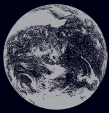


Freie Universität



Berlin



# envisioning limits

outer space and the end of utopia

19–21 April 2012

Harnack-Haus | Berlin

<b>2</b>	<b>Agenda</b>
<b>3</b>	<b>Program</b>
<b>5</b>	<b>Abstracts</b>
5	Philippe Ailleris <i>Red Soil, Phonograph Records, and United Nations Resolution 33/426. Our 1970s Extraterrestrial Heritage</i>
5	Thore Bjørnvig <i>Unlimited Play in a World of Limits. The LEGO Classic Space Theme, 1978–80</i>
6	Ralf Bülow <i>The X Files. Reading a West German Sci-Tech Magazine from 1969 to 1973</i>
7	Martin Collins <i>Ambiguities of the 1970s. Spaceflight and the Problem of Historically Interpreting the In-Between Decade</i>
7	Luca Follis <i>Beyond Law's Frontier. The Normative Imaginary of Outer Space</i>
8	Alexander C.T. Geppert, Daniel Brandau and William R. Macauley <i>The 1970s, Western Europe, and the Delineation of Space</i>
8	Matthew H. Hersch <i>'On the Edge of Forever.' 1972 and the New American Space Consensus</i>
9	Andrew Jenks <i>Spaceflight, Cosmopolitics, and Transnational Consciousness</i>
10	Florian Kläger <i>Reading into the Stars. Metaphorized Cosmology and Self-Reflexivity in the British Novel of the 1970s</i>
10	John Krige <i>Blowback, Lift Off. The Rise of Ariane and the Decline of US Monopoly of Access to Space in the 1970s</i>
11	Roger D. Launius <i>Human Spaceflight as Religion in the Aftermath of the Space Race</i>
11	Neil M. Maher <i>Ground Control. Space Technology, Environmentalism, and Détente Across the Developing World</i>
12	W. Patrick McCray <i>Gerard O'Neill's Visioneering of the 'High Frontier'</i>
13	Lisa Messeri and Janet Vertesi <i>The Greatest Missions Never Flown</i>
13	Agnes Meyer-Brandis <i>Space Traveling. A Performance-Lecture Examining Real Utopian Aspects of Interplanetary Exchange of Idea and Matter</i>
14	Doug Millard <i>Were the 1970s a Period of Transition for the History of Britain's Exploration of Space?</i>
14	Gonzalo Munévar <i>Space Colonies and their Critics</i>
15	Regina Peldszus <i>Astronauts and their Crew Quarters as Markers of 'Humanized' Space Futures</i>
15	Robert Poole <i>'2001: A Space Odyssey.' Space Travel and the Ends of Progress</i>
16	Virgiliu Pop <i>The Moon Agreement and the Beginning of Utopia</i>
16	Christina Vatsella <i>Satellite Art. Artworks in Orbit</i>
17	Peter J. Westwick <i>From the Club of Rome to Star Wars. The Era of Limits, Space Colonization, and the Origins of SDI</i>
<b>18</b>	<b>Biographies</b>
<b>24</b>	<b>Participants</b>
<b>28</b>	<b>Logistics</b>



If space exploration is understood as not just one of the twentieth century's most prestigious feats of engineering, but also a central theme in period visions of the future and utopias, then how might we understand the transition from the 1960s to the 1970s, with its emphasis on reduced possibilities and limitations to progress? Were the 1970s an intermission in twentieth century themes, or a decade of transition to new cultural configurations? Recent historiography has taken up this question, reassessing the 1970s in their economic, political, and cultural dimensions. Though histories of outer space and spaceflight have rarely been brought together with this new scholarship on the decade of détente, the ecology movement, and the 'limits to growth', fresh perspectives can help explain concomitant shifts and intermissions in spaceflight and astroculture. Common references such as the loss of popular interest after the Apollo moon landings, the end of the Space Race, and a sharp decline in political support for costly manned exploration programs can be re-evaluated in terms of their historical impact and importance. The 1970s also witnessed, for example, the foundation of the European Space Agency in 1975, unprecedented success of robotic space exploration missions, and renewed interest in space colonization.

This conference examines the argument that the 1970s constitute a crucial transitional period in the history of outer space, spaceflight and extraterrestrial life. It aims to shift the focus away from explanations of transition from Cold War contexts and produce more nuanced narratives: from the familiar struggle between two superpowers, namely the USA and the former USSR, to distinctly European perspectives, and from political to other socio-cultural dimensions of the Space Age. How were limits created, challenged and maintained? In what sense was outer space invoked to transform cultural boundaries and how were these conveyed to different audiences? How were the exploration of outer space and limits envisaged in Western Europe, for example, in the form of national and international space programs, the visual arts, news and entertainment media? Human exploration of outer space has routinely involved redefining and supposedly transcending limitations associated with life on Earth. Paradoxically, attempts to envisage boundless possibilities for humankind in outer space also reveal constraints imposed by human actors and social institutions. The conference will look at utopia not as a socio-cultural objective but rather as a process. Through defining limitless opportunities afforded by outer space, advocates of space exploration not only opened up new possibilities for accelerating or even surpassing human development, but also delineated the historicity and limitations of the human imagination.

The organizers would like to express their gratitude to Björn Blaß, Gilda Langkau, Friederike Mehl, Tom Reichard, Katja Rippert, Gösta Röver, Stephan Töpper, Bernd Wannemacher, the Center for International Cooperation at Freie Universität Berlin and, above all, the Deutsche Forschungsgemeinschaft.

ALEXANDER C.T. GEPPERT, WILLIAM R. MACAULEY AND DANIEL BRANDAU

## thursday, 19 april 2012

### 09.00 Introduction

ALEXANDER C.T. GEPPERT, DANIEL BRANDAU AND WILLIAM R. MACAULEY  
*The 1970s, Western Europe, and the Delineation of Space*

### 09.30 Feature Presentation I

MARTIN COLLINS  
*Ambiguities of the 1970s. Spaceflight and the Problem of Historically Interpreting the In-Between Decade*

10.30 COFFEE

### 11.00 Panel I: Transitions

Chair: Paul Nolte  
 ANDREW JENKS  
*Spaceflight, Cosmopolitics, and Transnational Consciousness*  
 DOUG MILLARD  
*Were the 1970s a Period of Transition for the History of Britain's Exploration of Space?*

12.45 LUNCH

### 14.00 Panel II: Pictures

Chair: Thomas P. Weber  
 ROBERT POOLE  
*'2001: A Space Odyssey.' Space Travel and the Ends of Progress*  
 RALF BÜLOW  
*The X Files. Reading a West German Sci-Tech Magazine from 1969 to 1973*

15.45 COFFEE

### 16.00 Panel III: Laws

Chair: Peter Becker  
 LUCA FOLLIS  
*Beyond Law's Frontier. The Normative Imaginary of Outer Space*  
 VIRGILIU POP  
*The Moon Agreement and the Beginning of Utopia*

17.45 DINNER AT HARNACK-HAUS

### 19.00 Feature Presentation II

AGNES MEYER-BRANDIS  
*Space Traveling. A Performance-Lecture Examining Real Utopian Aspects of Interplanetary Exchange of Idea and Matter*

## friday, 20 april 2012

### 09.00 Feature Presentation III

Chair: William R. Macauley  
 JOHN KRIGE  
*Blowback, Lift Off. The Rise of Ariane and the Decline of US Monopoly of Access to Space in the 1970s*

10.00 COFFEE

### 10.15 Panel IV: Politics

Chair: Etienne Benson  
 MATTHEW H. HERSCH  
*'On the Edge of Forever.' 1972 and the New American Space Consensus*  
 NEIL M. MAHER  
*Ground Control. Space Technology, Environmentalism, and Détente Across the Developing World*

12.00 LUNCH

**13.00 Panel V: Texts**

Chair: Matthias Schwartz

FLORIAN KLÄGER

*Reading into the Stars. Metaphorized Cosmology and Self-Reflexivity in the British Novel of the 1970s*

REGINA PELDSZUS

*Astronauts and their Crew Quarters as Markers of 'Humanized' Space Futures*

14.45 COFFEE

**15.00 Panel VI: Aesthetics**

Chair: Claudia Schmölders

CHRISTINA VATSELLA

*Satellite Art. Artworks in Orbit*

THORE BJØRNVIG

*Unlimited Play in a World of Limits. The LEGO Classic Space Theme, 1978–80*

16.45 COFFEE

**17.00 Panel VII: Prospects**

Chair: Debbora Battaglia

PHILIPPE AILLERIS

*Red Soil, Phonograph Records and United Nations Resolution 33/426. Our 1970s Extraterrestrial Heritage*

LISA MESSERI AND JANET VERTESI

*The Greatest Missions Never Flown*

## saturday, 21 april 2012

**09.00 Panel VIII: Habitats**

Chair: Thomas Brandstetter

W. PATRICK MCCRAY

*Gerard O'Neill's Visioneering of the 'High Frontier'*

GONZALO MUNÉVAR

*Space Colonies and their Critics*

10.45 COFFEE

**11.00 Panel IX: Transcendence**

Chair: Helmuth Trischler

PETER J. WESTWICK

*From the Club of Rome to Star Wars. The Era of Limits, Space Colonization, and the Origins of SDI*

ROGER D. LAUNIUS

*Human Spaceflight as Religion in the Aftermath of the Space Race*

12.45 SNACK

**14.00 Conclusion**

Chair: Alexander C.T. Geppert

DAVID A. KIRBY

*General Comment*

16.00 END

Philippe Ailleris

## Red Soil, Phonograph Records, and United Nations Resolution 33/426. Our 1970s Extraterrestrial Heritage

On 7 October 1976, Grenada's Prime Minister Sir Eric Gairy brought up the subject of UFOs at the United Nations (UN) General Assembly. His action was of historical significance. It was the first intervention at the UN related to extraterrestrial life, which in 1977 resulted in discussions about extraterrestrial civilizations by the UN Committee on the Peaceful Uses of Outer Space. Gairy's subsequent proposals lead to the adoption by the UN General Assembly in 1978 of decision 33/426 calling for the establishment of an agency or a department of the UN for coordinating and disseminating the results of research into UFOs. The decision was never applied, but its development nonetheless marked the pinnacle of serious public consideration of UFOs. In parallel with these developments and throughout the 1970s, the exploration of our solar system and the streams of images and data received from our space probes (Venera 9, Viking) revealed the non-hospitable environments of Earth's solar neighborhood. Interestingly, it was also during the same decade that humanity started launching into interstellar space vehicles equipped with the

ability to communicate with other space-faring civilizations (Pioneer, Voyager).

