces and voids of infinity felt and explicitly formulated since the sixteenth century. They all aim at overcoming what Sigmund Freud (1856–1939) termed in 1917 humankind's 'cosmological mortification,' the humiliating decentering of the earth effected by Nicolaus Copernicus's (1473–1543) heliocentric cosmology. Three decades and two world wars after Freud's observation, influential British futurist and science fiction writer Arthur C. Clarke (1917–2008) identified a related 'desire to know, whatever the consequences may be, whether or not man is alone in an empty universe' as the one key motive underlying all human efforts to overcome gravity and reach out beyond humankind's natural habitat on planet Earth.[2]

Imagining and re-imagining space and furnishing it time and again with one artifact after another, be they mental or material, has had a doubly paradoxical effect. As outer space became increasingly cluttered, it simultaneously became more and more concrete, and, concomitantly with such imaginary colonization, regarded in ever more spatial terms. An entire geography of outer space developed that presented itself as a continuation, if not a logical extension of earlier geographies of imperial expansion and colonial domination (Figure 1.1).[3] At the same time, outer space developed into one of the major sites of twentieth-century utopian thinking, where relations *vis-à-vis* science, technology and the future were positioned, played out and negotiated as nowhere else. In the process, outer space was transformed into a place in its own right. In 1974, cosmic jazz musician Sun Ra (1914–1993) was timely when famously proclaiming with His Astro Intergalactic Infinity Arkestra that 'Space is the Place.' For much of the twentieth century, it was indeed.

THE ILLUSTRATED LONDON NEWS

The World Copyright of all the Editorial Matter, both Illustrations and Letterpress, is Strictly Reserved in Great Britain, the British Dominions and Colonies, Europe, and the United States of America.

SATURDAY, SEPTEMBER 15, 1951.



THE FIRST STEP TOWARDS THE CONQUEST OF SPACE: AN UN-MANNED SATELLITE STATION CIRCLING THE EARTH.

Figure 1.1 In the fall of 1951, the cover page of the reputable *Illustrated London News* featured a 'generally recognized' concept for the 'first step towards the conquest of space.' The upper image shows an unmanned satellite station circling the earth in its orbit as a communication device. A solar mirror, pointing towards the sun and focused on a central heating coil, is integrated to produce electricity, while an earthward-oriented arm carries a radio transmitting system and receiving instruments. The lower image details the placing of three

Even an ever-expanding space, however, is subject to limitations. As numerous other observers – no less insightful than Sigmund Freud, Arthur C. Clarke and Sun Ra – have noted time and again, in defiance of all grand rhetoric and despite all arduous, piecemeal steps into the often glorified and frequently kitschified 'unknown,' to date the so-called Copernican revolution has still not been fully consummated. While versions and visions of outer space, extraterrestrial life and alien worlds – 'where no man has gone before' – have become increasingly elaborate, multifarious and competing, they have not succeeded in completely transcending life as we have long known and lived it, notwithstanding considerable cultural repercussions and societal impact. The more far-fetched these outlooks have become, the more geocentric they remain.[4] When the Allensbach-based Institut für Demoskopie, the oldest German polling institution, found during the Space Race's heyday that the proportion of West German citizens believing in the existence of extraterrestrial intelligence had declined from 42 to 28 percent between June 1954 and May 1967, it aptly termed such a seemingly counterintuitive diagnosis 'cosmic provincialism.'[5] Space enthusiasm and terrestrial geocentrism are two faces of the same coin. Aiming to observe and to comprehend rather than to believe, to preach or even to predict, it is particularly imperative that space historians find the right measure of benevolent, yet critical, distance from historical actants and propagandists of spaceflight and extraterrestrial expansion, the powerful promises they made, and the time-tested rhetorics they employed.

A truism for some, politically undesirable for others, the historicity of outer space and its human-made character is patently good news for the historian, permanently on the prowl for past forms of human self-expression. Historical visions of a future in outer space, imagined encounters with extraterrestrial civilizations and changing conceptions of alien life forms seem deeply characterized by their insurmountable anthropomorphism, insofar as they, quite unsurprisingly, always reveal more about their author's societies than about 'them' or any 'other.' If so, then the comprehensive historicization of outer space and extraterrestrial life must not only be intensified and advanced at once, but also instantly acquitted from all potential charges of exoticism, arcaneness and, hence, political irrelevance. Quite to the contrary, far from being outlandish or restricted to obscure elite discourses, ideas and images of outer space have been inextricable from the self-ascribed technoscientific modernity of the twentieth century as exemplified by that outdated yet still alluring notion, the Space Age.[6]

When such a Space Age occurred, how long it endured, and when it ceased to exist – or whether we still live in its midst – are valid questions still open to

---

Figure 1.1 (*continued*) such space stations in earth orbit and their radio interconnections. Largely based on Arthur C. Clarke's far-reaching concept of 'extra-terrestrial relays,' published in the October 1945 issue of *Wireless World*, the aim was to establish the kind of global communication system considered indispensable in a world society yet to come.
Source: G. H. Davis with Eric Burgess and Arthur C. Clarke, *Illustrated London News* (15 September 1951), 393.

debate. Irrespective of such periodization problems, it is entirely indubitable that outer space was, for several decades in the postwar era, intimately bound with notions of modernity and utopian visions of human progress. 'Our present-day world and our present-day human existence is most profoundly influenced and shaped by the fact of spaceflight,' philosopher Günther Anders (1902–1992) noted in 1970.[7] As the 15 contributions to this volume demonstrate time and again, for a limited, surprisingly short-lived time, outer space became the epitome of modernity – comparable only to that other major technoscientific project of the twentieth century, nuclear power. The Space Age and the Atomic Age went hand in hand, yet the former's radiance remains largely unacknowledged compared to its modern iconic 'evil twin,' bomb culture. It is necessary, but not nearly sufficient, to explain fears of alien invasion by evoking a Cold War context and employing the notion of Cold War *Angst*. Space enthusiasm, fantasies of spatial expansion and visions of interplanetary colonization are older and more all-encompassing, and should not be reduced to a collective, psychosis-like defensive complex.[8]

In his introduction to the standard work, … *The Heavens and the Earth*, the award-winning political history of this period published more than a quarter-century ago, historian Walter McDougall identified three structural forces necessary to launch the American space program: an economy prosperous enough to finance the endeavor; the availability of appropriate technological means; and, more hazily, yet suggestively, 'imagination.' Within this triad, the present book focuses on the third vector, what McDougall described with sociologist Daniel Bell as 'culture, the realm of symbolism that explores the existential questions facing all human beings all the time – death, love, loyalty, tragedy.'[9] Unlike the bulk of existing historiography, contributions in this book do not set out to examine political, diplomatic and technological aspects of space history. Rather, they explore the socio-cultural rationales behind these efforts and their relationship to the imaginary, from both individual and collective perspectives. Three core questions drive this book: First, how did the idea of outer space, spaceflight and space exploration develop over the course of the twentieth century into a central element of the project of Western and, in particular, European modernity? Second, how was outer space represented and communicated, imaged, popularized and perceived in media as varied as print and film, as well as a diverse array of narrative conventions including historical fiction and institutional reporting, all in their own ways contributing to the imaginary bestowal of the universe? And, third, in what way have these conceptions of the cosmos and extraterrestrial life been affected by the continual exploration of outer space, and vice versa?

