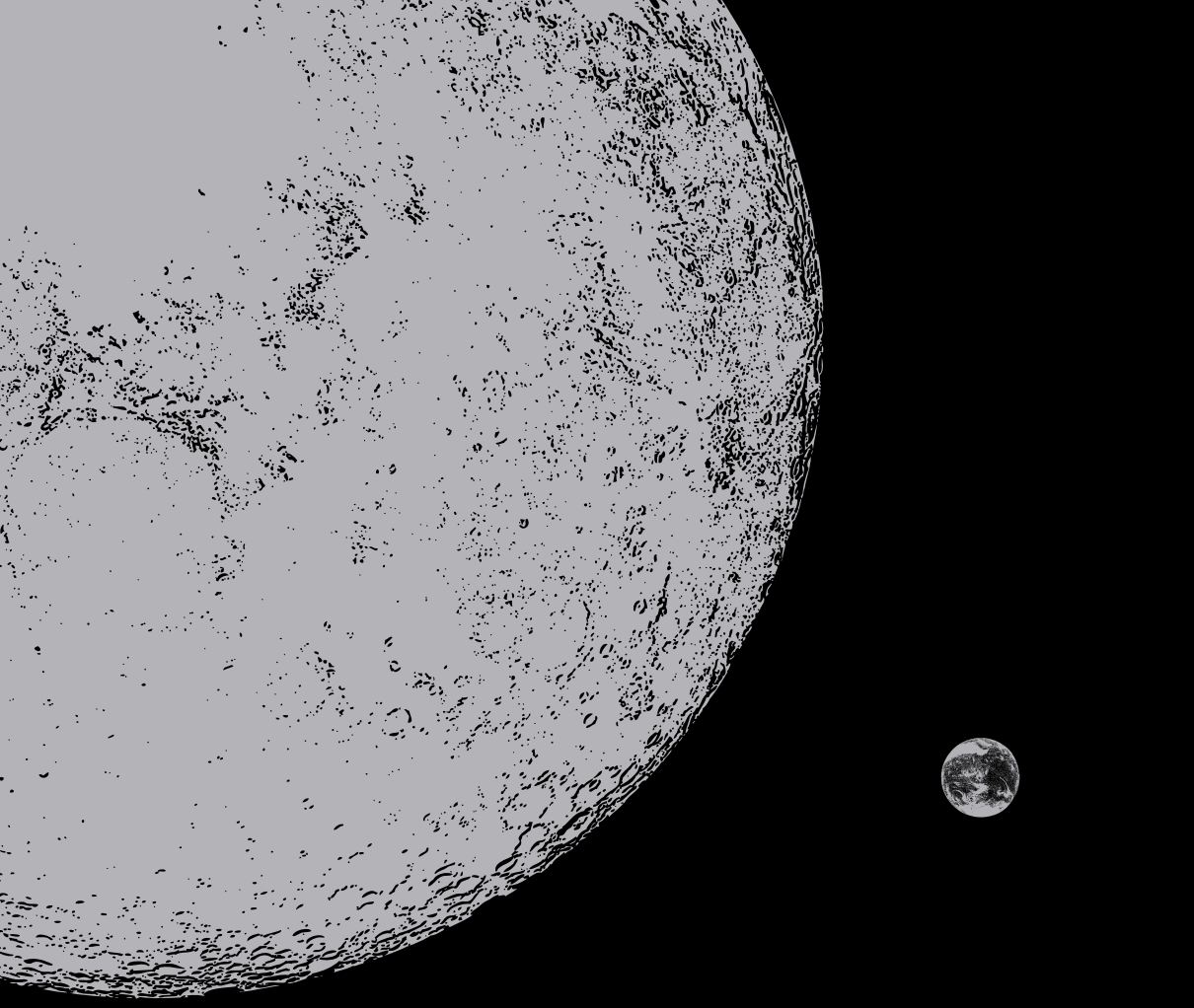

LIMITING OUTER SPACE

Astroculture After Apollo

EDITED BY
Alexander C.T. Geppert

'This provocative yet deeply researched collection of essays edited by Alexander Geppert reveals the profound connection between the climacteric of manned spaceflight after Apollo 11 and the onrush of globalization in the 1970s. Pausing after the moon landings in its cosmic quest, humanity, as it were, deepened its global connections; and this book opens up that hitherto unexplored linkage.'