Bringing these UN hearings and space milestones closer, I argue in this paper that the 1970s constituted a crucial transitional period in the history of human contemplation regarding extraterrestrial life. It was the moment that our inner speculations and hopes of discovering non-terrestrial sentients were reduced to nothing. It marked the end of exobiological utopias. This paper retraces the major steps of Grenada's UN UFO initiative and examines the ufological discourse in terms of socio-cultural dimensions linked to the space age and search for extraterrestrial intelligence. This analysis will examine the argumentation used, crossing cultural and national boundaries (e.g. Earth as the inheritance of all humanity, limiting common anthropocentric presuppositions, security) and show the constraints faced by Gairy and the tactics of de-legitimation used by opponents (e.g. funding, credibility, influence) while emphasizing societal issues that still prove valid today (e.g. the need for scientific engagement, communication and transparency).

Thore Bjørnvig

## Unlimited Play in a World of Limits. The LEGO Classic Space Theme, 1978–80

In 1978, six years after the last human footprint was left on the Moon, the Danish LEGO Company launched its first series of models dedicated solely to the theme of outer space. Now known as 'Classic Space LEGO' it is lauded by adult LEGO fans around the world. Some of the designs were vaguely reminiscent of the first *Star Wars* movie from 1977, which may partly explain the theme's world-wide success. The LEGO space theme was introduced in a time that, in the words of Roger

D. Launius, 'might best be viewed as a nadir in human space exploration, with the Apollo program gone and the Shuttle not yet flying.' Yet, the building instructions for the classic space themed toys depicted neat little mini-figures with eternally smiling faces, garbed in white and red space suits, and occupied with colonizing and mining a Moon-like planetary surface. In the sketchily suggested story lines for the theme there were no conflicts, no weapons, no warring factions. With

their horizons of softly rolling Moon-dunes and the alluring blackness of space looming behind, the visual representations of the theme transcended the limits imposed by historical contingency, suggesting instead a vision of unlimited space for peaceful exploration and expansion by humankind. As such, it connected to utopian sentiments running through the American space program, as exemplified by Gerard O'Neill's optimistic plans for building space habitats. Through an analysis

of the LEGO sets themselves, various LEGO publications, writings of online LEGO fan communities, and interviews with LEGO designers, this paper elucidates the origins of the LEGO Classic Space theme and its connections to the historical and cultural context of the time. My analysis will shed light on how a vision of outer space was created in a Danish toy company and how it subsequently captured the minds of a generation.

## Ralf Bülow

### The X Files. Reading a West German Sci-Tech Magazine from 1969 to 1973

In early 1969 a brand new illustrated monthly appeared at West German newsstands: *X – unsere Welt heute* ('our world of today'). *X* called itself an *Aktuelles Magazin für Naturwissenschaft und Technik* ('magazine for the latest news from science and technology') and was the first popular sci-tech journal of decent quality to be sold to the German public in great numbers: Nearly 100 000 copies were printed each month. In spite of its success the magazine run only a little over four years: In April 1973 *X* was merged with another sci-tech periodical and is largely forgotten today.

*X* magazine was produced in a time when the perception of science and technology changed in West German society. During the 1960s scientific and technological progress and, of course, spaceflight were seen mostly positive, whereas in the 1970s many people lost

interest or developed a more critical view. It can be assumed that the contents of a popular sci-tech magazine, which each month has to find its buyers, somehow reflect not only the personal views of its writers but also the changing climate of opinion among its readers.

In this paper, the following questions will be addressed: Which topics can be found in the magazine? Which topics were pushed? And which were overlooked? What images were used for the magazine cover? How did *X* write about spaceflight and astronomy? And how did its outlook change over the years? We will also look at the letters to the editor and the results of a readers' poll conducted in 1970. It may thus be argued that *X* can be used as an indicator how West Germans interested in science, technology and spaceflight saw the world during the late 1960s and early 1970s.

Martin Collins

**Ambiguities of the 1970s.  
Spaceflight and the Problem of Historically Interpreting the In-Between Decade**

This presentation is not a historical study per se, but a reflection on the attempts of historians and critical theorists to interpret the 1970s – its significance, its main vectors of change, its positioning as a passage between the postwar period through the 1960s and 1980s and after, decades (however chronologically marked) that have been taken as distinct historical formations. Thus, the 1970s, from the scholarly perspective, has come to be seen as an interpretive problem in mediating our understanding of the American-European experience in the decades that bracket it. Typically, such interpretive searching has centered on changes in American-European political economy, political ideology, and conceptions of self (particularly as grounded in market-based consumption) – in short, giving analytic preference to understanding structures as opposed to events (such as the 1973 Oil Crisis). These domains, spanning broad conceptions of social order to the inner experi-

ence of individuals, speak to period notions of ‘limits’ and ‘utopia’ in different ways. This reconnaissance will seek to do two tasks: To, first, provide a critical account of thinking about the 1970s, drawing together period theorists such as Daniel Bell and François Lyotard as well as recent historiography and theory, and then, second, suggest the ways in which spaceflight has been conceptualized, indirectly and directly, in such framing of the decade. The focus in the first part will be to sort through the central problem as seen by a variety of authors writing about the 1970s: Perceived changes in capitalism and the relation of this transformation (late capitalism) to questions of politics, the state, and citizens as consumers. The focus of the second part will be to make a case for seeing spaceflight (as element of political economy, as trope and ideology, as a realm of consumption) as an integral aspect of period change.

Luca Follis

**Beyond Law’s Frontier. The Normative Imaginary of Outer Space**

The transition between the 1960s and 1970s witnessed an easing of the Cold War ‘Space Race’ and an escalation of international collaboration concerning human activities in space, symbolized both by the Apollo-Soyuz Test Project and the creation of the European Space Agency. Yet this period also involved an extensive elaboration and normalization of ‘space law’: the Outer Space Treaty of 1967, the Astronaut Agreement of 1968, the Liability Convention of 1972, the Registration Convention of 1975 and the Moon Agreement of 1979 collectively defined the scope of law in outer space and entrenched a score of ambiguities and inconsistencies within *corpus juris spatialis*. In conscious renunciation of Earth’s imperial, colonial and Cold War legacies these treaties set up a legal regime which sought to preclude claims

to sovereignty and ownership over space. In many significant respects these agreements represented the first steps towards the creation of a post-national, post-sovereign global community. At the same time, when viewed from the perspective of the early twenty-first century, in a period in which the sovereign state is in decline and the future of space exploration seems to be largely left in the hands of private enterprise, the ambiguities and inconsistencies contained in *corpus juris spatialis* reassert themselves with imminent force. What is space? Is it a resource? Is it an extension of the environment? This paper considers the normative legacy of the 1960s and 1970s and explores its viability for the twenty-first century.



## Alexander C.T. Geppert, Daniel Brandau and William R. Macauley

### The 1970s, Western Europe, and the Delineation of Space

This paper will introduce the principal themes of the *Envisioning Limits* conference. It will provide a conceptual frame (envisioning as a constitutive process in the cultural history of outer space) and focus on three analytical themes (Western Europe, limits, utopia) for interrogating the argument that the 1970s represent a rupture in the history of space, spaceflight and extra-terrestrial life, as symbolized by the first Moon landing in July 1969. Further, this introductory presentation will clarify how the conference structure integrates different

approaches to explaining how the process of envisioning space exploration created opportunities for transcending perceived limits, but also delineated the historicity and boundaries of the imagination. Attempting to overcome an obvious intermission-vs.-transition dichotomy and to avoid decadological thinking, the paper argues that the post-Apollo and pre-Ariane years constitute a crucial, if hitherto overlooked and underestimated period in space history that awaits closer scrutiny and integration into general historiography.

## Matthew H. Hersch

### 'On the Edge of Forever.' 1972 and the New American Space Consensus

If there were any question that the first Space Race had ended by 1972, Wernher von Braun's retirement from the American National Aeronautics and Space Administration (NASA) and the final Apollo Moon landing that year extinguished all doubts. In 1972, space agencies in the United States, the Soviet Union, and Western Europe savored important successes while recognizing that the optimistic visions of exploration that had been popular in the 1960s could not survive an environment of political, economic, and social change. With preeminence over the Soviet Union seemingly established, Americans in particular could either abandon space travel or finally pursue it for the reasons the most grandiose prophets of flight had once imagined: to transform the human spirit. In 1972, various groups of Americans demanded starships, not space capsules, and a space program that would benefit all people, instead of a select few. While NASA tested its new Skylab space station

and began work on its Space Shuttle – a people's spacecraft unlike any ever constructed – science fiction fans fractured into 'trekkers' and 'freaks.' *Star Trek* enthusiasts held their first convention, celebrating anachronistic visions of future spaceflight rooted in early-1960s American liberalism. Meanwhile, a growing community of counter-culturists imagined a space program freed from the violence and petty jealousies of nation-states, where the only mission was the elevation of human consciousness. 'Space is the place,' afro-futurist jazz musician Sun Ra exclaimed in 1972: a vast, fertile wilderness where Earth's social ills would find no purchase. Drawing upon institutional histories, archival documents, oral history, and popular culture, this paper examines a single, critical year in the history of spaceflight, and the uneasy consensus for space exploration that ultimately emerged from it.