I Defining astroculture

On 11 July 1969, towards the end of the period under scrutiny in this book, British pop musician and actor David Bowie (1947–) released 'Space Oddity,' a song produced to coincide with the Apollo 11 lunar mission (Figure 1.2). Used in conjunction with the BBC's coverage of the first moon landing nine days later, 'Space Oddity' combined futuristic electro sounds with ethereal strings and more familiar rock timbres. Reaching number five in the British charts, it became Bowie's

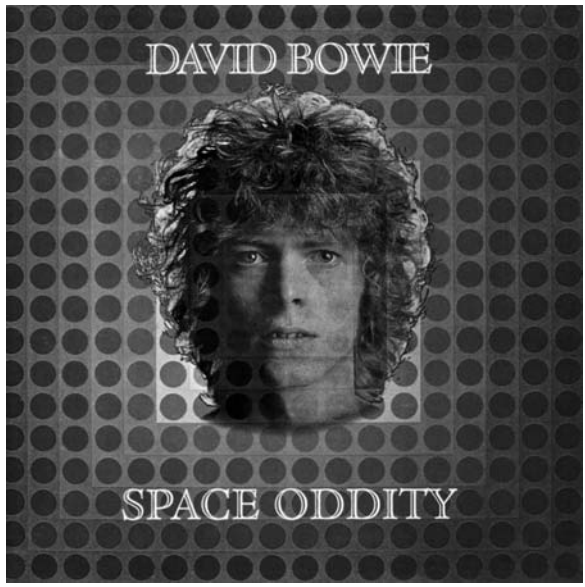


Figure 1.2 UK cover of David Bowie's 1969 hit record 'Space Oddity,' his portrait superimposed on a work by the French-Hungarian Op-Art artist Victor Vasarely (1906–1997), consisting of blue and violet spots on a green background. The title was added later.
Source: Courtesy of Philips Records/Universal Music Group, 1969.

first commercial hit. Firmly grounded in established motifs, 'Space Oddity' was inspired by Stanley Kubrick (1928–1999) and Arthur C. Clarke's 1968 landmark science fiction film *2001: A Space Odyssey*, as the pun in its title overtly signaled. Yet it also added cultural references to the repertoire that would recur in future attempts at making sense of outer space, notably a new fictive hero, the soon-to-be legendary astronaut Major Tom, whose remains are ostensibly floating indefinitely through the universe. Tom has indeed traveled far – if not to the physical limits of the galaxy, at least into the depths of international pop culture. Bowie's own productions frequently drew on this space trope, such as in 'Ashes to Ashes' (*Scary Monsters*, 1980) and 'Hallo Spaceboy' (*Outside*, 1995). Bowie's Major Tom has also been prominently evoked by Def Leppard ('Rocket,' 1987), Peter Schilling ('Völlig losgelöst,' 1983) – a key protagonist of the so-called *Neue Deutsche Welle* in early 1980s pop music – and numerous others.[10]

Although the song's lyrics comprise only 35 lines, on closer inspection one finds a surprising number of astral sub-themes addressed, many of which are featured in contributions to this volume. They include the science/fiction complex ('Take your protein pills and put your helmet on/ [...] Commencing countdown, engines on'); the intricate commerce/media/public triangle ('And the papers want to know whose shirts you wear'); the so-called overview effect, that is, the view back onto the earth usually associated with the epoch-making 1968 spaceflight of Apollo 8 and the standard argument that humankind's thrust into outer space would, ultimately, constitute a return to itself ('For here am I sitting in a tin can/ Far above the world/ Planet Earth is blue/ And there's nothing I can do'); as

well as religious-spiritual implications and references to a spatial-transcendental beyond that only the blessed and chosen astronaut is capable of approximating by ascending into heaven ('May God's love be with you').

Bowie's 'Space Oddity' is exemplary for another reason. In the twentieth century outer space, futurism and alien images permeated contemporaneous culture and society to an unprecedented extent. His hit epitomizes a specific complex of space-related cultural products that have gained considerable momentum since the Second World War, furthered by actants in politics, mass media and popular culture. Analytically, their complicated alliances and interconnections are hard to disentangle, not least because of the sheer lack of a widely recognized standard terminology. As a remedy, this book examines the cultural significance and societal repercussions of outer space and space exploration under the new label of 'astroculture.' How have human beings used their creative powers to render the infinite vastness of outer space conceivable? Far from intending to establish yet another academic subdiscipline, astroculture constitutes an umbrella concept to ease McDougall's terminological difficulties in referring to an underspecified and barely studied field of historical research. To remain within and augment his vocabulary: astroculture comprises a heterogeneous array of images and artifacts, media and practices that all aim to ascribe meaning to outer space while stirring both the individual and the collective imagination.[11]

At the same time, this superordinate concept is designed as an explicitly culture-related counterpart to such better known and firmly established notions as 'astrophysics,' 'astropolitics' – evidenced by the founding of an academic journal by this title in 2003 – or 'astrosociology.'[12] When historicizing outer space, for reasons of practicality, inclusiveness and connectivity, astroculture is to be preferred over other umbrella notions. The obvious and conceivably encompassing, yet far too imprecise choice, 'space culture(s),' is unsuitable due to the equivocality of the term 'space' itself, thus inviting conceptual misunderstandings from other fields like urban studies or entire disciplines such as geography. Further alternative suggestions include, for instance, Margaret Mead's and Donald N. Michael's largely inconsequential mid-1950s 'Man-Into-Space' (MIS) program for the social sciences, launched well *before* the first artificial satellite, or the more recent, narrower 'extraterrestrial (ET) culture' as developed by American anthropologist Debbora Battaglia.[13] Astroculture as a novel concept does share some of the defining features of ET culture, including an emphasis on lived experience, the objective of de-exoticizing the alien, and its self-understanding as an exploratory project. Yet, there are also distinct differences. Not all astroculture revolves around alien life or extraterrestrial technology, anthropocentric and terrestrial as those may be, but comprises a wider range of images, artifacts and activities conducted by a broader range of expert and amateur actants. Different as the so-called 'space,' 'science fiction,' 'ET,' 'UFO' and other related communities are – the first, *mutatis mutandis*, focusing on applied science, the second on fantasy, the third on humans and the fourth on alien technology – their agendas, concerns and practitioners overlap and compete to such an extent that any separating, non-integrative approach seems unduly self-limiting from the outset and would require particular justification. Taking seriously the umbrella

concept of astroculture leads to analyzing similarities and commonalities *before* possibly re-establishing differences and boundaries between the various subcultures. Hence, the entire range of supposedly obscure and frequently exoticized phenomena, including UFOs, the 'technological wing of the ET imaginary'; early contact claims, alien abduction experiences and 'starship memories'; or Erich von Däniken's so-called pre-Astronautics fall as well under the purview of astroculture, as do space mirrors, space elevators, space stations and space colonies.[14]

Strenuously exempting these phenomena from historicization as a consequence of their 'pseudoscientific' character or rejecting them as 'frivolous speculation' would be a rash and grave intellectual error. The Space Age cannot be thoroughly historicized without taking debates about the epistemic-ontological status of claims regarding space exploration and extraterrestrials into account. Research on the history of astroculture does not aim at providing definitive answers regarding the reality or fiction of space-related phenomena. Instead, it critically focuses on the intentions, actions, categories and explanations provided by actants themselves, because they are part and parcel of the ways in which human beings attempt to come to terms with and make sense of the infinite universe that surrounds us. And vice versa: viewed from the opposite perspective, that of historiography, it is hoped that the formulation of this new umbrella concept of astroculture will lead to the controlled import of elsewhere long-established analytical key categories such as 'language,' 'consumption,' 'representation,' 'appropriation,' 'memory,' 'materiality,' and, above all, 'meaning,' in addition to numerous others into space history, where they have played no more than a minor, dramatically undervalued role.

II Introducing Europe

In addition to proposing the concept of astroculture and demonstrating exemplary ways in which its concerns can be historicized, the present volume pursues a second, hardly less ambitious objective. Introducing and foregrounding a specifically (West-) European perspective, it aims to find an analytical 'third way' or middle course between West and East, and address, if not solve, the European paradox of comprehensive space enthusiasm despite decades-long abstinence from manned spaceflight.