—Charles S. Maier, Harvard University

'For ages, mankind envisioned venturing to the moon. Surprisingly, once that vision was realized, popular fascination with spaceflight vanished quickly. The stars became disenchanted, and spaceship earth began to mirror itself with thousands of satellites instead. From perspectives as diverse as geopolitics, architecture and law, this intriguing book outlines continuities and transformations of astroculture during the post-Apollo era. It offers thought-provoking insights by adding a third dimension to the more than ambivalent 1970s and 1980s.'

—Dirk van Laak, Universität Leipzig

'This is a highly original volume on the surprising lull in space exploration during the crisis-ridden 1970s. The particular value of its multinational chapters lies in their transdisciplinary investigation of how the end of the Apollo moon landings coincided with a growing disillusionment of space imaginaries during the onset of globalization.'

—Konrad H. Jarausch, University of North Carolina, Chapel Hill

'*Limiting Outer Space* illustrates the rich possibilities of seeing spaceflight and astroculture as integral components of the pivotal decade of the 1970s. Representing an array of disciplines and geographies, the authors in this volume collectively complement and amend previous understandings of the cultural and geopolitical transitions of the age. Highly recommended for its broad scope and well crafted essays.'

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IMAGINING OUTER SPACE
European Astroculture in the Twentieth Century
(European Astroculture, vol. 1)

MILITARIZING OUTER SPACE
Astroculture, Dystopia and the Cold War
(European Astroculture, vol. 3) (forthcoming)

Alexander C.T. Geppert
Editor

Limiting Outer Space

Astroculture After Apollo

European Astroculture
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Contents

Acknowledgments

The idea of alien invasion is not entirely foreign to scholars of the past. In more than one instance in his voluminous *œuvre,* Eric Hobsbawm – arguably one of the greatest historians of the twentieth century – fantasized about the advent of extraterrestrial colleagues on planet Earth. 'Suppose that one day, after a nuclear war, an intergalactic historian lands on a now dead planet,' begins, for instance, his *Nations and Nationalism*, published in 1992.[1] Little did Hobsbawm know that such an obscure breed of historians from outer space had long touched down and even regularly convened at international conferences which would then, in turn, give rise to books like this one. Early versions of almost all of the 13 chapters gathered here were originally presented at such a symposium, entitled *Envisioning Limits: Outer Space and the End of Utopia* and convened together with Daniel Brandau and William Macauley in Berlin in April 2012. Those who enabled us to host an interplanetary gathering of this magnitude must be thanked first, and I would like to express sincere gratitude to both the Center for International Cooperation at Freie Universität Berlin (FU) and, in particular, the Deutsche Forschungsgemeinschaft (DFG). It is the latter institution, internationally known as the German Research Foundation, which has also been funding the Emmy Noether research group 'The Future in the Stars: European Astroculture and Extraterrestrial Life in the Twentieth Century' at Freie Universität Berlin, which I have had the pleasure to direct from 2010 through 2016.[2]

The Berlin symposium and this ensuing volume are tangible outcomes of that group's work. *Limiting Outer Space: Astroculture After Apollo* pursues some of the problems raised and issues discussed in an earlier anthology, *Imagining Outer Space: European Astroculture in the Twentieth Century*, a companion volume published with Palgrave Macmillan in 2012 and now reissued in paperback.[3] While *Imagining Outer Space* set out to establish and

contour a new field of historical inquiry – 'astroculture' –, the scope of the present book is more limited, yet also more narrowly focused. It is more limited because it zooms in on a single decade in the history of imagining, thinking and practicing outer space, the crisis-ridden 1970s. At the same time the volume foregrounds one particular problem, the limits of utopian thought and practice during this aptly called post-Apollo period. What both volumes have in common, however, is a cultural-interpretative approach, a commitment to combining a multiplicity of disciplinary perspectives, and the intention to push space history's geographical focus beyond the borders of the two Cold War superpowers. *Militarizing Outer Space: Astroculture, Dystopia and the Cold War*, a forthcoming third volume in form and format identical with the existing two, will expose the 'dark' side of global astroculture by exploring the militant dimensions of outer space in science fiction and science fact. Concentrating on weapons, warfare and violence, *Militarizing Outer Space* will conclude the unintended 'European Astroculture' trilogy.[4]