# Andrew Jenks

## Spaceflight, Cosmopolitics, and Transnational Consciousness

The starting point of my paper is the Apollo-Soyuz mission in July 1975, which marked both the beginning of a new era of transnational space exploration and an important shift in the political and cultural meanings associated with spaceflight. Aleksei Leonov, the cosmonaut who participated in the mission, said he was struck again and again during the flight, that ‘cooperation means friendship, and friendship means peace.’ Banal statements, perhaps, but not devoid of genuine belief. New ideas about collaboration and cooperation – which often clashed with heroic national narratives of space from the previous era – envisioned spaceflight as a way to forge a global consciousness and community. That realization came in part from a recognition of the limits of the Cold War struggle, reinforced by the terrifying prospect of Mutual Assured Destruction. It was also a perfect complement to the spirit of the 1970s, initiated by the first Earth Day in 1970 and inspired, in part, by a new breed of environmentalists such as the British scientist James Lovelock who imagined the Earth as a kind of spaceship – and its human inhabitants as just one minor component of a far larger cosmos. His 1979 book *Gaia*, from the Greek for Mother Earth, captured the spirit of the age. An amalgam of ideas that had crisscrossed many national boundaries, it was inspired in part by the ideas of the Russian cosmist and geochemist Vladimir Vernadsky, by images from the Apollo missions, and by anti-nuclear and environmental advocates throughout Europe.

This paper is based on a rich collection of documents contained in the Hoover Institution and Archives. Entitled the ‘Association of Space Explorers,’ the document collection recounts attempts by a group of Western European public figures, cosmonauts and retired astronauts – led by Apollo 9 mission veteran Rusty Sch-

weickart – to promote international cooperation during Ronald Reagan’s presidency. Western Europe was a staging ground for the group’s efforts. The group held its first meeting in a chateau just outside Paris in October 1985. The French cosmonaut Jean-Loup Chrétien, who eventually flew on both Soviet and NASA vehicles, was a key figure. Jacques Cousteau, a pioneer in sea exploration, was also closely involved in the effort and gave the keynote speech. As the group put it during the meeting in Cernay in October 1985: ‘[We] have seen the Earth from a vantage point that transcends political differences, and are thereby in a position to inspire all of us to work together more creatively on issues of mutual concern.’ The Association itself grew out of détente and the Apollo-Soyuz mission in 1975, ‘that memorable handshake in space,’ as the organizers put it. The association’s members and sponsors – at a time of increasing Cold War tensions – had profound faith in ‘the potential of this group of individuals to influence the consciousness of our time... perhaps unique in the history of explorers.’ The selection of a French ninth-century Abbey as the location for the initiative also conveyed the participants’ desire to initiate a broader transnational movement – though one with explicitly European origins. As the organizers put it, they had gathered in an Abbey, ‘where crusaders once passed on their way to Jerusalem.’ It was space exploration with a distinctly Western European twist, as ‘meals were conducted in a leisurely European style [and] there was ample time for fishing and boating on the lake.’ Especially important to the organizers was the need to go beyond Cold War visions of space and to emphasize the ‘conservation of natural resources and resolving the problems of environmental pollution.’

## Florian Kläger

### Reading into the Stars.

#### Metaphorized Cosmology and Self-Reflexivity in the British Novel of the 1970s

Attempts to envisage the boundlessness of outer space tend to reveal terrestrial and anthropological limitations. This duality of the limitless and the limited informs a number of British 1970s novels that engage the question after the place of mankind in the universe in order to reflect about the limitations and potential of the novel as a literary form.

In *The Genesis of the Copernican World*, Hans Blumenberg predicted that there would never be a classic travel narrative about the first Moon landing, and that man ‘did not succeed, on this occasion [in 1969], in showing that the only reason why the Earth is not a desert is that he exists, contemplates it, and can talk about it.’ The experience of outer space proved a severe challenge to traditional narratives of the relationship between mankind and cosmos. However, as Günther Anders pointed out, the photographs taken of Earth from space in 1968 also introduced an unprecedented

element of cultural self-reflexivity. The paper discusses the functions assumed by this new sense of self-reflexivity in selected British novels of the 1970s.

Invocations of outer space and of the relationship between mankind and cosmos are made, I argue, to probe the limits of representation and hence, the limits of the genre. Such invocations prompt reflections about the potential, nature, and purpose of the novel in contemporary society. Authors such as Doris Lessing, Iris Murdoch, A. S. Byatt, John Banville, and Ian McEwan take the human desire to anthropomorphize the cosmos and to ‘make it speak’ about mankind as commensurate with the desire of the novelist and the novel reader to create meaningful worlds from words. In the paper, I examine their treatments of the topic as one concrete manifestation of astroculture’s impact on the venerable cultural practice that is the novel.

## John Krige

### Blowback, Lift Off.

#### The Rise of Ariane and the Decline of US Monopoly of Access to Space in the 1970s

On Christmas Eve 1979, the United States lost its two-decade, ‘free world’ monopoly on access to space when the European launcher Ariane performed flawlessly on its maiden flight. A decade later, thanks to Ariane’s success, the Shuttle’s low annual launch rate, and the Challenger accident the public/private company that exploited Ariane commercially, Arianespace, had captured about 50% of the world market for civilian satellite launches, a position it manages to maintain even today.

This breach in the US control of access to space was but one of several setbacks to the global reach of American power in the 1970s. Nor was it the only one in the domain of space science and technology. In fact Europe’s determination to close the much-vaunted ‘technological gap’ that had dominated thinking in the late 1960s helped tilt the balance of forces between it and the United States in the 1970s. This tilt was due to

the convergence of two factors. Leading policymakers in the United States were trapped in modes of behavior that were born of their dominant position in the 1960s and were unable to adjust to the new situation that confronted them in their dealings with Europeans. That situation was one in which Europeans were no longer willing to be ‘bullied’ by a dominant partner, and were determined to break free of the United States if the latter did not respect their wishes. This conflict – between senior policy makers in the US who wanted to rein in European aspirations, and European policymakers that wanted to chart their own course, free of the United States if need be – came to a head in negotiations over launcher policy between 1969 and 1972.

This paper will describe these negotiations. It is widely known that the decision to embark on Ariane was never a forgone conclusion and that, even in France,

deep doubts and serious opposition marked the birth of the project. It is also generally argued that NASA's demand that it would only launch *Symphonie* – a Franco-German telecom satellite – if it was used for experimental, not operational purposes, was the single most important factor in favor of a pro-Ariane decision in France. This paper will revisit that debate. But it will insist that it overlooks other equally significant US-European confrontations over access to space (in the definitive Intelsat agreements and in the post-Apollo

program) that fuelled the determination to be independent. By highlighting these multiple simultaneous conflicts over a technology that was intimately related to the expression and implementation of American power, and by exploring the effects of the United States' hostility to European demands, we are able to chart the first signs of a crumbling hegemony that would result in the eventual marginalization of the United States as just one provider among others of space services.

**Roger D. Launius**

### **Human Spaceflight as Religion in the Aftermath of the Space Race**

There is a very significant religious quality to advocacy for human space exploration, lending it a 'higher purpose' that may disturb the faithful but helps explain much of the hold human space exploration has enjoyed within its supporting community. Religion carries several connotations, chief among them being faith and worship, the existence of a set of beliefs inspiring reverence and allegiance, trust in an alternative arrangement of human affairs that cannot be physically demonstrated, a frequent promise of immortality, an explanation of the creation, and conviction in a message of salvation. Human space exploration fits these characteristics well. It inspires faith, worship, reverence, alternative futures, and a quest for secular immortality. Being like a religion, space exploration as a belief system has saints, martyrs, and demons; sacred spaces of pilgrimage and reverence; theology and

creed; worship and rituals; sacred texts; and a message of salvation with humanity insuring its future through expansion of civilization to other celestial bodies.

This paper focuses on the religion of spaceflight in the 1970s. This was a pivotal period in the aftermath of the Apollo Moon landings and expectations were broad that the dreams of spaceflight – the utopian/religious conceptions so much a part of it – were on the verge of realization. The manner in which the decade of the 1970s unfolded, however, was quite different from what had been expected. This paper will explore how and why those who embraced spaceflight as religion responded to the developments of the 1970s, setting in train a succession of major efforts around the world designed to further the dreams of spaceflight and expressing its elements as a form of religion.

**Neil M. Maher**

### **Ground Control. Space Technology, Environmentalism, and Détente Across the Developing World**

The relationship between the Space Race and the environmental sciences has changed dramatically over time. While NASA and the Soviet space agency began the 1960s using environmental sciences to explore outer space, after the first Earth Day in 1970 both increasingly turned to the same science to examine ecological changes taking

place on planet Earth. 'Ground Control' explores this scientific reorientation during the 1970s by placing it within the broader historical context of both environmentalism and détente across the developing world.

This paper integrates environmental and technological history to analyze how NASA and the Soviet space

agency shared data from technologies such as earth resources satellites not only with environmentalists, who often used it to promote conservation and ecological stewardship, but also with leaders from developing countries around the world. For example, during the mid-to-late 1970s NASA lured scientists, engineers, and politicians from Brazil, Nicaragua, and Mexico in Latin America, from Zaire, Senegal, Kenya, and Botswana in Africa, and from Pakistan and Japan in Asia, to work closely with US and European governments in return for Landsat data regarding each of these country's natural resources. The Soviet Union retaliated in the early 1980s by using its Soyuz missions to conduct si-

milar measurements of natural resources in developing communist countries that were cooperating with its Intercosmos Council, including Vietnam, Mongolia, and Cuba. Both space superpowers could, and did, halt this flow of natural resource data from space to these same developing countries if their leaders refused to act in the best interest of the US or USSR.

'Ground Control' thus explores how the utopian promise of environmentalism in the late 1960s and early 1970s receded as the rising tide of détente washed across the developing world. At the very center of this historical shift were space technology on the one hand, and earthbound nature on the other.

## W. Patrick McCray

### Gerard O'Neill's Visioneering of the 'High Frontier'

Starting in 1969, Princeton physicist Gerard O'Neill began to imagine that what he called the 'humanization of space' could provide a critical safety valve for a crowded, polluted, and energy-hungry planet. O'Neill formulated his ideas in direct response to the warnings of ecocatastrophe presented in international bestsellers like *The Population Bomb* and *The Limits to Growth*. Space, as O'Neill described in his award winning 1977 book *The High Frontier*, could be not just a government-run program for astronaut elites but a place where wide array of citizens could live and work.

