



*European Space Sciences Committee  
Standing Committee for the Humanities*

*Towards a Forward Look on **Humans in Outer Space***

**2 -3 April 2009, La Palma, Spain**

## **BIOGRAPHIES AND ABSTRACTS**

### **JACQUES ARNOULD**

#### Biography

Jacques ARNOULD, born in 1961, has a Ph.D. in History of Sciences and a Ph. D. in Theology. He is taking an active interest in the interrelation between sciences, cultures and religions with a particular interest for two set of themes: the first related to the life sciences and his evolution; the second related to space conquest. To the first he devoted several works and publications on the historical and theological aspect. To the second, he is the French Space Agency (CNES) expert in charge of ethical, social and cultural aspect of space activities.

#### Abstract

##### **Leaving the earth: a challenge for a theology of incarnation**

The idea to leave the Earth belongs not only to the logic, but also to the mythology of the space adventure. Is it possible to articulate the prospect to leave the Earth, to colonize another celestial body, with the Judeo-Christian tradition which places at the center of its contents the promise of a territory (Israel) and the arrival on Earth (the incarnation) of God himself? This question would also have to be confronted to leave the Earth with that of a new Creation, like the pilgrim fathers had made formerly, at the time of the conquest of the New World.

### **ALAN BRITTON**

#### Biography

Alan Britton is the Deputy Director of the Education for Global Citizenship Unit at the University of Glasgow. He is involved in teaching and research on notions of global and national citizenship, educational policymaking, culture and identity. He began his career in education as a social studies and languages teacher. He was later appointed as the first Education Officer at the newly created Scottish Parliament in 1999, before taking up the post of Stevenson Lecturer in Citizenship at the University of Glasgow in 2001.

#### Abstract

##### **A School Curriculum for the Children of Space Settlers**

humans to be born on another world. These young people will naturally require to be educated in this very different geographical, technological and cultural context. What forms should this education take? What knowledges, skills and values will have to be inculcated in

these young people in order to equip them for life in another world? To what extent will their education be rooted in the pedagogical and cultural traditions of the 'home planet', and to what extent will there be a significant shift in curricular emphasis, both philosophically and in terms of the knowledge base? In short, what would the first Martian or Lunar School look like, what would it teach, and how would it teach? This paper will address these apparently speculative questions in a way that is in fact rooted in, and relevant to, ongoing and unresolved global educational concerns.

## **CHARLES COCKELL**

### Biography

Charles Cockell is Professor of Geomicrobiology at the Open University. He received his first degree in biochemistry at Bristol University and his PhD in Molecular Biophysics at the University of Oxford, UK. His interests are in the study of microorganisms in extreme environments and specifically in rocky environments. He also has an interest in space policy and ethics. He is author of the book, *Space on Earth: Saving Our World by Seeking Others* (Macmillan, 2006) which explores the links between space exploration and environmentalism.

### Abstracts

#### **Life on Mars – Does it Matter?**

Microorganisms rarely form part of environmental concerns on the Earth and yet they play a considerable role in space policy, particularly planetary protection. Why does this dichotomy exist? Part of the explanation lies in the perception that microorganisms, or their equivalent, if they are eventually found elsewhere, will have scientific value and that this scientific value must be preserved. This is an argument driven by utilitarian concerns. The utilitarian value of microorganisms is not a controversial position to defend since microorganisms have many uses. A much more controversial issue is whether microorganisms have intrinsic value, i.e. some type of reason to be preserved independent of their uses to humans. There are arguments that can be formulated to support the intrinsic value of microorganisms, but there is no a priori argument that can support the position that life forms of a different origin have more intrinsic value than Earth organisms. Constructing an environmental ethic for microorganisms has practical use in deciding how robots and human explorers should treat them on other planets. Even if extraterrestrial life is never found, such an ethical debate provides a useful device for considering how microorganisms should be treated on the Earth.