Engineering such scholarly large-scale enterprises would not be possible without the help of many. Thanks are due to both the conference speakers whose presentations could, alas, not be included in this volume as well as more than a dozen commentators and discussants. Their insight and criticism shaped the original symposium and, in turn, this volume. These critical interlocutors include Philippe Ailleris, Debbora Battaglia, Peter Becker, Thomas Brandstetter, Ralf Bülow, Matthew Hersch, John Krige, Neil Maher, Patrick McCray, Lisa Messeri, Agnes Meyer-Brandis, Gonzalo Munévar, Virgiliu Pop, Claudia Schmölders, Matthias Schwartz, Helmuth Trischler, Christina Vatsella, Janet Vertesi and Thomas P. Weber. Insisting that the colors of space are black and silver, FU's chief designer Gösta Röver developed our own visual language; her conference posters also formed the basis for the cover illustrations of all three volumes. FU photographer Hubert Graml helped prepare images for publication. Several anonymous reviewers offered invaluable criticism and pointed advice. Kayalvizhi Saravanakumar and her team oversaw the production process with equanimity and punctilious attention to detail. Audrey McClellan created the index with great professionalism and utmost care. I would also like to express my heartfelt gratitude to the contributors themselves, in particular for their patience and willingness to let me subject them to one round of revisions after another. The final word of thanks, however, must go to all members of the 'Future in the Stars' research group at Freie Universität Berlin. They include doctoral students Daniel Brandau and Jana Bruggmann, postdoctoral research associate Tilmann Siebeneichner as well as student assistants Björn Blaß, Ruth Haake, Friederike Mehl, Tom Reichard, Katja Rippert and Magdalena Stotter. Ruth proved particularly indispensable during the final stretches; without her, neither this book nor its editor would have survived the interminable publication process. Once the

group has dissolved in the not too distant future, I shall terribly miss working with an entire crew of intergalactic, and indeed stellar, historians. Fortunately, we still have a ways to go before our mission can be declared accomplished.

Shanghai
November 2017

Alexander C.T. Geppert

Notes

1. Eric J. Hobsbawm, *Nations and Nationalism: Programme, Myth, Reality*, 2nd edn, Cambridge: Cambridge University Press, 1992, 1.
2. A detailed conference program can be found at http://limits.geschkult.fu-berlin.de. For comprehensive reports see Friederike Mehl, 'Envisioning Limits: Outer Space and the End of Utopia. 19.–21. April 2012,' *H-Soz-u-Kult* (9 July 2012), online at http://hsozkult.geschichte.hu-berlin.de/tagungsberichte/id=4303; and idem, 'Berlin Symposium on Outer Space and the End of Utopia in the 1970s,' *NASA History News & Notes* 29.2–3 (2012), 1–5. For further information on the Emmy Noether research group 'The Future in the Stars: European Astroculture in the Twentieth Century,' consult http://www.geschkult.fu-berlin.de/astrofuturism (all accessed 1 October 2017).
3. Alexander C.T. Geppert, ed., *Imagining Outer Space: European Astroculture in the Twentieth Century*, Basingstoke: Palgrave Macmillan, 2012; 2nd edn, London: Palgrave Macmillan, 2018 (= *European Astroculture*, vol. 1); and idem, ed., *Astroculture and Technoscience*, London: Routledge, 2012 (= *History and Technology* 28.3).
4. Alexander C.T. Geppert, Daniel Brandau and Tilmann Siebeneichner, eds, *Militarizing Outer Space: Astroculture, Dystopia and the Cold War*, London: Palgrave Macmillan, forthcoming (= *European Astroculture*, vol. 3).

List of Figures

The 1969–72 moon landings marked a shift in planetary perspectives. Inspired by iconic NASA photographs Earthrise (1968), Blue Marble (1972) and the first picture of earth and moon captured in a single frame (1977), the cover image positions the post-Apollo spectator beyond the moon, looking back at the distant home planet from outer space. © Gösta Röver, Freie Universität Berlin.

