

The Chinese Space Programme in the Public Conversation about Space

Andrew Thomas

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Irvine, California • Boca Raton, Florida • USA
2020

ISBN: 978-1-61233-476-9 (pbk.)
ISBN: 978-1-61233-477-6 (ebk.)

Cover design by Ivan Popov

Library of Congress Cataloging-in-Publication Data

Names: Thomas, Andrew, 1954 April 7- author.

Title: The Chinese space programme in the public conversation about space /
Andrew Thomas, BA, MA, FBIS.

Description: Irvine, California : Dissertation.com, 2020. | "Awarded the
degree of Master of Philosophy (M Phil), March 2020, Department of
Politics, People and Place, Faculty of Business and Law, De Montfort
University." --Added title page. | Includes bibliographical references. |
Text in English with some Chinese.

Identifiers: LCCN 2020026990 (print) | LCCN 2020026991 (ebook) | ISBN
9781612334769 (paperback) | ISBN 9781612334776 (ebook)

Subjects: LCSH: Astronautics--Social aspects--China. | Outer
space--Exploration--Social aspects--China.

Classification: LCC TL789.8.C6 T529 2020 (print) | LCC TL789.8.C6 (ebook)
| DDC 629.40951--dc23

LC record available at <https://lccn.loc.gov/2020026990>

LC ebook record available at <https://lccn.loc.gov/2020026991>

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Awarded the degree of Master of Philosophy (M Phil)

March 2020

Department of Politics, People and Place

Faculty of Business and Law

De Montfort University

Acknowledgements

I would like to thank my supervision teams at de Montfort University, past and present: Dr Jonathan Rose and Professor Steven Griggs; and Professor Alastair Blair and Dr Stephen Parsons. At DMU Dr Peter King wrote eloquently about Jacques Derrida and Dr Mark Roberts gave useful and constructive feedback. Professor Thomas Hoerber of the Ecole Supérieure des Sciences Commerciales d'Angers (ESSCA) and his crew have welcomed me on board their bold voyages into space policy, touching down in Glasgow, Cambridge and Rome. I thank ESSCA for financial support to the Rome conference. Dr Sarah Lieberman of Canterbury University kindly gave editorial support to a forthcoming paper.

The venerable British Interplanetary Society granted me the honour of election to Fellow during the course of this study, for which I thank the Society and its Executive Secretary, Gill Norman. The Base Commander of RAF Spadeadam in Cumbria generously briefed the BIS' History Committee at a visit I attended. I am particularly grateful to David Shayler who has welcomed me to the BIS Sino-Russian Technical Fora since 2015, and edited and published my papers in the BIS journal "Space Chronicle" as listed.

Conference organisers at: the Cosmographies conference, Falmouth University 2014; the Society for the Philosophy in Technology annual conference (2016) in Shenyang; *Polisci* 2016 in Istanbul; the British Association of Chinese Studies in Leeds (2014), and the conference of the British Postgraduate Chinese Students' Association in the Oxford China Centre, 2018, all receive my thanks.

Staff at the British Library, DMU's Kimberlin library, and the State Archives at Perth (Western Australia) and Adelaide (South Australia) provided professional support to my reading. The European Space Agency kindly invited me to attend the opening ceremony of a tracking antenna at New Norcia in Western Australia, and I took the opportunity to travel to Woomera, South Australia, and read the documentary history at the Community Centre in that town.

The Confucius Institute at DMU, together with tutors at the "City Lit.", Leicester University's "Languages at Leicester" programme, and the East China Normal University in Shanghai, all tried their very best to teach me modern Mandarin Chinese. Where I have success in Mandarin Chinese, it is due to their hard work; but my failures are my own responsibility.

The organisers of the Zhuhai Airshow in Southern China should also be commended along with the many friendly people I met there. New friends at the Society for Anglo Chinese Understanding (SACU) have enhanced and developed my understanding of China and its people. Others are recognised by footnote in the main text. Thank you, all of you.