#### **Managing human impact on other planets**

How should human impact on other planetary bodies be managed? We discuss the model of a planetary park system. Reasons are elaborated for such a system to protect representative regions of other planetary bodies. Although a parks system might seem supererogatory, and an over-reaction to the currently very limited environmental impact of robotic and human exploration and settlement activities, arguments are provided that suggest that such a system does have a value, even in advance of robotic and human

missions. Planetary parks incorporate concepts of planetary protection, but they extend the reasons for practical protection policies beyond the utilitarian protection of scientific resources emphasized by planetary protection, into other utilitarian and intrinsic value arguments. Planetary parks might still allow for the development of non-park areas by commercial enterprise. We discuss means by which industrial and commercial (tourist) interests and ideals on private property can be reconciled with the need for an environmental ethic.

## **DAVID DUNER**

### Biography

PhD David Dunér, born 1970, associate professor in history of science and ideas, Lund University, Sweden. He is an expert on seventeenth and eighteenth century science, philosophy, medicine, mathematics and technology. In his book *The World Machine. Emanuel Swedenborg's Natural Philosophy* he proposed a cognitive history of ideas. But he has also written essays on natural history expeditions, universal languages, iatromechanics, the camera obscura, spirals, and logical demonstrations. He is currently studying the history of mechanics and technology in the seventeenth and eighteenth century. He is co-editor of the annual of the Swedish Linnaeus Society, and board member of *Lychnos*, the annual of the Swedish History of Science Society. He had been visiting scholar at Johns Hopkins and Princeton University.

### Abstract

#### **Astrocognition**

What will happen to human cognition when humans encounter a totally different environment, physically, biologically and culturally, an extraterrestrial environment that the human earthly brain is not used to and developed for? In this paper I will propose a new multidisciplinary field that I would like to call "astrocognition". Astrocognition could be defined as a field studying what happens to the human mind in an extraterrestrial environment. In astrocognition we need to develop theories of extraterrestrial cognition and cognitive aspects of encounters with the unknown. As a starting point, we have the theories that have been developed in cognitive science, for example the theory of situated cognition, and cognitive semantics. Still we have very little experience of unknown extraterrestrial environments. But, we actually have experiences of unknown environments – here on earth. The only way of studying encounters with the unknown is to go to history. As an historian of science and ideas I would suggest that we study the early history of the exploration of the earth from a new angle. In these travels man encountered with the unknown, came to new continents, met new life forms, cultures etc. So, what will be achieved with astrocognition? We will get further knowledge of: i) how we encounter the unknown, ii) space–mind interaction, and iii) what a human being is from a universal perspective.

## **STAFFAN ERICSON**

### Biography

PhD and Associate Professor in Media and Communications, Södertörn University, Sweden.

## Abstract

### **Via Satellite: the space race and the mediated centre**

This presentation will explore the reciprocal relation between outer space endeavors and the establishing of a "mediated centre", i.e. the understanding of broadcasting media as the central access-point to the shared values and realities of the social world. Its conceptual frame work is the theory of "media events", as elaborated by Daniel Dayan and Elihu Katz in the early 1990s, its main illustrations will come from media representations of the original Space Race: from the launch of Sputnik in 1957 to the docking of American and Soviet spacecrafts in 1975.

### **ALEXANDER GEPPERT**

#### Biography

Alexander C.T. Geppert is Feodor Lynen Fellow at the Minda de Gunzburg Center for European Studies, Harvard University, and Assistant Professor of modern history at Freie Universität Berlin. He received his PhD from the European University Institute in Florence and has held various fellowships in Berkeley, Paris, London, Vienna and Essen. His publications include a monograph, *Fleeting Cities: Imperial Expositions in Fin-de-siècle Europe* (2009), and five edited volumes: *European Ego-Histoires: Historiography and the Self, 1970-2000* (2001), *Orte des Okkulten* (2003), *Esposizioni in Europa tra Otto e Novecento: Spazi, organizzazione, rappresentazioni* (2004), *Ortsgespräche: Raum und Kommunikation im 19. und 20. Jahrhundert* (2005) and *New Dangerous Liaisons: Discourses on Europe and Love in the Twentieth Century* (2009). His most recent article "Space Personae: Cosmopolitan Networks of Peripheral Knowledge, 1927-1957" appeared in the *Journal of Modern European History*. In 2008 he organized a large international symposium on the cultural history of outer space, *Imagining Outer Space, 1900-2000*, in Bielefeld (<http://geschkult.fu-berlin.de/outerspace>). At present Alexander Geppert is working on a new book, *Die Zukunft in den Sternen*, a comprehensive study of European Astrofuturism, outer space and extraterrestrial life in the twentieth century.