Abbreviations

ABM	Anti-ballistic Missile
AFOL	Adult Fan of Lego
AHR	*American Historical Review*
AIAA	American Institute of Aeronautics and Astronautics
ASAT	Anti-Satellite Weapon
ASE	Association of Space Explorers
ASTP	Apollo-Soyuz Test Project
BBC	British Broadcasting Corporation
BIS	British Interplanetary Society
BRD	Bundesrepublik Deutschland
BUL	Bulgaria
CETS	Conférence Européenne des Télécommunications par Satellites
CFF	Committee for the Future
CNES	Centre National d'Etudes Spatiales
CNN	Cable News Network
COPERS	Commission Préparatoire Européenne de Recherche Spatiale
COPUOS	Committee on the Peaceful Uses of Outer Space
COSPAR	Committee for Space Research
DDR	Deutsche Demokratische Republik
DEFA	Deutsche Film-Aktiengesellschaft
DFG	Deutsche Forschungsgemeinschaft
DFVLR	Deutsche Forschungs-und Versuchsanstalt für Luft- und Raumfahrt
DLR	Deutsches Zentrum für Luft- und Raumfahrt
DoD	Department of Defense
EEC	European Economic Community
ELDO	European Launcher Development Organization
ERNO	Entwicklungsring Nord
ESA	European Space Agency
ESOC	European Space Operations Centre
ESRO	European Space Research Organization
ET	Extraterrestrial

ETI	Extraterrestrial Intelligence
EU	European Union
EVA	Extravehicular Activity
FAZ	*Frankfurter Allgemeine Zeitung*
FR	France
FU	Freie Universität Berlin
GfW	Gesellschaft für Weltraumfahrt
HAEU	Historical Archives of the European Union
HAL	Heuristically Programmed Algorithmic Computer
IAF	International Astronautical Federation
IBMP	Institute of Biomedical Problems
ICBM	Intercontinental Ballistic Missile
IGY	International Geophysical Year
ISS	International Space Station
JPL	Jet Propulsion Laboratory
LGA	LEGO Group Archives
LSD	Lysergic Acid Diethylamide
MGM	Metro-Goldwyn-Mayer
MIRV	Multiple Independently Targetable Re-entry Vehicle
MOU	Memorandum Of Understanding
MOUSE	Minimum Orbital Unmanned Satellite, Earth
MTR	Military-Technical Revolution
n.d.	No date
n.p.	No publisher/pagination
NACA	National Advisory Committee on Aeronautics
NAS	National Academy of Sciences
NASA	National Aeronautics and Space Administration
NASM	National Air and Space Museum
NATO	North Atlantic Treaty Organization
NIEO	New International Economic Order
NRC	National Research Council
OST	Outer Space Treaty
Pan Am	Pan American World Airways
PAP	Post-Apollo Program
PL	Poland
RAE	Royal Aircraft Establishment
SDI	Strategic Defense Initiative
SDS	Students for a Democratic Society
SETI	Search for Extraterrestrial Intelligence
SKA	Stanley Kubrick Archive
SMI^2LE	Space Migration, Intelligence Increase, Life Extension
STS	Space Transportation System
SYNCON	Synergistic Convergence
TNA	The National Archives (UK)
UAR	United Arab Republic
UFO	Unidentified Flying Object
UK	United Kingdom
UN	United Nations

USA	United States of America
USAF	United States Air Force
USSR	Union of Soviet Socialist Republics
V-2	Vergeltungswaffe 2
VEB	Volkseigener Betrieb
VfR	Verein für Raumschiffahrt
WDR	Westdeutscher Rundfunk
ZDF	Zweites Deutsches Fernsehen

Notes on Contributors

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Introduction

CHAPTER 1

The Post-Apollo Paradox: Envisioning Limits During the Planetized 1970s

Alexander C.T. Geppert

> People aren't interested in the future any more. […] One could say that the moon landing was the death knell of the future as a moral authority.
>
> J.G. Ballard, 1970

> We are now in an interesting transition period when we can compare the realities of space with earlier imaginings of artists.
>
> Arthur C. Clarke, 1972[1]

For much of the twentieth century, human possibilities in outer space seemed endless. Not the skies, but the stars were the limit. During the 1970s this relationship was reversed and outer space reconfigured. After the six moon landings between July 1969 and December 1972 (Figure 1.1), for many the 'unrepeatable spectacle of a lifetime,' disillusionment set in.[2] All successes in planetary exploration by robotic spacecraft were overshadowed by the memory and legacy of the American Apollo program. Machine-generated close-up photographs of Venus, Mars and Jupiter could not outrival a human being walking on earth's closest celestial neighbor. Against the backdrop of the raging Vietnam War and the global oil crisis of 1973/74, imaginary expansion was shrunk, bounded and