Since 1945, Western Europe's contribution to the physical exploration of outer space has been peripheral and, for many years, a secondary priority at best. As a concomitant of the rapidly emerging US–USSR polarization during the Cold War, much of Europe's cultural hegemony was lost. Making a virtue of necessity and in order to profit from the rising prestige of technoscience, the concept of Europe as the 'third space power' – under French leadership – was invented as a political convenience, proving to be of particular political attraction to President Charles de Gaulle (1890–1970) who announced plans to establish a French orbital space program as early as 1959. On a supranational level, the institutional prehistory and inner-European unification process of what would become in 1975 the European Space Agency, seated in Paris, proved tremendously complex, taking almost two decades for the organization to be formed by merging ELDO (European Launcher

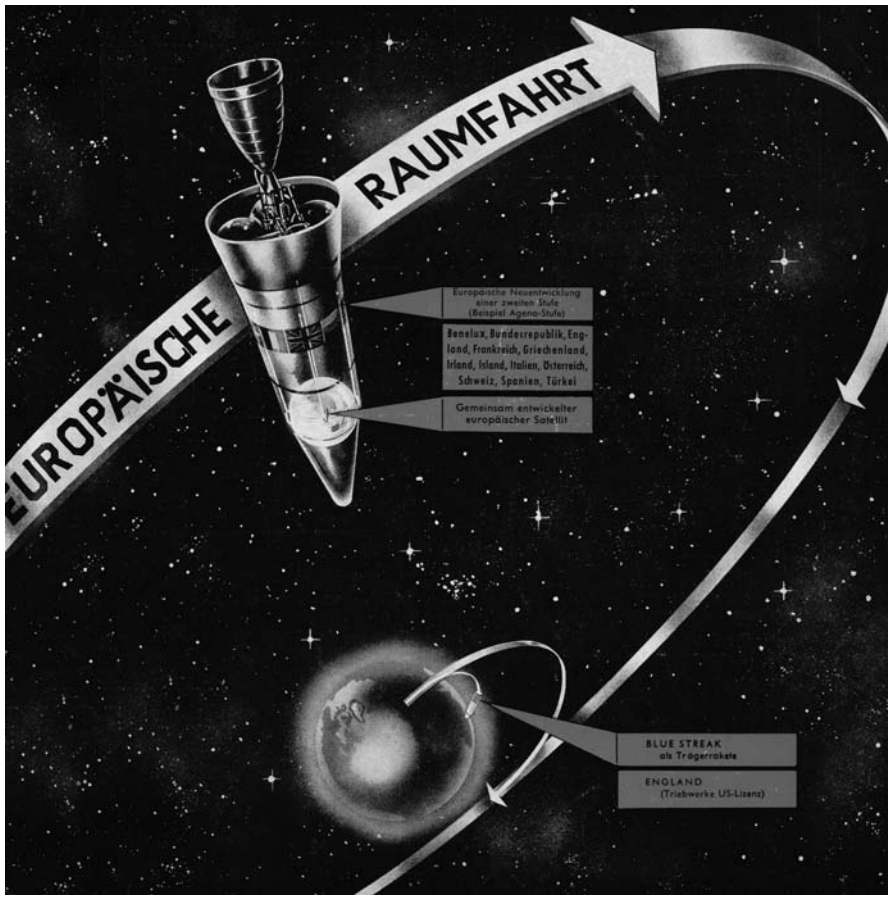


Figure 1.3 Illustration to explain and publicize the West-European space effort, 1961. In this picture, a satellite commonly developed by the six original member states of the European Economic Community (Belgium, France, West Germany, Italy, Luxembourg, Netherlands) in addition to England, Greece, Ireland, Iceland, Austria, Switzerland, Spain and Turkey (as indicated by the small flags on its body and the accompanying text box) is seen circling the globe, having been placed there by its carrier vehicle, the British Blue Streak ballistic missile. Ironically, the European Space Agency (ESA) was founded only in 1975 after repeated attempts to develop such an independent European launcher system had ended in failure.
Source: *Weltraumfahrt: Zeitschrift für Astronautik und Raketentechnik* 3 (May/June 1961), cover image.

Development Organization) and ESRO (European Space Research Organization), both set up in 1964 (Figure 1.3).[15]

The reason for which autonomy – understood as independent human launch capability – has always been the central theme of the European space program was quite simply its absence.[16] European spaceflight had begun with unmanned satellites, as it had with the USSR and the USA. Ariel 1, the first international earth satellite, was launched on 26 April 1962, as a joint project of the British and American space agencies; the Italian-American San Marco 1 satellite followed two

years later. On 26 November 1965, France became the third nation to orbit a satellite, Astérix, with its own Diamant rocket, launched from Hammaguir, a remote site in central Algeria still under French control. ESRO only managed to launch its first satellite in 1968. Yet, manned spaceflight proved a different matter. The first non-Soviet European human to fly in space was the Czech Vladimír Remek (1948–) in March 1978, with the first ESA astronaut, West-German Ulf Merbold (1941–) to follow five years later. These flights came 17 and 22 years, respectively, after those of Yuri Gagarin (12 April 1961) and John Glenn (20 February 1962), the first human and the first American, respectively, to orbit planet Earth.[17]

What was different in Europe, then, was the long time-lag of roughly two decades between unmanned (1962) and manned spaceflight (1978/1983), the latter still today attracting media coverage and public attention of an incomparable magnitude and hence generally treated as the only truly worthwhile form of spaceflight. Together with its civilian use, the absence of manned space activities in Western Europe may also help to explain why an organized anti-space movement has never evolved, not even an intermittent, anti-space discourse among the intellectual elites. Such an absence is all the more conspicuous when compared to the widespread opposition to atomic power and the large-scale anti-nuclear weapons movements of the late 1950s and early 1960s, particularly in Great Britain and West Germany, triggered by the threat of nuclear war and its lethal radioactive after-effects.[18]

As the chapters in this volume testify, popular interest in outer space and its presence in everyday life was nonetheless tremendous during the 1950s, 1960s and 1970s, and it remains so through today. It will require considerable effort to adequately explain this European paradox of overwhelming space enthusiasm simultaneous with such an extended period of abstinence from independent manned spaceflight activities. Without doubt, a broader, Europeanized historical perspective can only be achieved by forging a transdisciplinary and transnational approach that takes all necessary transatlantic references and transcontinental interdependencies into account. While in principle as worthwhile as any such internationalizing and hence widening move, current calls for writing a 'global history' of space exploration by shifting attention to the relationship between 'spaceflight and national identity' risk the danger of stating the obvious. What's more, such pleas cannot convince, at least until this intermediate, hitherto missing perspective, namely the West-European, has been conceptually and empirically explicated as a necessary counterweight to the overbearing focus on US and USSR histories. Provincializing Europe is always a neat feat, yet hardly feasible as long as space historians do not quite know when and what 'Europe in space' was.[19]

Historiographically, such a discrepancy between American and Soviet/Russian space history on the one hand, and its underdeveloped European counterpart on the other, is a direct consequence of their respective institutional settings. Especially in the United States, the concerted activities, resources and unparalleled research programs of NASA's History Program Office, founded in 1958, and the Smithsonian National Air and Space Museum, reopened in the new building along the National Mall in Washington, DC, in July 1976, have effectively made

space history a respectable academic topic.[20] Together with an interplay of persons, ideas and funds, these institutions have defined and structured a new field of historical research. Heavily invested in NASA's history-making powers, their establishment has proved a self-fulfilling prophecy. Indirectly at least, and somewhat ironically, scholarship on Eastern Europe and the 'Russian Space Age' – in particular Sputnik and the space *persona* of Yuri Gagarin (1934–1968) – has also benefited from such an unprecedented institutional shaping.[21] Today, both American and Soviet/Russian space history present themselves as open and expansive, yet comparatively well-established and structured fields, in spite of contrary claims and the inevitable degree of research-gap rhetorics.

In Western Europe, space history is by comparison a much smaller, more fragmented and underdeveloped affair, frequently exoticized and occasionally ridiculed by mainstream historians. Unfortunately, an institutional equivalent to NASA's History Program Office does not exist, and neither does the corresponding position of a Chief Historian. ESA's outreach activities into academic territory remain woefully limited, particularly as far as the humanities and social sciences are concerned. Having commissioned a small group of top-class historians under the direction of John Krige and Arturo Russo to author its institutional history in 1990, ESA subsequently extended this first self-historicizing initiative by commissioning 40 additional 'History Study Reports' with individual authors treating a total of 16 countries in overview-oriented booklets of 30–100 pages, in addition to general aspects of space study, such as satellite programs, the history of sounding rockets or international cooperation.[22] Yet, a mere accumulation of one national space history after the other – from Austria and Belgium to Switzerland and the United Kingdom – cannot compensate for a genuinely European history that treats the continent as a geographical setting *and* makes the question of Europeanness its central heuristic concern. By focusing exclusively on institutional, political, diplomatic and technical aspects of the European space effort, ESA has underestimated and neglected significant larger questions. Societal impact and cultural repercussions have not played a significant role in its historical self-assessment. What's worse, since the completion of the so-called History Project and despite the successful establishment of the European Space Policy Institute (ESPI) in Vienna in 2003 – a largely policy-oriented think tank – active promotion of non-science, non-applied research has come to a standstill. ESA's interest in its own past and position within European society, while inherently forward-looking, remains parochial, displaying almost its own version of 'cosmic provincialism.'