Whereas earlier visionaries offered largely descriptive speculations, O'Neill developed detailed plans for massive Earth-like habitats floating free in space far from our home planet's gravitational pull. He began with simple drawings and back-of-the-envelope estimates. In time, O'Neill's concepts matured into sophisticated designs backed by detailed calculations that he disseminated and discussed with colleagues. NASA and other professional organizations supported this work

with several conferences and workshops. O'Neill meanwhile popularized his vision to interested citizens, politicians, and journalists throughout the 1970s.

We lack a suitable word to call someone who undertook such a diverse set of future-directed activities. To fill this gap, I propose 'visioneer'. A neologism combining 'visionary' and 'engineer,' this word captures the hybridized nature of these technologists' activities. This paper presents O'Neill as a 'visioneer' – someone who imagines, designs, promotes, and sometimes even builds exploratory technologies. This paper places O'Neill's work within larger social, economic, political, and environmental concerns of the 1970s as well broader streams of technological utopianism. It also explores the challenges O'Neill faced in presenting his visionary engineering to a wider audience. Finally, this paper develops 'visioneer' as a category of historical actor that can help us understand the development and promotion of future technologies and technological utopias.

## Lisa Messeri and Janet Vertesi

### The Greatest Missions Never Flown

This paper discusses two missions that have been influential to many scientists' careers and often animate technical discussions. Ironically, neither of these missions – the Mars Sample Return and the Terrestrial Planet Finder – have actually flown, nor do they even have funding. Although envisioned by the planetary astronomy communities as early as the 1950s, these missions have been perpetually postponed for development in response to funding crises, and continue to be discussed and projected for development today. Despite this, we argue, they are important and powerful forces within the communities that support them. We first discuss how such missions serve a limiting function on the development of sequential missions along the way, as they become the proposed utopian vision of the ideal future mission that will resolve all of the community's pressing questions. Thus, despite never being accepted for development themselves, their constant apparition on the horizon of 'what comes next' exerts a powerful limitation on contemporary technologies in development, each of which is understood as 'technology demonstra-

tions' towards the eventual promised mission. Further, they serve a rallying function for Mars scientists or exoplanet astronomers around which a community organizes and individuals plan their career trajectories. This is particularly important as we attempt to understand the effects of the shifts in funding structure in the 1970s that moved from mission families (such as Apollo or Pioneer) to one-off missions such as flagships that must be uniquely approved and subject to Congressional whims. Finally, much as these imagined future missions provide limits for and utopian ideals for community members, they also respond to changes in local utopian visions of the planet Earth and its relation to space exploration. The missions therefore shift in response to how Mars or exoplanets are re-imagined in different periods, such as the ecological visions of the 1970s or the Earth in peril and decline in the 1990s. Ultimately, we argue, studying these missions that never flew is as important as studying those missions that actually flew for understanding the shape and scope of planetary exploration today.

## Agnes Meyer-Brandis

### Space Traveling. A Performance-Lecture Examining Real Utopian Aspects of Interplanetary Exchange of Ideas and Matter

This presentation will deal with the creation of art and science in the absence of weight. The starting point will be an artistic project entitled 'Cloud-Core-Scanner,' conceived by Agnes Meyer-Brandis and conducted under the condition of weightlessness. The experiment was originally carried out during a microgravity generating flight maneuver, usually restricted to scientific investigations, and executed in collaboration with the Deutsches Zentrum für Luft- und Raumfahrt (DLR). After describing her microgravity experiment, Meyer-

Brandis will discuss three different methods of space travel, one of which dates back to the age of enlightenment in the seventeenth century and subsequently transformed for audiences in the twentieth century. Agnes Meyer-Brandis' research can be interpreted as poetic-scientific investigation, weaving together fact, imagination, storytelling and myth, past, present and future. Her presentation will combine sometimes weighty and sometimes weightless perambulation in search of reality within constructions.

## Doug Millard

### Were the 1970s a Period of Transition for the History of Britain's Exploration of Space?

The 1970s are routinely touted as representing the end of Britain's space program. With its abandonment of satellite launch vehicle development, the downgrading of its main sounding rocket activities and the siphoning of funds away from national satellite projects towards the European, the decade is oft interpreted as one of decline for Britain in space, as in other arenas. Was any such trend echoing a deeper cultural withdrawal from matters space? How indeed had the culture of space manifested itself in Britain during previous decades and did the 1970s represent any sort of change?

Were those players actively involved in space exploration – governmental, military, academic and industrial – exploiting a broader societal consensus towards space or were the two largely separate? How were space and progress equated in Britain? Was a utopian dimension invoked by advocates of space exploration? By addressing such questions, and with particular reference to the 1970s, this paper seeks new interpretations of British space activity that challenge those promoted within the 'declinist' tradition.

## Gonzalo Munévar

### Space Colonies and their Critics

There may be no better example of a utopia based on outer space in the 1970s than Gerard O'Neill's proposal for building space colonies, as presented in his book *The High Frontier*. At the same time O'Neill's case also exemplifies the reaction of the 'limits to growth' advocates, for their attack on his ideas was as swift as it was vehement. O'Neill drew inspiration from several space pioneers who had envisioned boundless possibilities for humankind in the exploration and colonization of the cosmos. He was particularly impressed by the work of European thinkers such as Konstantin Tsiolkovsky, John Bernal, Hermann Oberth, Guido von Pirquet, Hermann Noordung, Wernher von Braun, and Krafft Ehrlicke. His ideas for 'islands in the sky,' for example, owe much to Bernal spheres, while his emphasis on finding solutions to our energy, pollution, and scarcity problems by building solar power satellites and mining the Moon and asteroids echoed Ehrlicke's 'extraterrestrial imperative'

to sustain the development of humanity by exploiting the resources of the solar system. His environmentalist critics believed instead that the very attempt to escape our limits by going into space was irresponsible day-dreaming. Wendell Berry, for instance, claimed that closing of the earthly frontiers 'calls for an authentic series of changes in the human character,' and thus while we need a change of attitude O'Neill offers technological solutions. The morality of the space enthusiast is thus both shallow and gullible, for he offers 'a solution to moral problems that contemplates no moral change.' And Dennis Meadows urged us to solve our problems here by seeking the 'loss of the growth ethic.' Nevertheless, in spite of the bitterness of the controversy, both sides created the basis for cooperation decades later, although nothing on the grandiose scale once dreamed by O'Neill.



Regina Peldszus

**Astronauts and their Crew Quarters as Markers of ‘Humanized’ Space Futures**

As unprecedented crewed mission paradigms enter the space exploration agenda today – such as prospecting Near Earth Asteroids, routine on-orbit servicing of satellites, and tackling the daunting problem of space debris – a new generation of space professionals comes to the fore. While these new professionals may differ from the profile of contemporary astronauts and cosmonauts, their fictional counterparts were depicted in 1970s science fiction films. Following earlier productions featuring astronaut protagonists on heroic missions, films from the 1970s onwards painted a bleaker picture of future space professionals and their remote habitats. This darker vision was foreshadowed by European science fiction films released during the 1960s in which human-machine interaction began to assume dystopian dimensions. In subsequent films, the era of the idealistic astronaut-scientist or pilot operating in clean, functional vehicles became less common.

Instead, this image was replaced by disillusioned, even subversive protagonists in European co-productions. In these dystopic films, latent personal dilemmas and emotional needs of individual characters were reflected in disorderly, decaying or excessively customized living quarters and unfurled a more ambiguous and complex representation of the human condition. In treating production designs as case studies, this paper engages with notions of speculative futures in Western European, Eastern Bloc, and US film as expressed in the portrayal of fictional spacecraft and their inhabitants. The paper examines the role of mock-ups or sets as embodied foresight tools, both in real space research and production design in fictional films. This relationship is exemplified in Kubrick’s *2001: A Space Odyssey*. Focusing on the depiction of astronauts and their habitats in subsequent films, this paper identifies and examines key design themes of more ‘humanized’ space futures.

Robert Poole

**‘2001: A Space Odyssey.’ Space Travel and the Ends of Progress**

The 1968 film *2001: A Space Odyssey* was the apex of Western astroculture. Written and constructed in tandem with the manned space program, it was the best-known of the many projects of the 1950s and 1960s designed to make space travel seem real. Its creators, Stanley Kubrick and Arthur C. Clarke, took unprecedented pains to ensure that the film’s portrayal of the near future appeared realistic in order that its scenario of contact with extraterrestrial intelligence should be credible. They went much further, however, offering a technology-driven vision of the course of human evolution: the film’s underlying message was that in the space age *homo sapiens* was on the verge of a breakthrough to a new relationship with the rest of the universe, and to a new level of evolutionary potential. Its success was similarly extraordinary, attracting (and baffling) the largest movie audiences in history and continuing to do so as the first travellers left Earth orbit and travelled to the Moon in 1968–69.

Yet while Clarke and, more ambiguously, Kubrick subscribed to the grand view of space travel, the film carried its own seeds of doubt. The killer apes of the opening ‘Dawn of Man’ sequence, the almost-human computer that malfunctioned and attacked the astronauts, and the robotic and unaware human characters, indicated that all was not well with *homo sapiens*, while the scenario in which human development was assisted at key moments by alien intervention suggested that evolution alone did not guarantee progress. Meanwhile the rise of the ‘limits to growth’ movement, ecology and environmentalism, themselves accelerated by the first views of Earth from space, began to cast doubt upon technological progress as the engine of human salvation. In retrospect, *2001* marked not only the apex but also the turning point of western astroculture.