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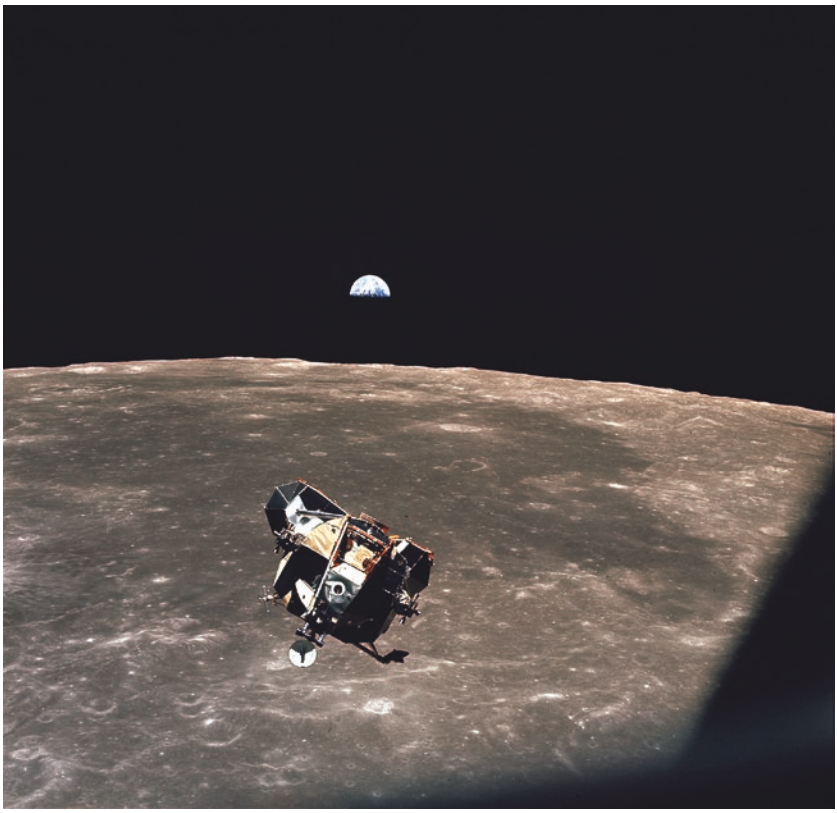

Figure 1.1 Apollo 11 lunar module 'Eagle' as it returned from the surface of the moon on 21 July 1969 to dock with the command module *Columbia*. While a smooth mare area is visible on the moon below, the half-illuminated earth hangs over the horizon in the background. Command module pilot Michael Collins (1930–), the NASA astronaut who took this picture when the lunar module ascent stage was about four meters away, has sometimes been described as 'the only human alive or ever to have lived not contained within the frame of this photo.'
Source: Courtesy of NASA.

grounded. With human spaceflight confined to low-earth orbit ever since the last astronaut returned to earth, the skies once again became the limit. If the Apollo era, in particular the new picture of planet Earth as its key legacy, constituted the apogee of worldwide space enthusiasm and the apex of the global Space Age, how did the latter's demise affect space thought and astroculture? Is the argument correct that it was during this aptly termed 'post-Apollo period' that the long-established link between sociotechnical imaginaries of outer space and phantasmagoric visions of a collective, imminent future in the stars loosened? And that, as a consequence, outer space itself lost much of the political relevance, cultural significance and popular appeal which it had been gaining worldwide since the mid-1920s, in particular after the end of the Second World War?

Limiting Outer Space has a triple focus. First, it zooms in on a particular time period, situated within a specific geographical setting, and foregrounds a

clear-cut historical question. Concentrating on the 1970s – according to the late New York University historian Tony Judt the 'most dispiriting decade of the twentieth century' – the book's thirteen chapters examine this now widely debated transition process from expansion to reduction, often considered concomitant with disillusionment and disenchantment, from a multiplicity of disciplinary perspectives. Second, the majority of contributions aim to replace oft-repeated US- and USSR-centric narratives of a bipolar Cold War rivalry and an escalating Space Race between East and West with more nuanced, less formulaic and more comprehensive analyses, integrating and indeed featuring European, if not global views on and contributions to 1970s astroculture. Finally, chapters ask whether the new 1970s sense of 'general space fatigue' marked the end of that hitherto inextricably intertwined nexus between outer space and the quest for utopia, when widespread belief in infinite human expansion was superseded by the discovery of inner space.[3]