That said, the cultural history of Europe in space and space in Europe is a problem that this volume can pose with great verve, yet by no means solve. The current state of research on these topics is too divergent, uneven and disconnected to yield conclusive results. As a consequence – and, at this early stage, possibly an inevitability – there can be no doubt that the present volume possesses a certain British/French/West German bias, with the Scandinavian countries, for instance, or the wider Mediterranean world, in particular Italy and Francoist Spain, not receiving the kind of attention that they deserve. Competition and cooperation, comparisons and connections between individual countries within capitalist Western and communist Eastern Europe are themes that several

contributions pursue, but which the volume as a whole does not squarely confront.[23] It will require a good deal of additional research before a fully fledged, empirically grounded and theoretically informed answer can be advanced as to the existence of a specifically West-European perspective on outer space between 1945 and the early 1970s. While contributions to this volume are confident in staking out a new field, they do not claim to offer more than the highlighting of a number of viable paths along which to address the European space history paradox.

III Fictionalizing science, scientizing fiction

To a large extent, the collective imagination of outer space relies on the power of images, both still and filmic. In the last book published before her death, literary theorist and public intellectual Susan Sontag (1933–2004) observed that civilians' understanding and envisioning of violent conflict is a direct product of photographic images of war. A parallel argument can be seamlessly applied here. It is virtually impossible to experience outer space in a direct, unmediated manner. So far only 12 men have walked on another celestial body, and while space tourism is becoming increasingly popular, it still remains limited to a handful of affluent aficionados willing to spend a fortune for a few days in low-earth orbit on board the International Space Station (ISS). As a consequence, popular understanding of outer space is chiefly a product of images and representations, and their composition into narratives such as the ones analyzed in this book.[24]

Making the complex relationship between 'realities' and 'visions,' between 'science' and 'fiction' the third focus of this volume is, then, perhaps not entirely original, yet seems an almost unavoidable choice (see Plate 1). The theme as such is long familiar to all space historians, first employed in 1944 by the German-born science popularizer and space expert Willy Ley (1906–1969), taken up by Clarke in a comprehensive paper read to the British Interplanetary Society (BIS) in April 1950, and subsequently expanded and elaborated by numerous other advocates and activists dabbling in amateur historiography.[25] The reasons for pursuing such vested interests on the part of protagonists and propagandists alike were as simple as they were straightforward: For a long time the 'spaceships of the mind' were the only ones existing. Members of the early spaceflight movement found themselves in dire need of a *longue durée* perspective in order to counter contemporaneous appeals against their allegedly dubious expertise, as well as rebuffing public scrutiny and hostile criticism toward the respectability of this contested, then newly developing field.[26] The launch of Sputnik 1 in October 1957 – so the widely accepted standard periodization and oft-repeated master narrative asserts – marked the beginning of the eagerly awaited Space Age, and over the course of the ensuing 'Space Race' the 'visionary' or 'pioneering' era of spaceflight was finally superseded by 'real' spaceflight, with the 'exploration' and ensuing 'conquest' of space being gradually, yet continually advanced. According to proponents of this view, it was during this historic and revolutionary process that 'science fiction' became increasingly substituted by 'science fact,' sooner or later ceding much of its historical significance to the 'right stuff.'[27]

While evidently not questioning the power of fiction, be it scientific or not, the present volume does not partake in these debates about primacy and substitution. Science fiction has never been a 'blueprint' for anything, and neither has 'science' evolved out of purely fictitious systems of thought. To be sure, there are differences between science in fiction, fiction in science, and science fiction. Science fiction and science fact do overlap and continually influence each other, yet neither one has ever fully subsumed or eclipsed the other. Assuming a linear development 'from imagination to reality' – as the venerable British Interplanetary Society's motto still reads – leads too easily to a naïve endorsement of the type of teleological master narratives that professional historiographical scholarship must avoid by all means.[28]

Arguing that 'science fiction' and 'science fact' are not contradictory but complementary, this book questions whether it is simply their different epistemologies and alternative modes of representation that configure the pivotal difference. If we interpret the science versus fiction problematic not as one narrative successfully replacing the other, but as a simultaneous coexistence with intersecting waves and continuous, mutual repercussions between the two, the core question is no longer one of primacy but about contact points, interrelations and their 'in-betweens.' Such an approach allows for encompassing historicization: Which scientific fictions became, at what point in time, predominant and were then realized and/or transformed into actual science? Which others 'failed' by remaining 'merely' fictitious, though by no means insignificant or ineffectual? And vice versa: what effects did science have on the conceptualization and design of fiction? Many science fiction authors in the 1930s, for instance, felt it was their duty to write 'realistic' science fiction so that it could serve as an inspiration to contemporaneous scientists. Analyzing the conditions and contexts, consequences and crossovers of science and fiction is as significant as examining the multifarious socio-cultural effects these 'scientific fictions' had in different historical settings. Contributions in this volume strive to balance both perspectives. Taken together, they constitute a prime example of how cultural history can help to question and effectively overcome long-established standard periodizations that, upon revision, suddenly forfeit much of their conventional logic.

IV Transcending the future

In addition to defining astroculture, introducing a West-European perspective, and exploring the science/fiction complex, this book pursues two additional objectives.

First, *Imagining Outer Space* argues that changing conceptions of outer space and extraterrestrial civilizations must be read as historical expressions of earthly ideas of the spatialized beyond and past expectations of planetary futures. For approximately three decades, from the aftermath of the Second World War through the mid-1970s, it was widely assumed that the future was destined to play out in outer space. In a few years, experts agreed, gigantic space mirrors, nuclear wonder weapons, manned space bases and numerous other imagined technologies would be positioned in the near-earth orbit, while the permanent colonization

of the moon, followed by Mars, and later the cosmic unknown beyond our solar system was believed to be only a matter of time. This is the same discursive complex for which American literary scholar De Witt Douglas Kilgore has coined the notion of 'astrofuturism,' here understood as a specific subcategory forming part of astroculture. The present volume explores the concept's usefulness by applying it empirically and historically within a defined geographical setting, that is, Western Europe.[29] How is the tight connection between outer space imaginaries and future visions to be explained, particularly prominent during the 1950s and 1960s? And does the observation hold that, by the mid-1970s, space was no longer 'the place,' that the promises of the Space Age began to lose their popular appeal at precisely the same time when faith in technology as a trustworthy engine of social change was on the wane as well? It is a standard historical argument that, with the global oil crisis of 1973, general expectations about the future underwent correspondingly radical shifts, with the Sex Pistols's 'No Future' (1977) becoming the slogan of the day.[30]

In addition to such a futuristic, later often explicitly utopian strand, there is, second, a strong transcendental element to be found at work within astroculture at large, directly connecting it to much older debates on the epistemologies of the supernatural and the theological beyond (see Plate 2). This latter strand is often used to explain man's continuing and inescapable fascination with outer space, when confronted with the infinite and inconceivable breadth of the abyss. Freud skeptically discussed this phenomenon under the term of *ozeanisches Gefühl* (oceanic feeling), considered by some of his (and our) contemporaries as nothing less than the basis of religion. Likewise, in a *Playboy* interview undertaken four decades later, director Stanley Kubrick went so far as to associate and explain 'the grandeur of space' with 'the myriad mysteries of cosmic intelligence' to be found therein.[31]

Thus, exploring imaginaries of outer space and conceptions of other worlds eventually leads to analyzing their strong, yet all too often obscured, affiliations with transcendental beliefs and the spiritual beyond. How did changing images of outer space and the entire cosmos impinge on religion?[32] Such a diagnosis goes well beyond obvious episodes like Pope Pius XII declaring, at the Seventh International Astronautical Congress in Rome in 1956, that humankind's efforts to explore the 'whole of creation,' that is, the entire universe, were 'legitimate before God'; astronaut Frank Borman (1928–) reading the Bible aboard Apollo 8 on Christmas Day 1968; Pope Paul VI's praising the moon landing as an 'advance for all mankind'; or Pope Benedict XVI's conversing live with 12 astronauts on board the ISS on 21 May 2011, lauding them as 'our representatives spearheading humanity's exploration of new spaces and possibilities for our future, going beyond the limitations of our everyday existence'.[33]

In the end, *Imagining Outer Space* argues that the twentieth century's most radical version of alterity, namely its evolving conceptions of alien life forms, an 'other' unlike any before, cannot be analyzed without taking the transcendental component of such encounters into account. Historicizing the Space Age, then, promises to shed new light on the modernity of an allegedly secularized century that, for several decades, held fast to the possibility of redemption by translocating

its earthly obsessions into the infinite vastness of the universe, with the hope of thereby retrieving cosmic transcendence in the imagined, secularized spatial beyond of the twentieth century.