## Abstract

### **Futures from Beyond: European Astroculture in the Twentieth Century**

For much of the twentieth century outer space has constituted a major site of utopian thought. Yet how did the idea of spaceflight develop into a central element of technoscientific modernity? This paper focuses on the sociocultural impact of outer space in France, Germany and Great Britain between the space fads of the late 1920s and the establishment of the European Space Agency half a century later. I argue that changing images of outer space and conceptions of extraterrestrial life must also in a European context be read as expressions of historically specific expectations for the future, i.e. within the discursive complex that literary scholars have labeled 'Astrofuturism'. Exploring interactions between representations of space and visions of the future highlights their strong, yet often hidden, connection to spiritual beliefs and a utopian beyond. Both features, the obvious futuristic strand and the underlying transcendental component, must be made central categories when historicizing the Space Age with a view to integrating outer space more closely into mainstream cultural historiography. Eventually, I aim to solve the 'European paradox' of comprehensive space enthusiasm despite decades of abstinence from actual spaceflight, and to identify a specifically European variant of international

astroculture before Apollo 8 delivered the first man-made images of the entire globe, proving so crucial to the process of current globalization.

## **NICOLAS GLANSDORFF**

### Biography

Nicolas Glansdorff JM Wiame Institute for Microbiology and Free University of Brussels (VUB) Belgium was born on December 25, 1937 in Brussels, Belgium. He is Emeritus Professor of Microbiology and Genetics at the Vrije Universiteit Brussel (Flemish Free University of Brussels) and honorary director of the Jean-Marie Wiame Institute for Microbiological Research. He received MSc and PhD degrees in Biology from the Universite Libre de Bruxelles. He was several years postdoctoral fellow of the Belgian National Science Foundation; this period included a one-year visit in 1967 at the Institute of Genetics in Glasgow, directed at the time by Professor G. Pontecorvo. He made several visits of a few months each at the Microbiology Department of the New York University Medical School in the laboratory of Professor W.K. Maas. At the beginning, his research interests resided mainly in molecular genetics and mechanisms of gene regulation, using arginine and pyrimidine biosynthesis in microorganisms as model systems. In recent years, he focused on the molecular physiology and evolutionary relationships of extremophiles and on the origin of life, with particular emphasis on the emergence and genetic legacy of the Last Universal Common Ancestor to the three Domains (Bacteria, Archaea and Eukarya).

### Abstract

#### **The impact of religious beliefs on space exploration**

The possible emergence of sentient beings in other star systems is no longer a fanciful conjecture. Whether we would become apprised of our mutual existence by physical contact or, more likely, by wave communication, the question arises of how to deal with future encounters. On a cosmic scale, mankind has just emerged from animality and is still mentally immature, despite some ground-breaking cognitive insights and philosophical advances (Einstein, Bell, Hawking, Spinoza, Darwin), whereas an alien civilization able to decipher terrestrial messages may be expected to have come of age and reached a higher level of moral and scientific development. Since history shows how deadly mankind's expansion proved to be when religious faiths claiming privileged "communication" with a deity were combined with economic and military imperialism, a serious discussion of the impact of mankind's religious beliefs on the conduct of space exploration and interstellar communication is necessary. These concerns are compounded by the fact that the presently most powerful and technologically developed nation on earth is marred by the strict adherence of most of its citizens towards the Scriptures, an attitude that holds a dangerous belief in the Apocalypse and the conviction that God created man in his image. An approach to the scientific and moral issues raised by encounters with other sentient beings should therefore be conceived in total independence from established churches by a community of scientists and philosophers able to stress mankind's achievements and interrogations at the highest possible level. In the present state of the world, a *de facto* secular Europe could play an important role but China should be a participant, since the development of Confucianism, an enduring secular attitude developed against a largely non religious background, is a major moral achievement of our race.