## Virgiliu Pop

### The Moon Agreement and the Beginning of Utopia

The transition from the 1960s to the 1970s has been quite visible in the field of international space law. Whereas the 1967 Outer Space Treaty was a product of the 1960s Cold War between East and West, the 1979 Moon Agreement was clearly a result of the 1970s New International Economic Order paradigm on the North-South coordinate axis. In the time passed between the UN-sponsored negotiation of the former and the latter legal documents, decolonization changed dramatically the geopolitical landscape, and the focus of the international discourse shifted from the security concerns of the 'First' and 'Second' worlds to the economical con-

cerns of the 'Third' world. While the end of the Space Race may have been the end of utopia for the Cold War factions, it represented in fact the beginning of utopia for the new international actors hailing from the developing world. While in the 1960s the 'have nots' criticized the race to the Moon as a waste of money that could have found a better use as foreign aid, in the 1970s the same social category sought to benefit from the space age by declaring the Moon as the 'Common Heritage of Mankind' and by seeking a share in the yet to come untold riches from the Moon – seen as a solution to the 'Limits to Growth.'

## Christina Vatsella

### Satellite Art. Artworks in Orbit

Being diametrically opposed to the Space Race and its Cold War connotations, major visual artists have used satellites as a creative medium in order to orchestrate transnational interactive new media performances. Whereas the first initiative dates from 1966, when Douglas Davis performed his *Seven Thoughts* to an empty Houston Astrodome and the live signal was sent up to a satellite, it was in the 1970s that various projects were being realized. In 1977, Kit Galloway and Sherrie Rabinowitz worked at NASA's Goddard Space Flight Center in Maryland in order to create interaction between two dancers based in San Francisco and Maryland respectively. The same year, Liza Bear and Keith Sonnier worked closely with NASA technicians in order to create a performance project unfolding between Battery City Landfill in New York and the NASA Ames Research Center in Mountain View California.

During the same period, two major satellite projects, in which the most important artists of their time (Joseph Beuys, Nam June Paik, Douglas Davis among others) became involved, were being realized in Europe.

In 1977, the opening of the major art show Documenta 6 in Kassel was marked by the first live international satellite telecast by artists. In 1984, Nam June Paik directed *Good Morning Mr Orwell*, a trans-Atlantic satellite production that connected the Centre Pompidou in Paris with New York.

This paper attempts to trace some basic threads of the Satellite Art history by analyzing the impact of rendering the outer space part of the art making procedure. According to what Nam June Paik describes as 'cosmic aesthetics,' new media art extends its limits seeking to transform the cultural boundaries and create new hybrid forms. The collaboration between artists and the NASA will be further analyzed in conjunction with the ideological framework of the artworks. These projects evoke the idea of transnational peaceful communication via art along with the desire to go beyond borders of space and time, but also beyond the borders of the countries and the nations. In other words, they reflected the utopian political agenda of the 1970s.

Peter J. Westwick

**From the Club of Rome to Star Wars.  
The Era of Limits, Space Colonization, and the Origins of SDI**

In 1972 the Club of Rome heralded the ‘era of limits,’ when demographic and environmental pressures would force humanity to scale back its ambitions and live with less. A decade later, in 1983, US President Ronald Reagan announced a grand plan to build a shield in space against ballistic missiles, what became known as the Strategic Defense Initiative (SDI). These seemingly separate and even contradictory historical events were, in fact, connected. This paper shows how the cultural and intellectual context of the 1970s – specifically, the idea of an impending crisis in human society – helped lead to SDI. The perceived threat to human survival galvanized a group of technological optimists to propose outer space not only as a solution to the Malthusian crisis of overpopulation, energy depletion, and environmental damage, but also to the possibility of nuclear

armageddon. As counterculture sci-fi enthusiasts embraced technology amid the anti-technoscience atmosphere after the 1960s, the quest for a technological fix linked erstwhile left-liberals with libertarians and others on the political right pushing missile defense as well as space colonization. The convergence included interesting institutional and intellectual alignments as well, mingling members of the L5 Society with nuclear weapon designers and Air Force analysts, and presenting missile-defense plans alongside enlightened discussion of biofeedback and the Gaia hypothesis. These unusual intersections highlight a historiographical need to look off the beaten path for the origins of SDI – in particular, to connect Cold War political and diplomatic history with history of science and technology and popular culture.

## PHILIPPE AILLERIS

### European Space Agency, Noordwijk (NL)

Philippe Ailleris is a project controller at the Space Research and Technology Centre of the European Space Agency in Noordwijk, Netherlands. In 2009, he founded and currently leads the Unidentified Aerospace Phenomena (UAP) Observations Reporting Scheme Project, which he initiated under the framework of the 2009 International Year of Astronomy. Ailleris' most recent publication is 'UFOs and Exogenous Intelligence Encounters' for the European Space Policy Institute in Vienna.

## DEBBORA BATTAGLIA

### Mount Holyoke College, South Hadley, MA (USA)

Debbora Battaglia is Five College Anniversary Professor of Anthropology at Mount Holyoke College in South Hadley, Massachusetts, USA. She has published widely on epistemologies of belonging and alienness, most recently in reference to science and religion confluences in outer space.

## PETER BECKER

### Universität Wien (A)

Peter Becker teaches history at Universität Wien. His research interests include the cultural history of public administration and state building, the history of biological reasoning about the social and its political implications, and the history of the Habsburg monarchy's engagement with international political projects. His most recent publications include *Sprachvortrag im Amt: Kommunikation und Verwaltung im Europa des 19. und 20. Jahrhunderts* (2011, ed.) and 'The Coming of A Neurocentric Age? Neurosciences and the New Biology of Violence: A Historian's Comment,' in: *Medicina & Storia* (2010). Peter Becker also co-edits the book series *1800 | 2000: Kulturgeschichten der Moderne*.

## ETIENNE BENSON

### Max-Planck-Institut für Wissenschaftsgeschichte, Berlin (D)

Etienne Benson is a research scholar at the Max-Planck-Institut für Wissenschaftsgeschichte in Berlin. He received his doctorate from MIT's Program in History, Anthropology, and Science, Technology, and Society in 2008 and was a postdoctoral fellow at the Harvard University Center for the Environment from 2008 to 2010. His first book, *Wired Wilderness: Technologies of Tracking and the Making of Modern Wildlife* (2010), traced the development of wildlife radiotelemetry in the United States from the 1950s to the early twenty-first century. His work on the history of biodiversity conservation, the ethics of research on endangered species, and human-animal relationships has appeared in *Environmental History*, the *Journal of the History of Biology*, *Historical Studies in the Natural Sciences*, and edited volumes on animal studies and national parks. He is currently working on a project about the history of environmental information politics.

## THORE BJØRNVIG

### Independent Scholar, Copenhagen (DK)

Thore Bjørnvig has an MA in the history of religions, is an independent scholar, and works as a freelance writer. While mainly doing research in areas connected to intersections between science, religion, and technology, he also engaged in research pertaining to prehistoric religion in the Scandinavian Bronze Age. His latest research assignment was at Kroppedal Museum, unit of astronomy, where he studied interactions and boundaries between industry and academia in the creation of the Danish Oersted Satellite.

## DANIEL BRANDAU

### Freie Universität Berlin (D)

Daniel Brandau is a PhD candidate and research associate in the Emmy Noether Research Group 'The Future in the Stars: European Astroculture and Extraterrestrial Life in the Twentieth Century' at the Friedrich Meinecke Institut of Freie Universität Berlin. He studied history, German language and literature, and educational science at Universität Bielefeld where he received his BA in 2007 and his MEdu in 2010. At the University of Cambridge he finished an MPhil in modern European history in 2009. During his studies at Cambridge, Brandau worked on early German space history, 1880s-1940s, and continues to pursue this research interest in Berlin. His PhD project focuses on 'Visions of Feasibility: Rocketry and Spaceflight Enthusiasm in Britain and Germany, 1920s-1960s', studying visions of future spaceflight and reciprocities with socio-cultural discourse from the period of early rocket societies to the first manned missions.

## THOMAS BRANDSTETTER

### Universität Basel (CH)

Thomas Brandstetter studied philosophy in Vienna and cultural and media studies at Bauhaus Universität Weimar. From 2006-2009, he was an assistant professor at the Institute for Philosophy at Universität Wien. Since October 2009 he has worked as a postdoctoral researcher at eikones NCCR Iconic Criticism in Basel. At present, Thomas Brandstetter's work focuses on the history of crystal analogies in biology. Other research interests include the history of science and technology, controversies in the sciences and the epistemology of astrobiology. Recent publications include: *Kräfte messen: Die Maschine von Marly und die Kultur der Technik* (2008) and *Zeichen der Kraft: Wissensformationen 1800-1900* (2008, co-ed.).

## RALF BÜLOW

### Independent Scholar, Berlin (D)

Ralf Bülow studied computer science, mathematics and philosophy in Bonn; his PhD thesis is on mathematical logics. During the 1980s he worked at the Deutsches Museum in Munich. In the early 1990s he continued as a freelance journalist reporting on science and technology. Since 1996 Ralf

Bülow has participated in numerous exhibition projects about computers, spaceflight, astronomy and physics, including a major exhibition on Albert Einstein. He has also written about science fiction history and re-issued a German utopian novel from 1930, Ri Tokko's *Das Automatenzeitalter* (2004). In his younger days, Ralf Bülow was an avid buyer and reader of X magazine.

#### MARTIN COLLINS

##### National Air and Space Museum, Washington DC (USA)

Martin Collins is a curator at the Smithsonian National Air and Space Museum. His research focuses on the history of the United States in the world after 1945, as seen through the history of technology. In 2006, he received the Society for History of Technology's IEEE Life Member Prize for his article 'One World... One Telephone: Iridium, One Look at the Making of a Global Age.' He is editor of the journal *History and Technology* (Routledge), and is managing editor of the book series *Artefacts: Studies in the History of Science and Technology*, published by the Smithsonian Institution Scholarly Press. Martin Collins' current research is a history of communications satellites and globalization in the 1990s, as seen through the multinational satellite telephone venture, Iridium.

#### LUCA FOLLIS

##### Lancaster University (UK)

Luca Follis is a lecturer in criminology at Lancaster University. His work focuses on the relationship between sovereignty, citizenship, and legal exclusion. He is currently writing a book manuscript provisionally entitled *The Prisoner and the Exception: Law between Sovereignty and Discipline*.