Finally, as no writer is alone in this world, I would like to acknowledge the support of my friends and family, particularly in the dark times. All errors and misunderstandings are my own responsibility.

Abstract

This study is the product of a long view of space exploration and the conversations about space in China. It locates the multiple conversations about space exploration and utilisation as they are in the Peoples' Republic of China (PRC), within other conversations about space culture in the world. China is viewed by Western researchers through many lenses which are examined here critically. In previous studies, writers explain away China's space programme with the easy answers of a "Space Race" and a "China Threat", in which the space programme is seen as merely an example of global competition, or threat, but this thesis challenges those barriers to Western understanding of the Chinese public conversation of space culture. In this study, critical theory and an underlying epistemology within a post-Enlightenment cultural frame are applied to official, archival and ephemeral texts and images. The manner of the critical application is distinguished from derivative techniques operationalised as Open Source Intelligence. The concept of Place, and within that, Foucault's linguistic concept of "Heterotopia", is significant both in understanding the Chinese overseas space bases on Earth and the temporal and spatial dislocations experienced in space missions. In acknowledging the interpretative approach, an empirical study, a "Q-sort" has been carried out, which demonstrates that the key factor in the Chinese conversation is Science, within the context of modernisation, tempered by Chinese cultural affirmation and international co-operation. The thesis concludes by providing general principles in future work for successful research into the popular culture of space exploration.

Keywords: China, space policy, OSINT, public conversation, Q-Sort

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1. Introduction: Space Policy with Chinese Characteristics

Towns and cities honour those of their own, who have gone out into the world and become famous through national or international achievement.

In Húludǎo (葫芦岛), a coastal city in the People's Republic of China, (PRC), I crossed streams of fast traffic to a roundabout in the centre of a busy square. Sculpture on the roundabout included a statue on a plinth, a representation of a space capsule burnt and dented on its return journey, steps, bushes and flowers, and a semicircle of pink marble pillars, their engraved script sparkling in the autumnal sunshine.

Hángtiān yuán (航天员, Astronaut) Yang Li Wei was the first Chinese national to fly into space, in the Shenzhou-6 mission of 2003. He made China the third country in the world to conquer crewed (manned) space flight. It is his statue that greets the traffic in Húludǎo. It is a statue of a man in a space helmet and visor, carrying a ventilation box, atop a plinth, with large trails of the letter 飞 (Fēi) behind him in bright colours, lit at night.

The foreman of the municipal team, which was cleaning the vegetation around the plinth before winter, came up to me.

Gesturing to the statue, he said to me in Mandarin I could just understand. “A Húludǎo man.”

“Yes, he is very famous,” I replied.

“Certainly. Where are you from?”

“England.”

“Ah, England.” He nodded slowly, then left me to return to his team, who were now leaning on their shovels and hoes, watching us, waiting for the report.

The striking sculpture is discussed in detail in a later Chapter of this thesis. But my host gave Yang Li Wei a different story.

I had thought that I had seen the flying apsaras of the Mogao caves represented in the sculpture by the large coloured trails, and said so.

“Painted ladies?” He snorted in derision. “We say that as you drive up to the statue you see first the three bananas, then a boy with a bag of grenades.”

And I experience a complex web of narratives and counter-narratives in the conversations about space exploration in China. This thesis explores that web.

Approaching the Chinese conversations

The challenge of exploring the popular conversation about space travel is that it starts from a preliminary position that some observers may decide is self-evident: depending on a binary opinion, space travel is a waste of time, or it is not. Certainly, travel in outer space, its exploration, and utilisation, is a new phenomenon in itself, but the cosmos has been discussed in myth and by virtue of Galileo and Bruno for example, in the foundations of science. Therefore, whatever side is taken on the merits of contemporary space travel, its narrative is important in itself.