## **GERDA HORNECK**

### Biography

Gerda Horneck is former Deputy Director of the Institute of Aerospace Medicine of the DLR, Köln, Germany and former Head of its Radiation Biology Section. She has been involved in several radiobiological and astrobiological space experiments since the Apollo missions and has been advisor to ESA, NASA, ESF and the EC on space-related issues. For her research she was awarded with honors by ESA, NASA, DLR, by the International Society of Astrobiology ISSOL and the International Academy of Astronautics IAA. She is currently President of the European Astrobiology Network Association EANA.

### Abstract

#### **An intense education, communication and outreach program for space exploration**

The exploration of space makes high demands on both (i) technology, engineering, science, and economy and (ii) education, communication, outreach and the society at large. A comprehensive education program needs to start at the Kindergarten through postdoctoral and adult level, thereby reaching all groups of the society. Those activities need to be bundled, coordinated, and expanded. It is proposed to set up a group of experts to evaluate the situation in Europe with regard to space education, outreach and communication in order to foster education and fascination for space exploration within the next generation and the public at large. If done properly, the exploration of our solar system and beyond may become a common vision of mankind and it may herald a new challenging era, which later generations may term "the space age".

## **OLIVER KENDRICK**

### Biography

Kendrick Oliver received his PhD in War Studies from King's College, London in 1995. Since 1996, he has taught at the University of Southampton, where he is now a Reader in American History. He is the author of two books, *Kennedy, Macmillan and the Nuclear Test-Ban Debate, 1961-63*, (Palgrave Macmillan, 1998) and *The My Lai Massacre in American History and Memory* (Manchester University Press, 2006), and the co-editor of *The Memory of Catastrophe* (Manchester University Press, 2004). He is currently writing a book on religion and the American space programme, 1957-75, contracted to Johns Hopkins University Press. He received a British Academy/Leverhulme Trust Senior Research Fellowship in 2007-8 to facilitate his work on this project.

### Abstract

#### **Religion and the American space programme, 1957 - 1973**

This paper will provide an overview of my current project on religion and the US space programme, 1957-75, offering some preliminary conclusions. The project is intended to explore a hitherto-largely neglected aspect of the social history of the space programme in the Mercury-Apollo era and also to provide a case study of how religious beliefs and practices operate within, and in response to, an ostensibly secular scientific and technological venture, whilst recognizing the peculiar consonance between spaceflight and

traditional religious hopes and fears. The paper will focus on four particular themes: the role played by religion in the formation of the space programme; the rise and fall of 'space age theology'; the space programme as a site for religious experience; and the response of religious Americans to the programme.

## **AGNIESZKA LUKASZCZYK**

### Biography

Agnieszka Lukaszczyk is, since September 2006, the Executive Officer of the Space Generation Advisory Council (SGAC). Starting May 2008 she has also been working as a space policy consultant at the Secure World Foundation (SWF). In addition, during the period of September 2006 to June 2008, Agnieszka worked at the European Space Policy Institute. Agnieszka also serves as the Vice President - Operations for the World Space Week. She holds a Masters degree from the American University's School of International Service in International Politics and a Bachelor degree in Political Science from the University of Tennessee. She also studied at the Université Catholique de Louvain in Brussels, Belgium; the Jagiellonian University in Krakow, Poland and the World Trade Institute in Berne, Switzerland. She gained professional experience at the Political Section of the Polish Embassy in Washington DC, American Electronics Association in Brussels, European Department of the Polish Senate in Warsaw and in the Warsaw Business Journal.

### Abstract

#### **Space Generation Survey**

The presentation will outline the response of students and young space professionals on the occasion of the 50th Anniversary of the first artificial satellite and the 40th anniversary of the Outer Space Treaty. The contribution has been coordinated by the Space Generation Advisory Council (SGAC) in support of the United Nations Programme on Space Applications. It follows consultation of the SGAC community through a series of meetings, online discussions and online surveys. The first two online surveys collected over 750 different visions from the international community, totaling approximately 276 youth from over 28 countries and builds on previous SGAC policy contributions.