I The growth of limits in the decade of crisis

It has taken historians a while to realize the wide-ranging implications and indeed epochal significance of what Eric Hobsbawm termed the 'crisis decades' or, more drastically: 'the landslide.' With the first oil-price shock of 1973/74, the standard argument now goes, an unprecedented quarter-century-long boom era came to an end in the West. The *trente glorieuses* had been a long period of relative political stability that was characterized by rapid economic growth, material prosperity for larger sections of society than ever before, and a reassuring sense of having successfully overcome two devastating world wars.[4] In March 1972, more than a year prior to the oil crisis, the Club of Rome had published its notorious 600-page *Limits to Growth* study on the 'predicament of mankind.' Translated into 35 languages and selling 9 million copies worldwide, the book's computer-based predictions for the future seemed to be validated by the unfolding course of events.[5] During the following years, a new sense of worldwide interconnectedness and global interdependence found its counterpart in the individualization of society and a withdrawal from the collective to the self. In an oft-cited article, American writer Tom Wolfe (1931–) coined the term 'Me Decade' to portray an ego-centered generation that had replaced 'man's age-old belief in serial immortality' with a narcissistic 'I have only one life to live.' The golden postwar era thus gave way to a less romantic, less optimistic and much more troubled, if not entirely 'lost,' decade, as contemporary observers in both Europe and the United States were quick to point out. 'In the long run,' *Time* magazine forecasted correctly, 'this decade and the next may well constitute an historical era of transition.'[6]

A majority of contemporary historians now echo these contemporaneous readings, impressionistic, unsystematic and incomplete as they may have been both then and now. Hardly surprising, economic and environmental historians were among the first to draw attention to the decade's transformative character. The former declared the 1970s 'of great interest for the economic and social historian,' while the latter pointedly termed the all-encompassing reinterpretation

of the man-environment relationship during these years the '1970s diagnosis.'[7] Within the past decade or so, literature on the so-called long 1970s, usually understood as lasting through the conservative turn of the early 1980s, has mushroomed both in European[8] and American historiography.[9] Contrary to usual experience, a rare consensus has eventually emerged among 'general' historians that the 1970s are to be regarded as a key period in the history of the twentieth century. Standing for structural rupture and constituting an epochal caesura, they should be conceptualized as a major turning point. Accordingly, a plethora of competing labels has been created to come to terms with a decade once overhastily described as a time when nothing happened: the 1970s as the 'end of confidence,' 'the age of fracture,' the period 'after the boom,' the 'decade without a name' that nonetheless constituted the 'threshold of change,' or the moment in time when all of a sudden the 'shock of the global' set in, simultaneously limiting and liberating. Others, somewhat predictably, have objected to any such forms of 'decadology,' as if historians were not well aware of their periodizations' artificial character, necessitated by professional pragmatism to come to terms with change over time.[10] There is opportunity in every crisis, goes another trite cliché, and labeling the 1970s as a global crisis consequentially leads to emphasizing their Janus-facedness, as a period of inertia *and* change, when the established post-Second World War consensus was revoked while giving way to the rise of post-industrial society in Europe and the world that dominates today's planetized present.[11]

As consequence and effect of such a structural rupture, not the least in contemporary self-understanding, the future changed its character during these years as well, often considered an unmistakable sign of epochs drawing to a close. 'My children, or today's teenagers, they are not interested in the future,' English novelist J.G. Ballard (1930–2009) deplored in a 1970 interview with British *Penthouse* magazine. 'What you see is the death of outer space, the failure of the moon landing to excite anyone's imagination on a real level, and the discovery of inner space in terms of sex, drugs, meditation, mysticism,' Ballard stated, thus giving expression to a frequently diagnosed assessment of the 1970s as a self-questioning time of troubles that looked neither forward nor outward but backward and inward.[12] Retrospection replaced prospection. Continual progress, exponential growth and outward expansion – previously considered the basis of incessant improvement of the human condition by means of technoscience – went into reverse. Large-scale technology ceased to be the trustworthy engine of societal change and humankind's betterment proved itself a problem, if not indeed its very obstacle.