When studying a society outside one's own, on the one hand alienation allows for an easier reflection on what is found, but on the other, barriers of language and culture intrude. To begin the journey through this thesis, then, I would like to set out some preliminary statements about my position as a critical researcher, the use of languages, particularly the Chinese language, and the ethical background of this research.

In this thesis, the example of Yanow is followed, as she writes (1998, p.234) :“The author who is writing about experience-near research needs to show that he or she was, in fact, close to the experience, whether as observer or participant. The focus of interpretive research is on meaning to the actor in the situation, and the researcher as participant stands in for that actor to some extent. Although this might seem to require first-person narration and even a confessional mode, it can be accomplished otherwise through third-person thick description, the layering of interwoven and interrelated material that characterizes ethnographic research”.

As Almond and Connolly argue (2019, p.2): “acquiring in-depth knowledge of relevant local social settings on a comparative basis requires processes which are much more encompassing than what happens in formal research processes such as interviews, and much more iterative than standard expositions of methodology would allow. This tends to mean that slow comparative research is difficult to evaluate according to the norms of positive science, as data is gathered in relatively idiosyncratic ways”. Therefore an explanation of the researcher’s position and the research strategy chosen is important to this thesis.

Position

My own background embraces cultural diversity and its affirmation in an atmosphere of mutual tolerance. We are all, to a greater or lesser extent, prisoners of our upbringing, but I adopt and propose ways in which we can reach an understanding of conversations within cultures different from our own.

The task is not easy: we bring a Western epistemology to it. Mazrui (1967), contemporary to Foucault in his “modes of reasoning” (Mamdani, 2018, p. 31/2), is forceful when he writes, in the post-colonialist context of Tanganyika/Tanzania and of Julius Nyere (1967 p. 21), that: “No amount of radicalism in a Western-trained person can eliminate the western-style of analysis which he acquires.” He continues his argument by saying that “French Marxists are still French in their intellectual style.... in style of reasoning and in the idiom of his thought”. Mazrui takes the view that that school of philosophy is rooted in post-Enlightenment European thought. In comments particularly apposite to the *Tel quel* movement, he asserts that “French Marxists have more in common with a French liberal than with fellow communists in China and Korea. And that is why a French intellectual who is a Marxist can more easily cease to be a Marxist than he can cease to be a French intellectual”.

China is a country without participation in the European Enlightenment, a country which considers itself to have been humiliated in modern times, and is now a nation attempting to reach an international position which is greater than at present.

With Western eyes and a mind-set of mutual respect, I have developed a research strategy of critical research into space exploration as it is experienced and expressed in non-Western cultures of the world. I include in this strategy deep engagement in the subject of space travel, through prior reading in astronomy to undergraduate certificate level and amateur practice in satellite technology, and I rely on my learning of languages and the introduction to culture they bring. To this thesis I bring seven years’ instruction into the Chinese language, mostly in England, but also at university in Shanghai. It follows instruction and qualification at University level in Russian, German and French.

Research strategy

New arrivals in China may well face public presentations about the Chinese space programme in a variety of ways. For me, this process started on a business visit to Jinan (近岸, Jìn àn), where I encountered a shop selling school prizes, such as cups and medals, some of which had space motifs and emblems. On that same trip in a Beijing stopover the hotel TV showed a news programme about China's then proposed first voyage to the Moon.

The gestation for this thesis was therefore long and slow. Almond and Connolly (2019, p.9) advocate a “slow research strategy” which in their terms “places value on time spent in the societies under study to acquire local meanings”. This means that informal conversations, serendipitous journeys and casual readings are as important in understanding narratives in China as are formal interviews.

Nonetheless I acknowledge a professional distance between researcher and China. To some extent this works to my disadvantage, in that particular challenges are seen to be posed to a non-Chinese person conducting fieldwork in China (Heimer and Thøgersen, 2006, p.4): “Doing fieldwork inside the People’s Republic of China is an eye-opening but sometimes also deeply frustrating experience”. I have tempered this disadvantage by language and cultural learning, both formal and informal, but retained a critical distance from earlier studies and become aware of both official narratives and lay conversations.