These key visions suggested the enhancement for humanity's reach beyond this planet – both physically and intellectual. These key visions were themed into three main categories:

- Improvement of Human Survival Probability – sustained exploration to become a multi- planet species, humans to Mars, new treaty structures to ensure a secure space environment, etc
- Improvement of Human Quality of Life and the Environment – new political systems or astrocracy, benefits of tele-medicine, tele-education, and commercialization of space, new energy and resources: space solar power, etc.
- Improvement of Human Knowledge and Understanding – complete survey of extinct and extant life forms, use of space data for advanced environmental monitoring, etc.

## **WILLIAM R. MACAULEY**

### Biography

William R. Macauley is a doctoral candidate in the Centre for the History of Science, Technology and Medicine, at the University of Manchester. His PhD research is on visual

representation of scientific knowledge and interdisciplinary approaches to interstellar communication c. 1957–1977, with particular reference to NASA's *Pioneer* plaque and *Voyager* record. His current research interests include the history of representational practices in science, visual culture, design history, scientific research and cultural discourse on communication with extraterrestrial intelligence, and space exploration. He was previously a postgraduate research student and Research Associate in the Department of Psychology at the University of Manchester and worked on sensorimotor coordination and phenomenology of presence in immersive virtual environments.

### Abstract

#### **Envisioning culture and inscribing knowledge: Radio telescopes, television and interstellar communication c. 1957 – 1968**

In the late twentieth century, science and technology supported exploration beyond our solar system and extended human knowledge through messages comprised of pictures and mathematical symbols, transmitted from radio telescopes and engraved on objects attached to spacecraft. 'Interstellar communication' refers to collective efforts by scientists and co-workers to detect and transmit messages between humans and supposed extraterrestrial intelligence in remote star systems. Interstellar messages are designed to communicate or 'inscribe' universal knowledge through pictures and mathematical symbols, rather than words or other forms of natural language, because it is assumed that recipients have no prior knowledge of humankind or the planet we inhabit. Whilst the emergence of interstellar communication as a recognized field of scientific research is closely linked to scientific research; contemporaneous news media and public discussion about 'space communication' constitute important sources of evidence on the history of interstellar communication and collaborative design of interstellar messages. For example, sound newsreels and non-fiction films from the late 1950s and 1960s, demonstrate how radio telescopes, telecommunication satellites and space probes are often depicted as objects that enable transmission of knowledge across linguistic and sociocultural boundaries. Moreover, scientists claim that radio telescopes and television are technological benchmarks that permit humans to establish contact and meaningful cultural exchanges with networks of 'superior Galactic civilizations.' My paper will critically examine evidence from various sources to illuminate how and why histories of radio astronomy, communication satellites and global television are enmeshed with the history of interstellar communication and visual culture.

#### **KURT MILLS**

##### Biography

Kurt Mills is Senior Lecturer in International Human Rights at the University of Glasgow. He previously taught at Gettysburg College, James Madison University, Mount Holyoke College and the American University in Cairo, and served as the Assistant Director of the Five College Program in Peace and World Security Studies at Hampshire College. His research and teaching interests are in international relations, international organizations, human rights, refugees and humanitarianism, and sub-Saharan Africa. He is the author of *Human Rights in the Emerging Global Order: A New Sovereignty?* and numerous articles on human rights and international relations.



## Abstract

### **Humans in Outer Space: Rights, Governance and Law**

This paper will ask whether and how the most fundamental political and legal concepts we apply to the international system are relevant to humans in outer space. Is outer space a Hobbesian 'state of nature' where life is nasty, brutish and short and there is a war of all against all? Or is it possible to apply evolving norms of democracy and international governance to the exploration of outer space? What legal and governance relationships between missions of exploration and colonization and Earth-based polities might be possible given the extreme distances and degraded or nonexistent communications? Given the particular conditions in space will conceptions of rights change? Will those engaged in exploration/working in space be guaranteed the same rights we take for granted, or will they need to be restricted to deal with the particular dangers in space? Will new rights, such as the right to breathable air, be recognized? Would finding extraterrestrial life require reconceptualisation of who is entitled to the most fundamental of rights?

### **ERIK PERSSON**

#### Biography

Ph.D. in practical philosophy at Lund university 2008 on a thesis about environmental ethics. Has also written about the philosophy of risk.  
Teaches applied ethics including space ethics at Lund University.