V Structuring this volume

Tackling a century that shaped and was shaped by outer space to an unprecedented degree, this book analyzes European imaginaries as they formed world narratives and laid out interplanetary futures. Its 15 chapters – in addition to this introduction and a comprehensive epilogue – trace the current thriving interest in spatiality and space to earlier attempts at exploring worlds other than our own. Contributions do not analyze the actual scientific findings or technological feats, but focus on the cultural significance and imaginative repercussions of outer space and extraterrestrial life. Despite their different disciplinary provenances, they all share a cultural-historical perspective, take an interpretative approach, and aim at overcoming space history's self-chosen 'splendid isolation,' with a view to integrating it more closely into mainstream social and cultural historiography.

All authors were asked to address the following three questions, or to seize a combination thereof in their contributions:

1. *Western Europe*. Was there a specifically European perspective on outer space, in particular between 1945 and the mid-1970s? How do we address – and, eventually, explain – the 'European paradox' of comprehensive space enthusiasm concomitant with a decades-long abstinence from manned spaceflight?
2. *Science/fiction*. How has the complex relationship between 'science' and 'fiction' evolved over time, in particular within the European imagination? Does the argument hold that science and fiction must be understood as complementary and relational, not antithetic, even if they are obviously both subject to their own rules, conventions and paces?
3. *The future*. How is the close connection between outer space and visions of the future to be explained, by many long believed to be inevitable and imminent? To what extent is Kilgore's notion of 'astrofuturism' analytically helpful? And is the argument historically correct that by the mid-1970s the idea of a utopia in outer space had lost much of its former compellingness and widespread appeal?

Arranged in a simultaneously thematic and largely chronological order – reaching from the *fin-de-siècle* through the present day, some even daring to speculate further ahead – the contributions give particular emphasis to the three decades between 1945 and the mid-1970s. Bracketing the entire *hausse* of Western cosmic enthusiasm, this period encompasses the so-called 'golden age of space travel' *before* the stationing of Sputnik 1 through the last Apollo landing on the moon in December 1972 and the establishment of the European Space Agency in 1975. Divided into five distinct parts – 'Narrating Outer Space,' 'Projecting Outer Space,' 'Visualizing Outer Space,' 'Encountering Outer Space,' and 'Inscribing Outer Space' – consisting of three chapters each, contributions historicize outer space from an interdisciplinary and transnational perspective. They focus on a

wide range of prominent activists, momentous cases, specific sites, pertinent type of media, and historical problems of particular significance.

Part I – 'Narrating Outer Space' – comprises a broad overview in Chapter 2 by former NASA chief historian Steven J. Dick on the role of the imagination in the making of outer space; a detailed reading in Chapter 3 by literary scholar Claudia Schmölders of the so-called Tunguska event, the ominous meteor strike in Siberia in June 1908, and its literary, scientific, metaphysical and pictorial impact; and in Chapter 4 an exploration by philosopher of science Thomas Brandstetter into images of, and debates about, crystalline aliens, that is, inorganic life forms on other planets, in twentieth-century science and fiction.

Part II – 'Projecting Outer Space' – encompasses Chapter 5 by political scientist Rainer Eisfeld on the changing human projections on planet Mars since the mid-nineteenth century, distinguishing between an 'Arcadian,' an 'Advanced,' a 'Frontier' and a 'Cold War' Mars; Chapter 6, an analysis of a largely unsuccessful 1960s East German print and film campaign against the American rocket engineer of German origin, Wernher von Braun (1912–1977) and his controversial Nazi past by historian Michael J. Neufeld; and Chapter 7 on another prototypical space *persona*, the aforementioned British science fiction author Arthur C. Clarke, and the powerful, yet carefully subdued transcendental strand in his all-embracing space thought by historian of religion Thore Bjørnvig.

Chapters in Part III – 'Visualizing Outer Space' – focus on West-European conceptions of outer space in different media contexts. Chapter 8 by historian Bernd Mütter compares the space coverage in West-German newspapers and science television shows between 1957 and 1987; in Chapter 9 historian Guillaume de Syon studies popular Franco-Belgian comic strips such as Hergé's well-known *Tintin* albums *Objectif lune* and *On a marché sur la lune* of 1953/54, but also *Buck Danny* and *Dan Cooper*, two comic series with a similar space theme; and in Chapter 10 art historian Henry Keazor submits the popular British television series *Space: 1999*, launched in the mid-1970s after *Star Trek* (1966–69) but before *Star Wars* (1977), to a close reading.

Part IV – 'Encountering Outer Space' – focuses on terrestrial contacts with extraterrestrial civilizations. Anthropologist Debbora Battaglia in Chapter 11 juxtaposes an analysis of a US National Research Council project on alien life forms and its hidden investment in century-old colonial projects with a reading of Werner Herzog's 2005 docu-fantasy film *The Wild Blue Yonder* and the neocreationist origin myth of Raëlism, a contemporary UFO religion; Chapter 12 by sociologist Pierre Lagrange revisits the way in which sociologists have (mis)represented and (mis)attributed the appearance of so-called flying saucers in the global skies after 1947 to a Cold War context; and in Chapter 13 historian James Miller analyzes postwar UFO sightings in Quarouble, a small village in northern France, following the subsequent activities and media career of young metalworker Marius Dewilde, prime observer and alleged extraterrestrial contact.

Finally, Part V – 'Inscribing Outer Space' – features in Chapter 14 an article by philosopher Gonzalo Munévar on the impossibility of exploring the depths of the universe by infinitely self-reproducing probes, and the consequences that

such a technology would have for the search for extraterrestrial life; an analysis in Chapter 15 of the famous NASA Pioneer plaque and its iconic interstellar message by historian of science and technology William R. Macauley; and Chapter 16 by art historian Tristan Weddigen on the calibration target that noted British artist Damien Hirst created for ESA's Mars lander Beagle 2 in 2002. Finally, Philip Pocock draws this volume to a finale with his wide-ranging epilogue, part commentary, part analysis, by historicizing space art from the perspective of a practicing artist.

Imagining Outer Space looks at Europe in light of its preoccupation with the outer limits of the spatial; analyzes contact points between science and fiction; and critically examines sites and situations where images and technologies contributed to the omnipresence of fantasmatic thought and translocated futures in the popular imagination of the twentieth century. Taken together, the contributions that follow aim to expand contemporary understandings of 'outer space' such that astroculture becomes a new field of modern European historiography.

Notes

1. The National Archives of the UK (TNA), FO 371/140426, IA 19/4, 1. For comments and criticism I would like to thank Debbora Battaglia, Steven J. Dick, Till Kössler, William R. Macauley, Bruce Mazlish, Michael J. Neufeld, the two anonymous reviewers and, above all, Anna Kathryn Kendrick.
2. Sigmund Freud, 'Eine Schwierigkeit der Psychoanalyse' [1917], *Gesammelte Werke*, vol. 12, Frankfurt am Main: Fischer, 1999, 3–26, here 7: 'kosmologische Kränkung'; Arthur C. Clarke, 'The Conquest of Space,' *The Fortnightly* 999 (March 1950), 161–7, here 167. The three standard works on the so-called Copernican Revolution remain Alexandre Koyré, *From the Closed World to the Infinite Universe*, Baltimore, MD: Johns Hopkins University Press, 1957; Thomas S. Kuhn, *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought*, Cambridge, MA: Harvard University Press, 1957; and Hans Blumenberg, *Die Genesis der kopernikanischen Welt*, Frankfurt am Main: Suhrkamp, 1981.
3. This countervailing historical development is also the reason for which I insist on using the somewhat old-fashioned term 'outer space' for the infinite, vacuous void beyond the earth's atmosphere, while the notion of 'space' remains reserved for 'spatiality,' when used in a more abstract, geographical sense.
4. The two *loci classici* are Günther Anders, *Der Blick vom Mond: Reflexionen über Weltraumflüge* [1970], 2nd edn, Munich: C. H. Beck, 1994; and Archibald MacLeish, 'A Reflection: Riders on Earth Together, Brothers in Eternal Cold,' *New York Times* (25 December 1968), 1. Space analyst Dwayne A. Day has suggested that the famous *Star Trek* phrase 'to boldly go where no man has gone before' might indeed have been borrowed from an official White House booklet, *Introduction to Outer Space* (Washington, DC: Government Printing Office), issued on 26 March 1958. On its first page, the booklet referred to 'the compelling urge of man to explore and to discover, the thrust of curiosity that leads men *to try to go where no one has gone before*' (my emphasis); see Dwayne A. Day, 'Boldly Going: *Star Trek* and Spaceflight,' *The Space Review* (28 November 2005), http://www.thespacereview.com/article/506/1 (accessed 20 August 2011).
5. 'Kosmischer Provinzialismus: Immer mehr Menschen halten sich für die einzig denkenden Lebewesen im Weltall,' *Allensbacher Berichte* (1967), 1–4, here 3. Such a decline was only temporary: By 1976, the number of believers in the existence of extraterrestrial intelligence rose to 38 percent, and by 1985 had climbed back to 40 percent. See 'Hallo Nachbarn! Im Weltall nicht allein?,' *Allensbacher Berichte* 24 (1976), 1–7, here 5;