Without going too far in treating China as a special case for study, it has also been commented that the challenges that European researchers in mainland China face include the fact that designs proposed as an ideal in the abstract are often unachievable in delivery. Accreditation to a Chinese University would make a random survey across China possible in theory, but in such a large country, stratification by gender, age and ethnic origin would be difficult in practice, and would require a large team with quality control to conduct it. Official documents or interviews may be forthcoming after accreditation but without unrestricted access to an archive may have been selected beforehand.

Rather than attempting badly to survey opinion, this thesis adopts a technique to examine the factors of a discourse, using written texts ordered by priority and analysed by underlying factor. This reveals meaning which is close to text and image. Further, the design chosen in the Q Sort exercise, which was conducted largely in mainland China, follows a strategy of “one case, many field-sites”, as presented by Heimer (2006, p. 62) , and discussed in detail in Chapter 11 below. Such a design prefers the common narrative of a nation, rather than drilling down into regional, local or ethnic differences within it.

Welcoming new data as it came to me, serendipity undoubtedly played a part in the finding of data. I found such items wherever people congregate: parks, museums and galleries; the post office; shops and markets; restaurants and coffee bars; and special events and festivals. In places where I encountered street artists I would commission a drawing from them about their interpretation of “Your country and space travel”, gaining insight into perceptions of space within their local culture. I read the Chinese press by keyword search in English and retro-searched using a Chinese-origin internet search engine. Under my strategy of iteration my collection of items became a set of data. In this thesis I used such serendipitous items as a spur to revisit items and evolve their meaning iteratively.

The gradual revelation of the conversation in this way is acceptable. As Becker (2009, p545), in his study of the interpretative technique, points out, “... successful qualitative research is an iterative process, one in which the data gathered at t1 [the first time period] inform data gathering

operations conducted at t2 [the second time period]. Successful researchers recognise that they begin their work knowing very little about their object of study, and that they use what they learn from day to day to guide their subsequent decisions about what to observe, who to interview, what to look for, and what to ask about. They interpret data as they get it, over periods of months or years, not waiting (in the fashion of survey analysis, for instance) until they have it all to start seeing what it means. They make preliminary interpretations, raise the questions those interpretations suggest as crucial tests of those ideas, and return to the field to gather the data that will make those tests possible”

No index is available of ephemeral material, because no such index is possible. The data studied are not and cannot be statistically representative of another, larger set of data behind it. But this is not a problem in itself. The acclaimed American biographer of former President Lyndon B. Johnson, Robert A. Caro, recounts an early maxim he was taught as a young newspaper reporter confronting archives : “Turn every page” (Caro, 2019, p. 11). But confronted with tens of millions of documents in the Presidential archive he realised it was not physically possible to do this. Instead, his working method was to find a pivot point or event and use it as an incisive tool with which to interrogate the remainder of the documents (Caro, 2019, p. 84ff.). In this thesis, such a “pivot point” may be that flash of insight or serendipitous point made in informal conversation. Thus, the point of archival work is not to summarise and reflect the archives as a whole, but to generate a theory, a narrative, that is contained within them.

To develop an interpretative account, the various critical applications are, in this paper, applied on a “grounded” basis. It is necessary to consider these raw items individually and together in a repeated process of analysis and synthesis, and revisiting them as a fuller conversation is discerned. In this way, Suchar (1997) proposes that after visiting displays in a gallery for the first time, it is necessary to review the visit, prepare a “shooting script” and return to the scene of the gallery with it to investigate matters which reflection suggests may be relevant, to discover either their presence or absence. This “revisiting” is the principle of retrodiction and is applied here to all data that has been obtained, which is considered and re-considered continually. Belfrage and Hauf (2015) promote “Critical Grounded Theory” (CGT) to evaluate and understand the data in this way. In their method, a theory is developed having been grounded in an initial categorisation, refined by an iteration through the data, then returned in a process of retrodiction to a further iteration of the data.