#### ALEXANDER C.T. GEPPERT

##### Freie Universität Berlin (D)

Alexander Geppert directs the Emmy Noether Research Group 'The Future in the Stars: European Astroculture and Extraterrestrial Life in the Twentieth Century' at Freie Universität Berlin. He received master's degrees from Johns Hopkins University and Georg-August-Universität Göttingen, and a PhD from the European University Institute in Florence. Geppert has held fellowships at the University of California at Berkeley, the EHESS in Paris, the German Historical Institutes in London and in Paris, the Internationales Forschungszentrum Kulturwissenschaften in Vienna, the Kulturwissenschaftliches Institut in Essen, and at Harvard University. Book publications include *Fleeting Cities: Imperial Expositions in Fin-de-Siècle Europe* (2010), *Wunder: Poetik und Politik des Staunens im 20. Jahrhundert* (2011, co-ed.) and *Imagining Outer Space: European Astroculture in the Twentieth Century* (2012, ed.). At present, he is working on a comprehensive cultural history of the European Space Age.

#### MATTHEW H. HERSCH

##### University of Pennsylvania, Philadelphia (USA)

Matthew H. Hersch is a lecturer in the Department of History and Sociology of Science of the University of Pennsylvania, where he received his PhD. During his doctoral studies, he held the 2009–2010 HSS-NASA Fellowship in the History of Space Science and a 2007–2008 Guggenheim Fellowship at the Smithsonian Institution's National Air and Space Museum. Hersch received an S.B. in political science from the Massachusetts Institute of Technology and a J.D. from New York University School of Law. He most recently served as the Postdoctoral Teaching Fellow for the Aerospace History Project of the Huntington-USC Institute on California and the West. Hersch specializes in twentieth-century American technology and its relationship to popular culture and is currently completing a book manuscript on the labor experience of American astronauts.

#### ANDREW JENKS

##### California State University, Long Beach (USA)

Andrew Jenks is an associate professor of history at California State University, Long Beach. He is the author of *Russia in a Box: Art and Identity in an Age of Revolution* (2005), *Perils of Progress: Environmental Disasters in the Twentieth Century* (2010), and a biography of the cosmonaut Yuri Gagarin, *The Cosmonaut Who Couldn't Stop Smiling: The Life and Legend of Yuri Gagarin* (2012). Jenks is co-founder of the Russian History Blog and has published widely in both traditional and digital media on Russian history, environmental history, and the history of science and technology. His current project looks at spaceflight as a key moment in the formation of transnational forms of collaboration and consciousness.

#### DAVID A. KIRBY

##### University of Manchester (UK)

David A. Kirby was an evolutionary geneticist whose work appeared in the *Proceedings of the National Academy of Sciences* before leaving bench science to become senior lecturer in science communication studies at the University of Manchester. His experiences as a member of the scientific community have informed his internationally recognized studies into the interactions between science, media, and cultural meanings. His publications include articles in *Social Studies of Science*, *Public Understanding of Science*, *Studies in the History and Philosophy of Science*, and essays in *New Literary History*, *Literature and Medicine*, and *Science Fiction Studies*, as well as a recent book *Lab Coats in Hollywood: Science, Scientists and Cinema*. Kirby is currently working on a book titled *Playing God: Science, Religion, and Cinema* which examines how cinema served as a battleground over science's role in influencing morality.

# FLORIAN KLÄGER

## Westfälische Wilhelms-Universität, Münster (D)

Florian Kläger studied English literature and history at Mainz, Galway (Ireland), Gießen, and Düsseldorf. His doctoral dissertation focused on early modern historiography and examined Elizabethan writings on Ireland for their impact on constructions of the English national past. Following a spell as a translator in the entertainment software industry, he moved on to a postdoctoral position at Münster, where he teaches British and Irish literature and culture in the department of English and work as coordinator of the Marie Curie Initial Training Network, 'CoHaB – Diasporic Constructions of Home and Belonging'. His research interests include questions of individual and collective identity formation, genre theory, Shakespeare Studies, and metaphorology. Kläger's current research project is a book on Reading into the Stars in British and Irish narrative fiction from Chaucer to the present day, with a focus on the contemporary novel. Other projects include a research group on constructions of Europe in early modern English literature.

# JOHN KRIGE

## Georgia Institute of Technology, Atlanta (USA)

John Krige has PhD's from the University of Pretoria and from the University of Sussex. He joined the Georgia Institute of Technology in 2000 as Kranzberg Professor in the School of History, Technology, and Society. Prior to that he directed a research group in the history of science and technology in Paris, and was the project leader of a team that wrote the history of the European Space Agency, as well as being engaged in a history of CERN. Krige's research focuses on the intersection between support for science and technology, and the foreign policies of governments. Since being at Georgia Tech he has expanded his interest beyond the study of intergovernmental organizations in Western Europe to include an analysis of US-European relations during the Cold War, with particular stress on transnational knowledge flows. He co-edited *Global Power Knowledge: Science, Technology and International Affairs* (2006). His most recent monograph is *American Hegemony and the Postwar Reconstruction of Science in Europe* (2006). A book manuscript dealing with 50 years of NASA's international relations is currently being reviewed by NASA and an academic publisher. He is also co-editor of *American Foundations and the Co-production of World Order in the Twentieth Century* (forthcoming 2012).

# ROGER D. LAUNIUS

## National Air and Space Museum, Washington DC (USA)

Roger D. Launius is senior curator in the Division of Space History at the Smithsonian Institution's National Air and Space Museum in Washington, DC, where he was division chair 2003–2007. Between 1990 and 2002 he served as chief historian of the National Aeronautics and Space Administration. A graduate of Graceland College in Lamoni, Iowa, he received his PhD from Louisiana State University, Baton Rouge,

in 1982. He has written or edited more than twenty books on aerospace history, including *Smithsonian Atlas of Space Exploration* (2009); *Robots in Space: Technology, Evolution, and Interplanetary Travel* (2008); *Societal Impact of Spaceflight* (2007); *Critical Issues in the History of Spaceflight* (2006); *Space Stations: Base Camps to the Stars* (2003); *Reconsidering a Century of Flight* (2003); *To Reach the High Frontier: A History of U.S. Launch Vehicles* (2002); *Imagining Space: Achievements, Possibilities, Projections, 1950–2050* (2001); *Reconsidering Sputnik: Forty Years Since the Soviet Satellite* (2000); *Innovation and the Development of Flight* (1999); *Frontiers of Space Exploration* (1998); *Spaceflight and the Myth of Presidential Leadership* (1997); and *NASA: A History of the U.S. Civil Space Program* (1994).

# WILLIAM R. MACAULEY

## Freie Universität Berlin (D)

William R. Macauley is a postdoctoral research associate in the Emmy Noether Research Group 'The Future in the Stars: European Astroculture and Extraterrestrial Life in the Twentieth Century' at Freie Universität Berlin. Previously, he studied at the University of Manchester where he received his BSc (Hons) in psychology (1992), MSc and PhD in science, technology and medicine (2006 and 2010). His doctoral thesis *Picturing Knowledge: NASA's Pioneer Plaque, Voyager Record and the History of Interstellar Communication, 1957–1977* is on visual representation of scientific knowledge and interdisciplinary approaches to interstellar communication. Macauley's postdoctoral research focuses on ways in which various professional and social groups in the UK and other parts of Europe produced and communicated knowledge about space and spaceflight from the early 1950s to the late 1970s. His publications include a chapter 'Inscribing Scientific Knowledge: Interstellar Communication, NASA's Pioneer Plaque, and Contact with Cultures of the Imagination, 1971–72' in the book *Imagining Outer Space: European Astroculture in the Twentieth Century* (2012). Macauley is currently working on a monograph based on his doctoral thesis, as well as other publications related to his postdoctoral research.

# NEIL M. MAHER

## New Jersey Institute of Technology/Rutgers University, Newark (USA)

Neil M. Maher is an associate professor in the Federated History Department at the New Jersey Institute of Technology and Rutgers University at Newark, where he teaches environmental history and political history. He has published articles in academic journals including the *Western Historical Quarterly*, *Environmental History*, and the *Chronicle of Higher Education*, edited a collection of essays by historians, scientists, and policy analysts titled *New Jersey's Environments: Past, Present, and Future* (2006), and co-edited a special issue of the *Radical History Review* titled *Transnational Environments: Rethinking the Political Economy of Nature in a Global Age* (2010). His book *Nature's New Deal: The Civilian Conservation Corps and the*



*Roots of the American Environmental Movement* was published in 2008. Maher is currently working on a second book project, tentatively titled *Ground Control: How the Space Race Scrubbed the Revolution*, which will examine how efforts to put humans on the Moon engaged, and ultimately co-opted many of the political movements of the 'long 1960s.'

#### W. PATRICK MCCRAY

##### University of California, Santa Barbara (USA)

W. Patrick McCray is a professor in the Department of History at the University of California, Santa Barbara. In 2011-12, he is also the Eleanor Searle Visiting Professor in the History of Science at the California Institute of Technology. McCray entered the historians' profession via his original career as a scientist. He has written widely on the history of science and technology after 1945. His book *Giant Telescopes: Astronomical Ambition and the Promise of Technology* (2004) explored how scientists build and use today's most modern telescopes. A subsequent project examined the activities of citizen-scientists during the Cold War (*Keep Watching the Skies: The Story of Operation Moonwatch and the Dawn of the Space Age*, 2008). He currently leads one of the CNS's research initiatives, exploring the history of nanotechnology and its place in the broader context of the technological enthusiasm and industrial policy in the late twentieth century. His forthcoming book, tentatively titled *Limitless: From Space Colonies to Nanotechnology in Pursuit of the Future*, is about people who used their expertise as scientists, engineers, and popularizers to promote visions of a more expansive technological future.