Images and imaginaries of outer space and spaceflight, vastly popular and usually utopia-saturated in previous decades, changed correspondingly. Three cover images of the West German weekly *Der Spiegel* – published in 1966, 1970 and 1979, respectively – illustrate the shifting space-future nexus over the course of the decade. Quoting at length Arthur C. Clarke (1917–2008), British techno-prophet bar none, the *Spiegel*'s 6 December 1966 issue indulged in 1960s technocratic planning fervor. The future could be forecast because it was man-made and therefore controllable (Figure 1.2). Published

Figure 1.2–4 From planning fervor to threat via irrelevance: changing expectations for the future over the course of the 1970s as illustrated by the West German weekly *Der Spiegel*. The headlines translate as 'Futurology: Man's Future is Being Planned' (1966, left), 'The Seventies: Planless into the Future?' (1970, center) and 'Skylab Falls to Earth: Danger for Mainz?' (1979, right). Mainz, the capital of Rhineland-Palatinate, was the largest German city lying within the forecasted hazardous zone.
Source: Courtesy of *Der Spiegel* 20.53 (6 December 1966); 24.1 (5 January 1970); 33.27 (2 July 1979).

only a couple of years later, the *Spiegel*'s 5 January 1970 issue denounced the formerly utopian ideal of total feasibility not only as outmoded ideology but as the very 'trauma of the modern world' (Figure 1.3). Scenarios of future expansion into outer space were now marginalized; the only mention of spaceflight in this 12-page feature was an image of a moon colony illustrating the article. In a third *Spiegel* cover story published in 1979, another nine years later, space was no longer a futuristic promise nor an irrelevant epiphenomenon but had transformed into an otherworldly threat. Dangerous debris raining down from Skylab (1973–79), the decommissioned and long uninhabited first American space station, might cause considerable damage upon re-entry, the article warned its readers (Figure 1.4).[13]

The same modernist faith in technoscientific rationalism that had propelled the Apollo program into the 1960s skies and beyond was feared to be falling from the heavens at the end of the 1970s. Ballard, commenting in another *Penthouse* interview conducted a decade later, agreed. 'The world of "outer space," which had hitherto been assumed to be limitless, was being revealed as essentially limited, a vast concourse of essentially similar stars and planets whose exploration was likely to be not only extremely difficult, but also perhaps intrinsically disappointing,' the writer pointed out. For him, the Space Age had irrevocably ended in 1974, when the last Skylab mission returned to earth, having long given way to an era of limits in which the future developed in one direction only – toward home. 'The twentieth century began with a futuristic utopia and ended with nostalgia. Optimistic belief in the future was discarded like an outmoded spaceship,' literary scholar Svetlana Boym has summarized this drastic volte-face in hindsight. The turn from a prospective and extroverted to a retrospective and introverted reasoning simultaneously marked the inglorious end of the much celebrated Age of Space.[14]

That outer space, whether imagined, journeyed or feared, should have played a key role in the genesis of the 1970s as a transitional period might surprise middle-of-the-road historians of the twentieth century more than experts in space history.[15] 'Post-Apollo period' – the term suggested here to characterize the decade *succeeding* the classical Space Age, namely the time period from December 1972 until the early 1980s – is an example of how mainstream historiography – in this case 1970s scholarship in particular – and space history can supplement, illuminate and enrich each other.[16] The benefit is mutual: on the one hand, 'post-Apollo' provides students of outer space, spaceflight and astroculture with a broader intellectual and conceptual context, which in turn allows them to situate their analyses within a recognized interpretative framework to which general historians can equally relate. On the other hand, christening the 'decade without a name' the 'post-Apollo period' suggests that the end of the postwar consensus, the widely shared sense of societal crisis, the growth of limits and the oft-noted introspective spirit of the 1970s did not only coincide but also shared a common denominator. It is not by chance that humankind's outward movement correlated with a new sense of planetized globality; the irony is that both only emerged *after* the classical Space Age had drawn to a close.

II The Post-Apollo paradox

According to contemporaneous experts, the historical assessment would be unambiguous. When asked what the American Apollo missions *meant* for mankind and how their societal impact was to be characterized then and in the future, American, British, French and German historians, anthropologists, philosophers, scientists and public intellectuals all but agreed. According to notables such as Arnold M. Schlesinger Jr., Arnold J. Toynbee, C.P. Snow, Margaret Mead, Claude Lévi-Strauss, Hoimar von Ditfurth and many other *hommes de lettres*, landing a man on the moon was an unprecedented achievement of unforeseen dimensions which later generations would hail as an epoch-making step in human history. 'The twentieth century will be remembered,' historian Schlesinger forecasted in 1972 in a later oft-repeated statement, 'as the century in which man first burst his terrestrial bonds and began the exploration of space.'[17] Yet, as to what characteristics and societal consequences the just-entered Moon Age would entail, the experts were divided. Some reckoned the moon to be a stepping stone toward the discovery of new worlds and their imminent colonization, while others warned of a rise of 'cosmic claustrophobia' should humankind fully comprehend its aloneness throughout the universe. 'Was the voyage of Apollo 11 the noblest expression of a technological age, or the best evidence of its utter insanity?,' wrote Norman Mailer (1923–2007), bringing the dilemma to a head.[18] A third, originally less prominent, reading suggested that the truly alien planet and the only newly discovered frontier was, indeed, planet Earth itself. Bridging unparalleled physical distances and reaching a new vantage point in space made it possible to turn the gaze around, to look back and inward rather than forward and outward. Accordingly, the most precious souvenirs brought along from the journey were neither the pictures of Neil Armstrong's footprints on the moon's gray, dusty surface nor the 382 kilograms of lunar rock the six missions brought back, but rather two unplanned, low-priority by-products of the $20 billion Apollo program, 'Earthrise' (1968) and 'Blue Marble' (1972). Two photographs of the home planet, epitomizing this newly reversed perspective from without, proved the program's inadvertent legacy.