'Der Kosmos gehört uns nicht allein,' ibid. 26 (1985), 1–8, here 4; and 'Andere Sterne,' *Jahrbuch der öffentlichen Meinung* 5 (1968–73), 155.

6. The term 'Space Age' is older than the Space Age itself, if conventionally defined, and is not of American, but of British origin. Its first usage can be found on the January 1946 cover of the popular journal *Everybody's Weekly*, promoting an article by journalist Harry Harper (1880–1930) that explained how the man of the future would 'penetrate the stratosphere and conquer outer space.' The term featured also in the title of a book-length study, *The Dawn of the Space Age*, that Harper published later that year. See Harry Harper, 'The Space Age,' *Everybody's Weekly* (19 January 1946), cover and 8-9; and *Dawn of the Space Age*, London: Sampson Low & Co., 1946.
7. Anders, *Der Blick vom Mond*, 11: 'Unsere heutige Welt und unser heutiges menschliches Dasein [wird] durch die Tatsache der Raumflüge aufs tiefste mitbeeinflußt und mitgeprägt.' This introduction is not an adequate place to present an overview and discuss all existing scholarship on the history of outer space, spaceflight and extraterrestrial life, but see the comprehensive bibliography at the end of this volume for an attempt at identifying the most relevant titles within this nascent but growing transdisciplinary field of research. The ten most significant core studies would have to include, in chronological order: William Sims Bainbridge, *The Spaceflight Revolution: A Sociological Study*, New York: John Wiley, 1976; Karl S. Guthke, *Der Mythos der Neuzeit: Das Thema der Mehrheit der Welten in der Literatur- und Geistesgeschichte von der kopernikanischen Wende bis zur Science Fiction*, Bern: Francke, 1983; Walter A. McDougall, ... *The Heavens and the Earth: A Political History of the Space Age*, New York: Basic Books, 1985; Michael J. Neufeld, *The Rocket and the Reich: Peenemünde and the Coming of the Ballistic Missile Era*, New York: Free Press, 1995; Hans Blumenberg, *Die Vollzähligkeit der Sterne*, Frankfurt am Main: Suhrkamp, 1997; Steven J. Dick, *The Biological Universe: The Twentieth Century Extraterrestrial Life Debate and the Limits of Science*, Cambridge: Cambridge University Press, 1996; Howard E. McCurdy, *Space and the American Imagination*, Washington, DC: Smithsonian Institution Press, 1997; Jodi Dean, *Aliens in America: Conspiracy Cultures from Outerspace to Cyberspace*, Ithaca, NY: Cornell University Press, 1998; De Witt Douglas Kilgore, *Astrofuturism: Science, Race, and Visions of Utopia in Space*, Philadelphia: University of Pennsylvania Press, 2003; and Steven J. Dick and Roger D. Launius, eds, *Societal Impact of Spaceflight*, Washington, DC: NASA, 2007, in particular the afterword by Martin J. Collins, 'Production and Culture Together: Or, Space History and the Problem of Periodization in the Postwar Era,' in ibid., 615–29. For two thorough and helpful reviews of the existing historiography, see Roger D. Launius, 'The Historical Dimension of Space Exploration: Reflections and Possibilities,' *Space Policy* 16.1 (2000), 23–38; and Asif A. Siddiqi, 'American Space History: Legacies, Questions, and Opportunities for Future Research,' in Steven J. Dick and Roger D. Launius, eds, *Critical Issues in the History of Spaceflight*, Washington, DC: NASA, 2006, 433–80. Unfortunately, neither discusses much non-American literature, nor works in languages other than English.
8. On Cold War culture, for instance, Paul S. Boyer, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*, New York: Pantheon, 1985; Stephen J. Whitfield, *The Culture of the Cold War*, Baltimore, MD: Johns Hopkins University Press, 1991; and Patrick Major and Rana Mitter, 'Culture,' in Saki R. Dockrill and Geraint Hughes, eds, *Palgrave Advances in Cold War History*, Basingstoke: Palgrave Macmillan, 2006, 240–62. For two comprehensive reviews of much of the recent literature in Cold War history, see Melvyn P. Leffler, 'The Cold War: What Do "We Know Now"?,' *American Historical Review* 104.2 (April 1999), 501–24; and Thomas W. Zeiler, 'The Diplomatic History Bandwagon: A State of the Field,' *Journal of American History* 95.4 (March 2009), 1053–73.
9. McDougall, ... *The Heavens and the Earth*, 12; Daniel Bell, 'Technology, Nature and Society: The Vicissitudes of Three World Views and the Confusion of Realms,' in *The Winding Passage: Essays and Sociological Journeys, 1960–1980*, Cambridge, MA: Abt Books, 1980, 3–33. McCurdy, *Space and the American Imagination*, 29, makes the same reference.

10. Michael Wale, 'David Bowie: Rock and Theatre,' *The Times* (24 January 1973), 15. There are repeated references to outer space and extraterrestrial beings in Bowie's comprehensive *oeuvre*, culminating in his portrayal of the space traveller Thomas Jerome Newton in Nicolas Roeg's 1976 film *The Man Who Fell to Earth*; see for instance 'Life on Mars,' *Hunky Dory* (1971); 'Starman,' *The Rise and Fall of Ziggy Stardust and the Spiders from Mars* (1972); 'Loving the Alien,' *Tonight* (1985); and 'Looking for Satellites,' *Earthling* (1997). Bowie's second extraterrestrial *persona* and *alter ego* was the rock superstar Ziggy Stardust, first introduced in 1972. The history of space as a prominent leitmotiv of pop music and the defining element of various subgenres – including 'space rock' (*c*. early 1970s, with a brief revival in the early 1990s); Sun Ra's 'afrofuturism' [*sic*] (*c*. early to mid-1970s), later taken up by funk musician George Clinton; and 'space disco' (*c*. 1977–80) – remains to be written. Bowie's 'Space Oddity' is an early example of the former. For a first, largely inventorial discussion of space, alien- and technofuturistic themes in popular music, see Ken McLeod, 'Space Oddities: Aliens, Futurism and Meaning in Popular Music,' *Popular Music* 22.3 (October 2003), 337–55.
11. See also Steven Dick's discussion in Chapter 2 of this volume. It is, admittedly, unfortunate that 'culture' is in itself such a broad, catch-all term, but there is no better.
12. See *Astropolitics: The International Journal of Space Politics and Policy*, Philadelphia, PA: Taylor & Francis, 2003–. Unfortunately, the journal's editors chose to define their title term very broadly when outlining the scope of *Astropolitics* as 'the role of space in politics, economics, commerce, culture and security.' A few years later, one member of the journal's editorial board, Jim Pass, declared that he had 'set out to develop astrosociology as a new sociological subdiscipline,' yet seems not to have generated much academic resonance, possibly because Pass proclaimed the necessity of such a disciplinary addition prior to undertaking any empirical research to demonstrate its practical fruitfulness. See Everett C. Dolman and John B. Sheldon, 'Editorial,' *Astropolitics* 1.1 (2003), 1–3, here 1; and Jim Pass, 'Astrosociology as the Missing Perspective,' *Astropolitics* 4.1 (2006), 85–99.
13. Donald N. Michael, 'Man-Into-Space: A Tool and Program for Research in the Social Sciences,' *American Psychologist* 12.6 (June 1957), 324–8; John Lear, 'Dr. Mead and the Red Moons,' *New Scientist* 2.52 (14 November 1957), 20; Debbora Battaglia, ed., *E.T. Culture: Anthropology in Outerspaces*, Durham, NC: Duke University Press, 2005. See also Joseph M. Goldsen, *Research on Social Consequences of Space Activities*, Santa Monica, CA: Rand Corporation, 1965; Charles P. Boyle, *Space Among Us: Some Effects of Space Research on Society*, Washington, DC: Aerospace Industries Association of America, 1974; William I. McLaughlin, ed., *The Impact of Space on Culture*, London: British Interplanetary Society, 1993 (*Journal of the British Interplanetary Society* 46.11); and Alvin Rudoff, *Societies in Space*, New York: Peter Lang, 1996. As early as 1965, MIT historian Bruce Mazlish came to the foresighted conclusion that the space program's philosophical impact, albeit at 'the farthest remove from an intended primary aim,' might ultimately be one of its most significant effects, and that it could be 'treated under the heading of "imagination"'; see Bruce Mazlish, 'Historical Analogy: The Railroad and the Space Program and Their Impact on Society,' in Bruce Mazlish, ed., *The Railroad and the Space Program: An Exploration in Historical Analogy*, Cambridge, MA: MIT Press, 1965, 1–52, here 41.
14. Debbora Battaglia, 'Insiders' Voices in Outerspaces,' in *E.T. Culture*, 1-37, here 1–2, 6, 19; see also her contribution, Chapter 11 in this volume. The notion of 'pre-Astronautics' refers to supposed extraterrestrial impact on early human civilization, taken up and popularized by the Swiss best-selling author Erich von Däniken (1935–) as the so-called 'ancient astronaut hypothesis.' Among von Däniken's countless publications, with sales exceeding 60 million, see in particular his *Erinnerungen an die Zukunft: Ungelöste Rätsel der Vergangenheit*, Düsseldorf: Econ, 1968; *Chariots of the Gods? Unsolved Mysteries of the Past*, London: Souvenir, 1969.