#### LISA MESSERI

##### University of Pennsylvania, Philadelphia (USA)

Lisa Messeri completed her dissertation at the Massachusetts Institute of Technology's Doctoral Program in History, Anthropology, and Science, Technology and Society in September 2011. She is presently working on a manuscript based on her doctoral dissertation, entitled *Placing Outer Space: An Earthly Ethnography of Other Worlds*, which concerns the role of place in scientific practice and how ideas of place shape and are shaped by science. Her ethnography examines the techniques used by planetary scientists to transform planets into places. Previous research on the cultural stakes of 'planet,' as made clear by Pluto's 2006 reclassification has been published in the *Social Studies of Science*. Messeri is presently a Fellow at the University of Pennsylvania, involved in a team taught interdisciplinary course for honors freshmen called the 'Integrated Studies Program.'

#### AGNES MEYER-BRANDIS

##### Universität der Künste, Berlin (D)

German artist Agnes Meyer-Brandis has a background in both sculpture and new media art. Her work, exhibited worldwide, is at the experimental edge of art and science, exploring the

zone between fact and fiction, fantasy and technology. Meyer-Brandis is the founder of the 'Forschungsfloss FFUR/Research Raft for Subterranean Reefology,' a small research institute whose chief aim is to explore and identify subterranean phenomena and unknown life forms. For the past two years her primary focus of research has moved to high altitude environments and their connected realities. In 2007, she conducted an artistic experiment on cloud formation in weightlessness in cooperation with the Deutsches Zentrum für Luft- und Raumfahrt (DLR).

#### DOUG MILLARD

##### Science Museum, London (UK)

Doug Millard graduated in environmental sciences at the University of Warwick in 1981. He gained his postgraduate qualification in secondary science teaching from the University of Bath in 1983 and joined the Education Department of the Science Museum in London in 1985. Between 1987 and 1991 he curated the chemical industry, gas, plastics and space technology collections. In 1992 he managed the Museum's main collections' store and then coordinated the procurement and installation of the Museum's new computer network. In 1994 he returned to curatorial work and is now Senior Curator for the Information, Communications and Space Technology collections. Millard has produced many space exhibitions, written articles, papers and books including a history of the Black Arrow satellite launch vehicle and its engines, lectured widely and appeared on television and radio. In 2006 he gained his MSc in the history of science, technology and medicine at the University of London and is currently researching a book on the history of the satellite and working on a major new communications and information gallery due to open at the Museum in 2014.

#### GONZALO MUNÉVAR

##### Lawrence Technological University, Southfield, MI (USA)

Gonzalo Munévar is professor of humanities and social sciences at Lawrence Technological University. He has a PhD in philosophy of science from the University of California, Berkeley, and has served as Nebraska Foundation Professor of Philosophy (Omaha), professor of history and philosophy of science at Evergreen, and visiting professor or fellow at Stanford University, University of Newcastle (Australia), Consejo Superior de Investigaciones Científicas (Madrid), Barcelona, Santiago de Compostela, Institute for Advanced Study in the Humanities (University of Edinburgh), Kobe Shodai (Japan), University of Washington, and the University of California, Irvine. His research interests include the epistemology of science, evolution, philosophy of space exploration, and neuroscience. Munévar's publications include *Radical Knowledge: A Philosophical Inquiry into the Nature and Limits of Science* (1981); *Evolution and the Naked Truth: A Darwinian Approach to Philosophy* (1998); and *Variaciones sobre Temas de Feyerabend*

(2006). Edited volumes include *Beyond Reason: Essays on the Philosophy of Paul K. Feyerabend* (1991); and *The Worst Enemy of Science? Essays on the Life and Thought of Paul Feyerabend* (2000, co-ed.). He is presently completing a book entitled *The Dimming of Starlight: The Philosophy of Space Exploration*.

## PAUL NOLTE

### Freie Universität Berlin (D)

Paul Nolte is professor of modern and contemporary history at Freie Universität Berlin. He received his university education in Düsseldorf, Bielefeld and at Johns Hopkins University. After finishing his PhD in 1993, Nolte served as an assistant professor at Universität Bielefeld. He was a German Kennedy Memorial Fellow at Harvard University and a fellow of the Wissenschaftskolleg in Berlin. From 2001 to 2005, he joined the faculty of the International University Bremen, and was a visiting professor of European history at the University of North Carolina, Chapel Hill, in 2010–11. Nolte has published widely on German and US social, political, and intellectual history of the nineteenth and twentieth centuries, with an emphasis on social movement, social thought, and political ideology. Since 2004, he has been editor-in-chief of the journal *Geschichte und Gesellschaft: Zeitschrift für Historische Sozialwissenschaft*; he also co-edits the book series *Kritische Studien zur Geschichtswissenschaft*. At the FU, Paul Nolte has been a founder and co-director of the master's degree program in public history. His most recent book is *Was ist Demokratie? Geschichte und Gegenwart* (2012).

## REGINA PELDSZUS

### Kingston University London

Regina Peldszus is a design researcher focusing on soft human factor aspects in extended space exploration missions and related analogues. She holds a master's degree in design studies from Central Saint Martins, London, and is currently in the final stages of her doctoral studies at Kingston University, London. Her doctoral research involves developing countermeasures and design approaches for the behavioral dimension of unprecedented deep space mission scenarios. With a background in design strategy and space studies, she has worked on evidence-based human factor projects for the European Space Agency and contributed to design applications for space mission simulations in Russia and the US. In recent years, she has also worked on real and speculative habitation design using material from the Stanley Kubrick archive in London. Regina Peldszus regularly documents and comments on practical developments and theory of spaceflight design. She has contributed to magazines such as *Wired*, and projects and workshops for organizations such as the Royal College of Art, the British Council and The Arts Catalyst. She completed the International Space University's SSP at NASA Ames Research Center and the Human Spaceflight program at the Swedish Institute of Space Physics. Regina Peldszus is

a member of the Space Architecture Technical Committee of the American Institute of Aeronautics and Astronautics (AIAA).

## ROBERT POOLE

### University of Cumbria (UK)

Robert Poole is reader in history at the University of Cumbria. In 2000–2001 he was Leverhulme Visiting Fellow at the Department of History, University of Manchester. He is the author of *Earthrise: How Man First Saw the Earth* (2008), a study of the first views of Earth from space and their impact. Poole is currently working on 'big history' in the work of Arthur C. Clarke, Arnold Toynbee and Olaf Stapledon, and on the origins of the scientific belief in extraterrestrial intelligence. He has also published on the history of the calendar (*Time's Alteration*, 1998), the history of witchcraft (*The Wonderful Discovery of Witches in the County of Lancaster*, 2011), and on eighteenth- and nineteenth-century popular protest, including articles in *Past and Present* and *History*. He has lectured extensively on history in Europe, the United States and Tokyo, and broadcast on US National Public Radio and BBC radio and television.

## VIRGILIU POP

### Romanian Space Agency, Timisoara (RO)

Virgiliu Pop is a researcher at the Romanian Space Agency, where he conducts research in the fields of space law, policy, and astrosociology, and coordinates various space education and outreach programs. Pop studied and lectured at the International Space University, and attended several law schools in Romania and Scotland for his undergraduate, masters and doctoral studies. His publications include several articles and two books, including *Who Owns the Moon? Extraterrestrial Aspects of Land and Mineral Resources Ownership* (2009). In 2011, Pop led the first Romanian crew at the Mars Desert Research Station.

## CLAUDIA SCHMÖLDERS

### Humboldt Universität zu Berlin (D)

Claudia Schmölders studied German literature, musicology and philosophy in Cologne, Zurich, Berlin and New York. In 1973 she received a PhD from Freie Universität Berlin; from 1975 through 1999 she worked as editor at various publishing houses as well as independent author, academic editor and lecturer at the universities of Cologne, Frankfurt am Main, Hamburg and Berlin. She held fellowships at the Maison des Sciences de l'homme in Paris and the Wissenschaftskolleg in Berlin, and completed her Habilitation at the Kulturwissenschaftliches Seminar, Humboldt-Universität zu Berlin, in 1997. Since 1998 Claudia Schmölders has been working as Privatdozentin, lecturer, and author. Her main publications include *Die Kunst des Gesprächs: Texte zur Geschichte der europäischen Konversationstheorie* (1979, 1986); *Das Vorurteil im Leibe: Eine Einführung in die Physiognomik* (1995, 3d edn 2007); *Gesichter der Weimarer Republik: Eine physiognomische Kulturge-*

*schichte* (2000, with Sander Gilman); and *Hitlers Gesicht: Eine physiognomische Biographie* (2000; English 2005).

#### **MATTHIAS SCHWARTZ**

##### **Freie Universität Berlin (D)**

Matthias Schwartz is a research fellow and lecturer at the Institute for East-European Studies and the Peter Szondi-Institute of Comparative Literature at Freie Universität Berlin. He studied Russian studies, Polish studies and modern history in Berlin, St-Petersburg, Moscow and Warsaw, and wrote his PhD thesis on the cultural history of Soviet adventure literature and science fiction from the 1920s to the 1950s. His other research interests include the interplay of science and arts in Russia from the eighteenth to the twentieth century; Soviet and Post-Soviet popular culture studies; and young Polish, Russian and Ukrainian literature in a globalized world.

#### **HELMUTH TRISCHLER**

##### **Deutsches Museum, München (D)**

Helmuth Trischler is head of research at the Deutsches Museum, Munich, professor of modern history and history of technology at the University of Munich, and director of the Rachel Carson Center for Environment and Society. His main fields of research are history of innovation systems and innovation cultures; aviation and space history; science, technology and European integration; and environmental history. He is the author or editor of 28 books and ca. 100 articles. Trischler is currently finishing a book on *Knowledge Societies and Expert Cultures in Europe Since 1850*.

#### **CHRISTINA VATSELLA**

##### **Université Paris Sorbonne – Paris IV (F)**

Christina Vatsella is an art historian based in Paris. She is a PhD candidate in history of art at the Université Paris Sorbonne – Paris IV, after having received scholarships from the Onassis Foundation and the IKY-Greek State Scholarship Foundation. Her research focuses on the history of new media art. Her PhD thesis is on the question of space in video installation. She is currently teaching history of art and the new media at the Université Paris-Est Marne-la-Vallée, Department of Art, Communication and Technology. She has worked at the Museum of Cycladic Art in Athens, at the New Media Department of the Centre Pompidou in Paris and at the Centre de Recherches en Arts of the Université d'Amiens in Picardie. In addition, Vatsella works as a freelance curator and has published articles in French, English and Greek.