But this thesis does not rely fully on literary, artistic or personal interpretation, however it may be grounded and re-visited. A major source of material to be interpreted has been a field study carried out within a standard practice (the Q sort methodology) and a social network analysis to accepted methodological standards. The results of these studies are brought into the argument of the thesis.

Finally, this research strategy has tested its preliminary results in academic discourse by presentation at conferences in Europe, China and Turkey and early publication (as in the List of Relevant Published Works).

Ethical position

I seek to discover stories which have been told to me by real people and with them to understand better their conversation about space travel. I wish, too, to present my understanding to a world which in many ways is not sympathetic, or is even hostile, to them. In this difficult area, the University requires compliance with ethical structures that I have adopted and which have been approved. Generally, data protection, informed consent and interviewee anonymity are at the forefront of these requirements. For this reason I have been unable to thank personally in this thesis the many Chinese people who have helped me. Particular ethical approval was given for the social network analysis and the exercise in a British school, and reviewed for the Q-sort.

In the preparation of the Q sort conducted in Chapter 11 of this thesis, I took early advice from expert Sinologists into how feasible it was to carry out a Q sort in a Chinese city. I was advised to secure ethical approval (my ethical approval included interviews), to carry an identification and explanation in English and Chinse (see Appendix 1), and, specifically to China:

"Chinese students don't do a lot of this sort of fieldwork, so people might be confused about your status.

You'll probably find it all goes smoothly, but the usual advice should anyone object or officialdom take too much of an interest is smile, apologise, and find another venue. Good luck!"

Here we see the special conditions applicable to all research in the field inside China.

Translation and terminology

All translations given with source in this thesis are my own. From written Chinese I am supported strongly by machine character recognition, but temper this in translation with my own knowledge of Mandarin in simplified characters and grammar. The phonetic system used in this thesis is the modern system of Romanisation for standard Mandarin, Pinyin, although with reference to the 1970s I have occasionally repeated the then contemporary style of Wade-Giles. For translations from Russian, French and German I have used my own knowledge of grammar and the use of dictionaries, with more occasional use of preliminary translation by machine. I thank all those teachers and first-language speakers who have helped me over the years; far from fluent, I acknowledge that all mistakes in translation are solely my own responsibility

In line with what I believe to be contemporary Chinese practice, I use the term “Hángtiān yuan 航天员” rather than “Tàikōng yuán 太空员” to refer to a Chinese voyager in space, although the latter term, with its implication of the high sky, is still present informally. The important part of the term is the suffix “yuan” 员, which refers to a team player. In contrast, a professional person, such as an Astronomer “Tiānwénxué jiā 天文学家” has the suffix “jiā” 家. Publications originating or facing the West sometimes uses the expression “Taikonaut” in comparison to “Astronaut” (American) or “Cosmonaut” (Russian).

Overview of thesis

This thesis sets space travel primarily in the programme of modern China (PRC). It begins by recognising a fundamental problem: that easy answers offer a poorer explanation. It argues that commentators and researchers, particularly from the West, view China through different “lenses”, which shape what is seen. These lenses do not distort the image of China but set its perceived depth of field, movement and colour. From “high data” (as defined below) published officially the thesis introduces cultural products to the field of vison. The thesis uses an iterative, interpretative methodology, identifies an understanding or interpretation, and then summarises the multiplicity of narrative and counter-narrative.

A key principle in this thesis is to consider the “intertextual chains or networks of texts and events” (Fairclough, 2010, p. 420), which form and reflect the popular conversation about space. When this principle is applied here to ephemeral images (such as advertisements in the metro system) its contribution to interpretation can be seen readily. But consider some of the archival documents used. Where, using the Freedom of Information Act, archival documents from the 1960s to the 1980s about China’s launches into space have been produced from the US Central Intelligence Agency (CIA), the remarks that may be embedded or explicit about the nature of China are also subject to the principle of Intertextuality.