15. For the foundational document that declared space 'a field of research so enormous and important that it far surpasses anything that can be imagined today,' see the memorandum 'Introduction to the Discussion on Space Research in Europe,' 30 April 1959, by physicist and scientific statesman Edoardo Amaldi (1908–1989), Historical Archives of the European Union (HAEU), Florence, Italy, COPERS 0001. John Krige, Arturo Russo and Lorenza Sebesta, *A History of the European Space Agency*, 2 vols, Noordwijk: ESA, 2000, here vol. I, 19–20, 91. See also John Krige, 'Building a Third Space Power: Western European Reactions to Sputnik at the Dawn of the Space Age,' in Roger D. Launius, John M. Logsdon and Robert W. Smith, eds, *Reconsidering Sputnik: Forty Years Since the Soviet Satellite*, Amsterdam: Harwood, 2000, 289–307, here 301–2, 395; and Walter A. McDougall, 'Space-Age Europe: Gaullism, Euro-Gaullism, and the American Dilemma,' *Technology and Culture* 26.1 (January 1985), 179–203.
16. For a contemporaneous debate between a German astronomer and space critic, NASA's Deputy Director for international affairs, a French geophysicist and a German senior civil servant see Rudolf Kühn, Arnold W. Frutkin, Jean Coulomb and Max Mayer, 'Herausforderung "Weltraum" – Europas Antwort,' *Dokumente: Zeitschrift für übernationale Zusammenarbeit* 20.3 (1964), 201–22; and Orio Giarini, *L'Europe et l'espace*, Lausanne: Centre de Recherches Européennes, 1968. In the late 1980s, a joint policy report by five renowned European research institutions proclaimed such space autonomy – defined as the 'capability to reach, to operate in and to return from space, and to do so, not on sufferance of friend or foe, but according to its own perception of what is to the common good' – 'Europe's stated goal.' The report also went so far as to declare outer space a 'major area in which Europe can consolidate a common identity and develop its unity.' See Forschungsinstitut der Deutschen Gesellschaft für Auswärtige Politik (Bonn), Institut Français des Relations Internationales (Paris), Istituto Affari Internazionali (Rome), Nederlands Instituut voor Internationale Betrekkingen 'Clingendael' (The Hague) and Royal Institute of International Affairs (London), *Europe's Future in Space: A Joint Policy Report*, London: Routledge & Kegan Paul, 1988, 181, 187, 3.
17. The first American in space, Alan Shepard (1923–1998), did not orbit the earth during his 15-minute flight on 5 May 1961; see Brian Harvey, *Europe's Space Programme: To* Ariane *and Beyond*, London: Springer Praxis, 2003, 249–50.
18. See, for instance, Holger Nehring, 'National Internationalists: British and West German Protests against Nuclear Weapons, the Politics of Transnational Communications and the Social History of the Cold War, 1957–1964,' *Contemporary European History* 14.4 (2005), 559–82.
19. Asif A. Siddiqi, 'Competing Technologies, National(ist) Narratives, and Universal Claims: Toward a Global History of Space Exploration,' *Technology and Culture* 51.2 (April 2010), 425–43, esp. 426, 442.
20. See W. D. Kay, 'NASA and Space History,' *Technology and Culture* 40.1 (January 1999), 120–7, here 120; and, as a valuable research aid, Steven J. Dick, Stephen J. Garber and Jane H. Odom, eds, *Research in NASA History: A Guide to the NASA History Program*, 3rd edn, Washington, DC: NASA, 2009. As an institution, the museum predates its current spectacular Space Age building. Established as 'The National Air Museum' in 1946, the supplement 'and Space' was added in 1966; see Michael J. Neufeld and Alex M. Spencer, eds, *Smithsonian National Air and Space Museum: An Autobiography*, Washington, DC: National Geographic, 2010.
21. Again, it is impossible to discuss the much more extensive literature on Soviet and East-European history in all desirable detail here. Interested readers should consult such works as Paul R. Josephson, 'Rockets, Reactors, and Soviet Culture,' in Loren R. Graham, ed., *Science and the Soviet Social Order*, Cambridge, MA: Harvard University Press, 1990, 168-91; Svetlana Boym, 'Kosmos: Remembrances of the Future,' in *Kosmos: A Portrait*

of the Russian Space Age, New York: Princeton Architectural Press, 2001, 82–99; James T. Andrews, *Science for the Masses: The Bolshevik State, Public Science, and the Popular Imagination in Soviet Russia, 1917–1934*, College Station, TX: A&M University Press, 2003; Matthias Schwartz, *Die Erfindung des Kosmos: Zur sowjetischen Science Fiction und populärwissenschaftlichen Publizistik vom Sputnikflug bis zum Ende der Tauwetterzeit*, Frankfurt am Main: Peter Lang, 2003; Igor J. Polianski and Matthias Schwartz, eds, *Die Spur des Sputnik: Kulturhistorische Expeditionen ins kosmische Zeitalter*, Frankfurt am Main: Campus, 2009; and the publications by Asif A. Siddiqi, especially *The Red Rockets' Glare: Spaceflight and the Soviet Imagination, 1857–1957*, Cambridge: Cambridge University Press, 2010.