Present-day geographers, historians, art historians and philosophers have readily taken up and now widely echo this third reading, arguably elevating it to one of the few widely accepted standard arguments in space history. Geographer Denis E. Cosgrove has attested to Earthrise and Blue Marble having 'altered the shape of the contemporary geographical imagination,' whereas historians Robert Poole and Benjamin Lazier have, respectively, declared Earthrise as providing the 'defining moment of the twentieth century' which gave rise to an entire 'Earthrise era.' Similarly, art historian Horst Bredekamp has used philosopher Peter Sloterdijk's notion of a 'Copernican revolution of the gaze' to argue that Blue Marble became the image of earth par excellence as it allowed for a complete reversal of viewing directions only possible from an extraterrestrial standpoint. Distance made for a reorientation and complete reversal of perspective, which in turn led literally to a

new *Weltanschauung* on earth.[19] Following these and other assessments, the Apollo program did indeed prove epoch-making – albeit hardly for the reasons put forward by the majority of observers, analysts and critics at the time. Apollo was not tantamount to a caesura in human history because it meant twelve men walking on earth's closest celestial body, but because the spacefarers, acting as representatives of all of humankind, returned with portraits of everyone's communal home, the world's first selfie.

The minority of experts who had predicted that jaunting into outer space would, paradoxically, lead to a rediscovery of *inner* space were correct. As some had argued as early as 1965, 'man's thrust into outer space' proved ultimately a return to himself. Correspondingly, when in 1977, five years after the end of the Apollo program, US probe Voyager 1 sent back a color photograph that showed earth and moon floating together in the vast darkness of outer space, public resonance was limited. Lacking the implicit 'human touch' of the earlier souvenirs, the novelty of this machine-generated image was not sufficient to excite the public anew, and neither did it make front-page headlines (Figure 1.5).[20]

How then to connect this new, earth-centered image of outer space featuring *planet* Earth with the transitional 1970s, and why suggest labeling these years the 'post-Apollo period'? Signalling its problematique in its very name, post-Apollo denotes a period, a program and a problem. First, the term obviously refers to the time period *after* the completion of the Apollo missions in 1972.[21] Second, it also stands for NASA's spaceflight program by the same name, first discussed in Congress in August 1965, laid out in a September 1969 report and culminating in President Richard Nixon's announcement on 5 January 1972 in which he committed to build the Space Shuttle. Vehemently debated nationally and internationally, the task was to find an answer to the question of where the American nation would 'go in space in the Post-Apollo period.' As historian John M. Logsdon has argued, the set of decisions made during those three short years defined human spaceflight activities in the United States for the next four decades, until the termination of the Shuttle program in 2011.[22] But in addition to marking a historical time period and denominating a national space policy of long-term impact, post-Apollo also points, third, to a particular historical problem: the Post-Apollo paradox. As the contributions to this book testify, neither spaceflight nor astroculture ceased to exist during the 1970s, even if their already complex relationship further loosened once the future moved elsewhere and enthusiasm began to dwindle all the more.[23] Yet, it was precisely at this moment in time that, by many accounts, the world-encompassing process of international entanglement now usually referred to as globalization finally unfolded with full force. That the term 'global' took on its contemporary theoretical connotations in the early 1970s and turned into the conceptual category so familiar today is not a coincidence but a by-product of the post-Apollo period.[24]

Surprisingly absent from the flourishing historiography is the causal connection between the heyday of space exploration, space thought and astroculture of the 1950s and 1960s, and the sense of crisis and incipient globality of