#### **JANET VERTESI**

##### **Princeton University (USA)**

Janet Vertesi holds a PhD in science and technology studies from Cornell University, and an MPhil in history and philosophy of science from Cambridge University. Her first book manuscript is based on two years of ethnographic immersion

with the Mars Exploration Rover mission, in which she examines the use of digital images on the mission for conducting science and robotic operations. She is currently working on a comparative ethnography with the NASA-ESA-ASI Cassini mission to Saturn to elucidate the role of sociotechnical organization in scientific production. Janet Vertesi is a former recipient of the HSS-NASA History Office fellowship in the history of space science, alongside several grants from the National Science Foundation. She has published on the history of telescopic astronomy in the seventeenth century, especially the visual production of Johannes Hevelius, on subway mapping, and on various projects in human-computer interaction. She is currently a Link-Cotsen fellow at the Society of Fellows in the Liberal Arts at Princeton University, where she is also lecturer in sociology.

#### **THOMAS P. WEBER**

##### **European Commission, Brussels (B)**

Thomas P. Weber studied biology in Saarbrücken, Leeds and Bielefeld and graduated with a DPhil in zoology from Oxford University in 1995. After working as a post-doctoral researcher at Uppsala University and the University of East Anglia in Norwich, he worked at Lund University in Sweden from 1997–2005, first as a fellow of the German Research Council, then as an associate professor. Since 2006 he has been working for the European Commission. Weber's scientific work was mainly concerned with the modeling of ecological and evolutionary processes, but his interests also extend to the history of science and the relationship between science and literature. Since 1996 Thomas Weber has been a freelance author for leading German newspapers, especially the *Frankfurter Allgemeine Zeitung*. His first book, *Darwin und die Anstifter*, was published in 2000. Issues surrounding science and fiction are covered in the edited volume *Science & Fiction II: Leben auf anderen Sternen* (2004) and the book *Science Fiction* (2005).

#### **PETER J. WESTWICK**

##### **University of Southern California, Los Angeles (USA)**

Peter Westwick is assistant research professor in the History Department at the University of Southern California, and director of the Aerospace History Project at the Huntington-USC Institute on California and the West. He received his BA in physics and PhD in history from UC Berkeley, and has held fellowships at Yale and Caltech. He is the author of *Into the Black: JPL and the American Space Program, 1976–2004* (2006), and *The National Labs: Science in an American System, 1947–1974* (2003). He is also editor of *Blue Sky Metropolis: The Aerospace Century in Southern California* (2012). Peter Westwick is currently working on a history of the Strategic Defense Initiative and a history of surfing.



## Address

The Future in the Stars:  
European Astroculture and Extraterrestrial  
Life in the Twentieth Century  
Emmy Noether Research Group  
Friedrich-Meinecke-Institut  
Freie Universität Berlin  
Koserstraße 20  
D-14195 Berlin  
[www.limits.geschkult.fu-berlin.de](http://www.limits.geschkult.fu-berlin.de)

## Bars

Luise, Königin-Luise-Straße 40–42,  
D-14195 Berlin, [www.luise-dahlem.de](http://www.luise-dahlem.de)

## Venue

Harnack-Haus  
Ihnestraße 16–20  
D-14195 Berlin  
[www.harnackhaus-berlin.mpg.de](http://www.harnackhaus-berlin.mpg.de)

## Convenience Stores

Kaiser's, Königin-Luise-Straße 37, 14195  
Berlin (Mondays to Saturdays 7.00–22.00)

## Newsagents

Lotto, Königin-Luise-Straße 39,  
14195 Berlin

## Phone Numbers

Harnack-Haus +49 (30) 84 13 38 04  
Daniel Brandau +49 (176) 34402860  
Alexander Geppert +49 (178) 8181270  
William R. Macauley +49 (176) 99596643

## Restaurants

NEAR U-BAHN DAHLEM DORF  
(Linie U3) (2 minute ride, 15 minute walk)  
ALTER KRUG,  
Königin-Luise-Straße 52, 14195 Berlin  
(German home-style cooking)  
RISTORANTE PIAGGIO,  
Königin-Luise-Straße 44, 14195 Berlin,  
[www.ristorante-piaggio.de](http://www.ristorante-piaggio.de)  
(Italian and Mediterranean cuisine)

NEAR U-BAHN RÜDESHEIMER PLATZ  
(Linie U3) (6 minute ride)  
PASTIS, Rüdesheimer Straße 9,  
14197 Berlin,  
[www.restaurant-pastis.de](http://www.restaurant-pastis.de)  
(elaborate French cuisine)  
GASTHAUS LANDAUER,  
Landauer Straße 8, 14197 Berlin,  
[www.gasthaus-landauer.de](http://www.gasthaus-landauer.de)  
(mainly German cuisine, fixed and varying  
menus)

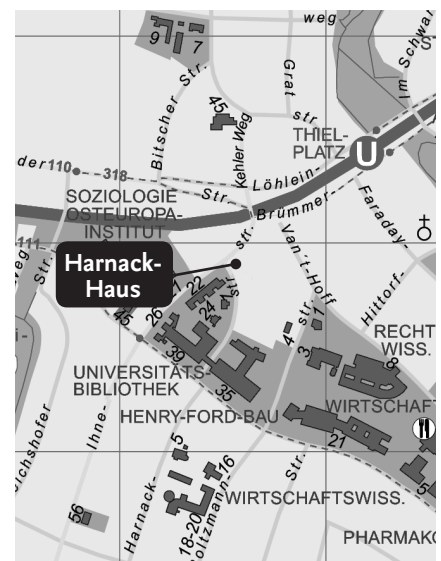
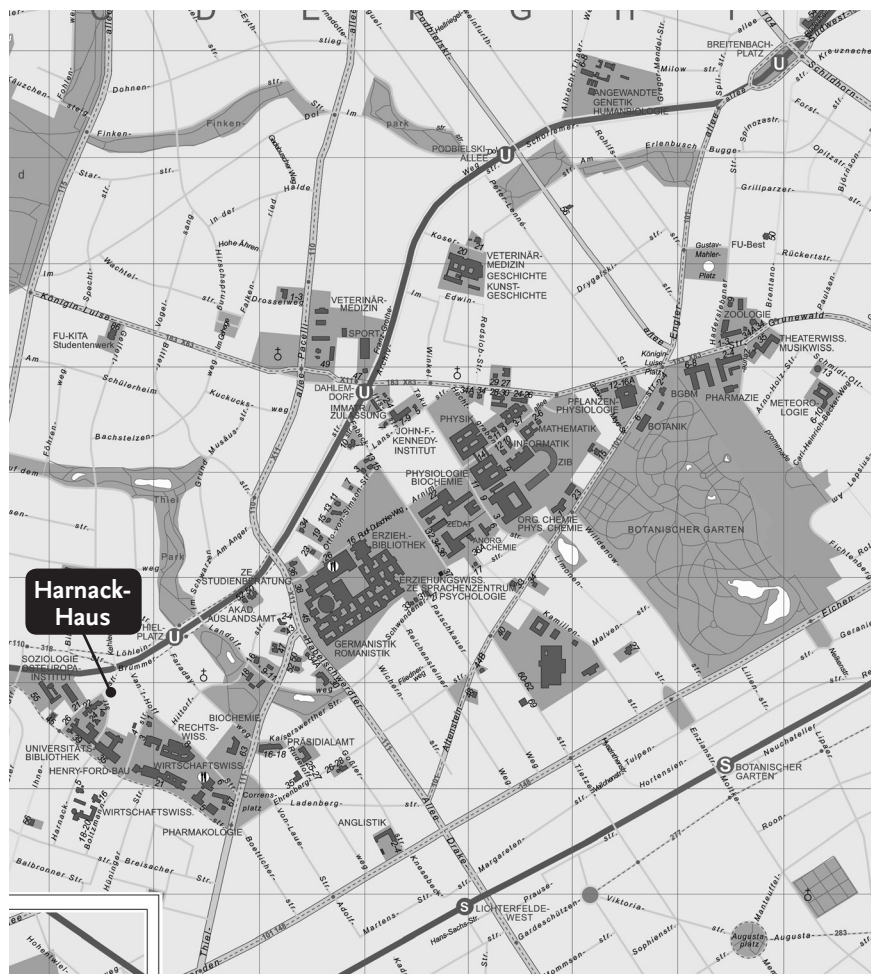
NEAR U-BAHN NOLLENDORFPLATZ  
(Linie U3) (18 minute ride)  
HASIR, Maaßenstraße 10, 10777 Berlin,  
[www.hasir.de/de/hasir\\_schoeneberg.html](http://www.hasir.de/de/hasir_schoeneberg.html)  
(Turkish and Anatolian cuisine)  
BOCCACELLI,  
Winterfeldtstraße 34, 10781 Berlin,  
[www.boccacelli.com/home.html](http://www.boccacelli.com/home.html)  
(Italian cuisine)

## Transportation

U-Bahn Thielplatz (Linie U3)  
S-Bahn Lichterfelde West (Linie S1)  
(15 minute walk)  
The website of Berlin Public Transport  
(BVG) contains more information and  
provides a convenient route calculator  
([www.bvg.de](http://www.bvg.de)).

## WWW

Wireless connection to the internet is  
available for free at Harnack-Haus.  
Passwords can be obtained from the  
receptionist. Participants may also access  
the internet via their eduroam account.



Brochure design: Freie Universität Berlin,  
Center for Digital Systems (CeDiS)  
Map: Freie Universität Berlin, Div. III, Engineering and Utilities

[www.limits.geschkult.fu-berlin.de](http://www.limits.geschkult.fu-berlin.de)  
[astrofuturismus@fu-berlin.de](mailto:astrofuturismus@fu-berlin.de)