22. Krige, Russo and Sebesta, *A History of the European Space Agency*. These 40 'ESA History Study Reports' are available at http://www.esa.int/esapub/pi/hsrPI.htm (accessed 10 August 2011). For a summary of the activities undertaken within this project, see Karl-Egon Reuter and Johann Oberlechner, 'The ESA History Project,' *ESA Bulletin* 119 (August 2004), 48–54; also available at www.esa.int/esapub/bulletin/bulletin119/bul119_chap6.pdf (accessed 20 August 2011). Popular volumes, such as *The Impact of Space Activities upon Society*, ed. International Academy of Astronautics and European Space Agency, Noordwijk: ESA, 2005, do not constitute an exception to this rule. For further reflections on the long overdue Europeanization of space history, see Alexander C. T. Geppert, 'Flights of Fancy: Outer Space and the European Imagination, 1923–1969,' in Dick and Launius, *Societal Impact of Spaceflight*, 585–99.
23. See, for example, the contributions by Claudia Schmölders (Chapter 3), Michael J. Neufeld (Chapter 6) and Pierre Lagrange (Chapter 12) in this volume.
24. Susan Sontag, *Regarding the Pain of Others*, New York: Farrar, Straus & Giroux, 2003, 21: 'Creating a perch for a particular conflict in the consciousness of viewers exposed to dramas from everywhere requires the daily diffusion and rediffusion of snippets of footage about the conflict. The understanding of war among people who have not experienced war is now chiefly a product of the impact of these images.' The vast, largely US-oriented literature on the complex interplay between science fact and science fiction within feature film includes Vivian Sobchack, *Screening Space: The American Science Fiction Film*, 2nd edn, New Brunswick: Rutgers University Press, 1997; Errol Vieth, *Screening Science: Contexts, Texts, and Science in Fifties Science Fiction Film*, Lanham, MD: Scarecrow Press, 2001; J. P. Telotte, *Science Fiction Film*, Cambridge: Cambridge University Press, 2001; and, most recently, David A. Kirby, *Lab Coats in Hollywood: Science, Scientists, and Cinema*, Cambridge, MA: MIT Press, 2011.
25. See, for instance, in chronological order Willy Ley, *Rockets, Missiles, and Space Travel* [1944], 3rd edn, New York: Viking, 1951; Arthur C. Clarke, 'Space-Travel in Fact and Fiction,' *Journal of the British Interplanetary Society* 9.5 (September 1950), 213–30, reprinted in Arthur C. Clarke, *Greetings, Carbon-Based Bipeds! Collected Essays, 1934–1998*, New York: St. Martin's Press, 1999, 84–98; Eugene M. Emme, ed., *Science Fiction and Space Futures: Past and Present*, San Diego, CA: American Astronautical Society, 1982; and Frederick I. Ordway and Randy Liebermann, eds, *Blueprint for Space: Science Fiction to Science Fact*, Washington, DC: Smithsonian Institution Press, 1992. Early critical literary studies include, in chronological order, Christof Junker, *Das Weltraumbild in der deutschen Lyrik von Opitz bis Klopstock*, Berlin: Matthiesen, 1932; Edwin M. J. Kretzmann, 'German Technological Utopias of the Pre-War Period,' *Annals of Science* 3.4 (October 1938), 417–30; Marjorie Hope Nicolson, *A World in the Moon: A Study of the Changing Attitude Toward the Moon in the Seventeenth and Eighteenth Centuries*, Northampton, MA: Smith College, 1935–36; James Osler Bailey, *Pilgrims Through Space and Time: Trends and Patterns in Scientific and Utopian Fiction*, New York: Argus, 1947; Martin Schwonke, *Vom Staatsroman zur Science Fiction: Eine Untersuchung über Geschichte und Funktion der naturwissenschaftlich-technischen Utopie*, Stuttgart: Ferdinand Enke, 1957; and Roger Lancelyn Green, *Into Other Worlds: Space-Flight in Fiction, from Lucian to Lewis*,

London: Abelard-Schuman, 1958. Two important contemporary works on science fiction literature and criticism are Adam Roberts, *The History of Science Fiction*, Basingstoke: Palgrave Macmillan, 2006; and Fredric Jameson, *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions*, London: Verso, 2005.

26. 'Spaceships of the Mind' was the title of a 1978 BBC TV series produced by Dick Gilling and presented by Nigel Calder; see Nigel Calder, *Spaceships of the Mind*, New York: Viking Press, 1978.
27. Tom Wolfe, *The Right Stuff*, New York: Farrar, Straus & Giroux, 1979. For a more detailed analysis, see Alexander C. T. Geppert, 'Space *Personae*: Cosmopolitan Networks of Peripheral Knowledge, 1927–1957,' *Journal of Modern European History* 6.2 (2008), 262–86. That the pendulum could be said to have swung back towards 'fiction' in recent years, caused by 'factual' disillusionments such as the Space Shuttle Columbia disaster in February 2003; the limited public appeal of the most expensive civilian project ever undertaken, the International Space Station; or the cancellation of America's Constellation and Space Shuttle programs in February 2010 and July 2011, respectively, might be a noteworthy observation beyond the scope of this essay.
28. As early as 1972, science fiction author Isaac Asimov (1920–1992) raised similar doubts inspired by the Apollo moon landings: '[. . .] so ist es amüsant festzustellen, daß viele meinen, nachdem die Astronauten auf dem Mond gelandet sind, habe die Wissenschaft die Science-fiction eingeholt. Denn nicht die Science-fiction-Bagatelle der Mondlandung selber ist bedeutungsvoll, sondern die gesellschaftliche Wirkung der Raumfahrt' ('[. . .] it is amusing to note that many believe, now that the astronauts have landed on the moon, that science should have caught up with science fiction. For it is not the science fiction-bagatelle of the moon landing itself that is momentous, but the societal impact of spaceflight'); see his 'Plädoyer für Science-fiction,' *Der Spiegel* 11 (6 March 1972), 138–9, here 139.
29. Kilgore defines astrofuturism as 'an escape from terrestrial history. Its roots lie in the nineteenth-century Euro-American preoccupation with imperial expansion and utopian speculation, which it recasts in the elsewhere and else*when* of outer space. [. . .] [I]t is also the space of utopian desire. Astrofuturist speculation on space-based exploration, exploitation, and colonization is capacious enough to contain imperialist, capitalist ambitions and utopian, socialist hopes. [. . .] While [astrofuturism is] an American phenomenon anchored by the nation's mid-century commitment to the space race, its roots and membership are international'; see *Astrofuturism*, 1, 3. Kilgore does not elaborate on this international perspective. For a helpful review essay, see Joan Gordon, 'Ad Astra Per Aspera,' *Science Fiction Studies* 32.3 (November 2005), 495–502.
30. Standard works on the history of the future include Joseph J. Corn, ed., *Imagining Tomorrow: History, Technology, and the American Future*, Cambridge, MA: MIT Press, 1986; Georges Minois, *Histoire de l'avenir: des Prophètes à la prospective*, Paris: Fayard, 1996; and Lucian Hölscher, *Die Entdeckung der Zukunft*, Frankfurt am Main: Fischer, 1999. In the present context see in particular Brian Horrigan, 'Popular Culture and Visions of the Future in Space, 1901–2000,' in Bruce Sinclair, ed., *New Perspectives on Technology and American Culture*, Philadelphia, PA: American Philosophical Society, 1986, 49–67; and Roger D. Launius, 'Perfect Worlds, Perfect Societies: The Persistent Goal of Utopia in Human Spaceflight,' *Journal of the British Interplanetary Society* 56.5 (September/October 2003), 338–49. There is no European equivalent to the American 1970s pro-space movement and its inherent spaceflight utopianism that Launius analyzes.
31. Sigmund Freud, 'Das Unbehagen in der Kultur' [1930], *Gesammelte Werke*, vol. XIV, Frankfurt am Main: Fischer, 1999, 419–506, here 422 ('ein Gefühl wie von etwas Unbegrenztem, Schrankenlosem, gleichsam "Ozeanischem"') and 430; Eric Nordern, 'Interview with Stanley Kubrick,' *Playboy* 15.9 (September 1968), 85–96, 158, 180–95, here 94. See also William B. Parsons, 'The Oceanic Feeling Revisited,' *The Journal of*

Religion 78.4 (October 1998), 501–23; and Thore Bjørnvig's contribution, Chapter 7 of this volume.

32. For initial ventures into the conceptual history of the 'beyond,' see the contributions to Lucian Hölscher, ed., *Das Jenseits: Facetten eines religiösen Begriffs in der Neuzeit*, Göttingen: Wallstein, 2007; and Colleen McDannell and Bernhard Lang, *Heaven: A History*, New Haven, CT: Yale University Press, 1988.
33. John Hillaby, 'Astronauts Get Blessing of Pope,' *New York Times* (21 September 1956), L; 'Astronautics in Britain,' *Spaceflight* 3 (1967), 234; 'European Interest in Apollo Dwindles,' *New York Times* (10 February 1971), 24; 'Pope Benedict XVI Greets Shuttle, Station Crew,' *NASA Television* (21 May 2011), http://youtu.be/81jAmb_e1pg (accessed 20 August 2011); *Frankfurter Allgemeine Zeitung* (23 May 2011), 9.

Index

Page numbers appearing in *italics* refer to illustrations; 'n.' after a page reference indicates a note number on that page.