## Abstract

Space exploration raises several interesting ethical problems. One of these problems is how to distribute the risks and benefits – among nations, private enterprises, and individuals. This question has many similarities with questions of distribution here on the earth, but it also opens up totally new aspects. It is important to investigate what conclusions the theories developed to deal with distribution problems on our own planet will yield when applied to inter-planetary situations, and also to what extent we need to adapt these theories and develop new ones. I also expect that working with distribution problems related to space exploration will give us new perspectives on similar problems here on the earth.

### **ANNA G. PIOTROWSKA**

#### Biography

Anna G. Piotrowska studied musicology at Jagiellonian University (Kraków, Poland) and Durham University (UK). She also pursued her post-graduate studies in the Center for American Studies and the Center for Psychology and Pedagogy at Jagiellonian University. In 2002 she defended her PhD on the idea of nationalism in music.  
Anna G. Piotrowska is mainly interested in sociological and cultural aspects of musical life and the place of music in human life. She actively participates in many international conferences, among others in Copenhagen, Brussels, Vilnius, Tbilisi, Sheffield, Thessaloniki, etc. She was awarded a few fellowships in UK universities as well as in Central European University in Budapest and in national library of France. In 2007 with 20 other scholars she co-authored "A Manifesto for the Humanities in Europe. *In varietate concordia*".

Anna G. Piotrowska is an author of the book (“The Idea of National Music in the Works of American Composers of the Early 20<sup>th</sup> century”, ISBN 83-7322-569-2) and more than thirty articles (both in Polish and English) on musical culture. Currently she works as an Associate Professor in the Chair of Theory and Anthropology of Music at the Institute of Musicology, Jagiellonian University in Kraków, Poland.

### Abstract

#### **Music as a means of communication in the outer space**

Music has been hailed as a *universal language* – while taking this statement as an initial assumption it is worthwhile to speculate whether or not music could serve as the best or at least one of the best systems of communication in the outer space. The variety of musical styles elaborated within European culture prevent, however, from agreeing on one ‘official’ style that could be representative for human race out there; yet it remains true that the European philosophical thought has been since the Ancient times preoccupied with mathematical and physical nature of music.

The ultimate goal of the research would not be the de-humanization of musical thought (music lost in the numbers) but the search for the most basic, philosophical answer to the question: what is music? and why/ how music as a universal language could be employed as a universal communication system.

#### **NINA-LOUISA REMUSS**

### Biography

Nina-Louisa Remuss is with the European Space Policy Institute (ESPI) since July 2008, focusing on security-related topics. Currently she is the Project Manager of a study and related workshop (which will be held under the auspices of the current EU Council Presidency) on: “Space and Internal Security – Developing a Concept for the Use of Space Assets to Assure a Secure Europe”. In addition she manages ESPI’s support to the 2009 UK Presidency of the European Interparliamentary Space Conference. She holds a Bachelor Degree in European Studies from the University of Maastricht (The Netherlands) and a Master’s Degree in International Security Studies from the University of St. Andrews (United Kingdom). Nina-Louisa Remus has been an intern at the Permanent Mission of Germany to the United Nations as well as at the German Federal Ministry of Defense. She has published on space and security related topics and presented papers at related conferences.

### Abstract

#### **Humans in Outer Space – From Envoys of Mankind to Combatants?**

With Europe aiming at becoming a leader in human spaceflight, the question arises what impact astronauts have on the development of space security and particularly the weaponisation / peaceful uses discussion of outer space. In this regard, it is possible to distinguish three potential future scenarios: First, astronauts become involved and become an element of the weaponisation of outer space, secondly, humans engage as a means for verification and other peaceful security uses and third, humans refrain from getting involved in this field (which does not rule out that military personnel – as has been quite common – are “peaceful” astronauts). While drawing on these three possibilities this paper

aims at providing a path analysis as well as a normative recommendation, thereby also considering the societal implications involved like the prevalent image of the astronaut in Europe. Moreover, the current international legal framework - with the notion of astronauts as “envoys of mankind” (Art. V of the 1967 Outer Space Treaty) as centerpiece - will be reviewed in the light of the path analysis.

## **ALFONSINA SCARINZI**

### Biography

Alfonsina Scarinzi is Italian. She studied German, English and Communications and holds a doctor degree (Dphil.) in German Philology from the Georg–August Universität Göttingen (Germany) with a particular focus on literary reception theories, lived aesthetic experience and cognitive science. Her present research interests deal with enactive cognitive science, sense-making and emotions in the interaction between reader-user and digital forms of texts of literature as well as in simulated situations through empathic reading of fiction. She completed her last training in communications at the *Council of Europe* (Strasbourg, France).

### Abstract

#### **Through Pleasure in Outer Space: the Contribution of the Imitative and Simulation Function of Reading Fiction to the Cultural Acceptance of Space Exploration. European Perspectives.**

Reading fiction is considered to play an important role in the development of human culture. The reason is that it offers the conditions in the reader’s interaction with fiction to experience simulated situations. Through these readers can model their own behaviours. Fiction helps readers to cultivate their socially adaptive capacity for entering through simulation or imitation into the narrated experience of other people. Against this background my contribution focuses on the question how the imitative and simulation function of reading fiction dealing with space exploration can influence, change or challenge the readers’s cultural attitude towards this sort of endeavours and contribute to their cultural acceptance.

## **MARK TIMMINS**

### Biography

Mark Timmins Ma St Martins RSA YDI

Current position: Director of Fashion, Heriot-Watt University

Previous posts: Knitwear designer for Courtaulds knitwear supplying Marks and Spencer plc  
Fancy yarn designer, William Hutchinson Yarns

Most recent paper presentation at "Less Remote" strand of world aeronautical conference, Glasgow 2008 exploring clothing in space

### Abstract

#### **Fashion and Clothing in Space**

The world is exploring the issues of space tourism and we are rapidly approaching, shirt sleeve space flights, for non trained astronauts as well as longer stays in hotels in geo

stationary orbit and zero gravity as well as resorts on the moon in micro gravity. None of these options are cheap or easily achieved and the people who avail themselves of these opportunities will by definition be excitement seeking, rich and status aware. This will reflect in the clothes worn in these environments, the fashion will have to be lightweight, dynamic, responsive, beautiful, expensive and do something completely different than that of garments in a conventional gravity environment. This opportunity for space couture forms the basis of my presentation and I hope to enlighten and inspire the conference and a wider audience with some new fashion concepts that are literally out of this world.

## **BERNA VAN BAARSEN**

### Biography

Berna is Associate Professor in medical ethics and psychology at the VU University medical centre in Amsterdam (VUmc), section Philosophy and Medical Ethics. Berna is an ethicist-member in a number of Ethical Committees in the Netherlands such as the Medical Ethical Review Committee of the VUmc that, and the National-Regional Euthanasia Review Committee. She teaches medical ethics to medical students and in post-academic programs. Her main research themes are Suffering and End of Life, (existential) loneliness, and human dignity. She is also active in Space research ethics and psychology. She is PI of the international Mars500 project, entitled "The effects of group dynamics and loneliness on cognitive and emotional adaptation to extreme, confined environments", and she is member of a newly created ESA Topical Team on "Psychosocial and neurobehavioural aspects of human spaceflight".

### Abstract

#### **Humans in Outer Space: Existential Fulfilment or Frustration?**

What makes an astronaut decide to leave the security of his houses, leave behind his beloved ones, and travel to the Moon? Why do women and men strive for new goals far beyond our border into space? Is it just curiosity? Or have these challenges their roots in more fundamental human structures such as meaning and purpose of life? Meaning in life has been related to various social-psychological variables such as group membership, affect balance, happiness, self-esteem, dedication to a cause, and clear goals. People with a sense of meaning may see the demands of life as challenges instead of barriers. Therefore, meaningfulness ('existential fulfilment') and meaninglessness ('existential frustration') may be key factors in daring issues such as human spaceflight. A multidisciplinary review of available research on meaning and purpose of life and the relevance of these (future) studies for humans in outer space is proposed, with the outlook to guide future psychological research on the human and social aspects of space flight missions.