Adopting intertextuality allows for other views of China, such as science fiction, to provide a context for these documents of American origin. Here, we use the term “China” as if the country

to which it applies were a single coherent mass, as it presents itself on the world stage. Another view, which is implicit in this thesis, cracks the shell of this homogeneity. Indeed, other views of that period are possible. Looking back on that time, the chimera being challenged by the CIA in its analysis of China's space programme was of a conflict of economic values – against communism – not of tangible assets in space, such as minerals being mined from the Moon or asteroids or planets being occupied. Conflict with China was not a necessary condition. The Peoples' Republic of China was only eight years old at the time of the first Sputnik, and its temporary close alliance with the USSR was to end a few years later, an epoch known as the "Sino-Soviet split". But for a brief period under Nixon and Carter the USA embraced China and its space programme more warmly, and this served to assist the introduction of the Reform period promoted by Deng Xiaoping.

This time was known generally in the European Space Agency's description as "Space 2.0", actual exploration following cosmic speculation, leading to the era of international co-operation that exists at the time of writing, which they term Space 3.0. Although the USA ended its temporary period of space co-operation with China, the ESA and European countries did not. Chinese co-operation with European research institutes is now extensive. Hamilton and Joske (2018) view similar co-operation with Australia as a threat. This is one of the easy answers discussed below.

There is, of course, a large amount of literature giving easier answers. This thesis does not seek to replicate this work but to review it and to offer an argued alternative. The contribution which this thesis makes is to interpret cultural products as data expressing a public conversation within China and between Chinese people, rather than to choose between theories based in Western political anxieties.

The answers which the thesis provides can be summarised as follows: the thesis concludes with the confirmation that China sees space exploration as a matter of high science and technology in the country's continuing search for modernisation. On the one hand, China speaks of itself as a nation of ethnic groups, some clearly minorities, seen to be present in the government. On the other hand, in practice China uses cultural products to cement the nation together by adopting the legends and history of the dominant (Han) ethnic group. China is also keen to work with international partners in its development of this science and technology, though some international partners find this threatening.

A level of abstraction is employed such that the thesis can meet analysts of military intelligence on their own ground. This is done by adopting those techniques of critical methodology which have been adopted by "Open Source Intelligence (OSINT)", but articulating its underlying ontology and epistemology.

Outline of the thesis

This thesis drives a path through this jungle of public conversation. Not only is the Peoples' Republic of China (PRC) the third nation to have developed a crewed (manned) space programme. The nation has landed its technology on the Moon and is continuing its exploration and utilisation of near and outer space. These plans and activities offer the opportunity seized by this thesis to consider what is variously described as the narrative or conversation, the framework, setting or policy of space exploration and utilisation ("space policy"), with an emphasis on the specifically Chinese dimension, or the "Chinese Characteristics" of it, as in a term used by President Xi Jinping and the Chinese Communist Party.

In the first half of this thesis we shall briefly describe the state of the Chinese Space programme as it is at the time of writing, by comparative reference to its own account of its antecedents,

achievements and consequences, and shall establish the frameworks and settings in which it is viewed in other countries.

Whilst China’s “Belt and Road” initiative will extend China’s influence through Africa and Europe, China’s space programme is considered first within its own hemisphere. This has a regional emphasis but extends southwards to Australia and North-Westwards to Russia. Often, China is not viewed positively outside its borders, and its space programme is no exception. As shown in later pages, China has appeared in recent years as a threat to world interests established after the 1945 war.

Thus, the nature of the dominant framework “the Space Race” is examined in this hemispheric context. Australia’s experience of the Soviet Union, and the consequent portrayal of communist villains in boys’ fiction, led the country to experience the launch of Sputnik in 1957 as a popular sensation and its conflict with anti-communism. In that sense, Australia provides a coherent account of the origin of the sensation. But in subsequent years China inherited the role of target for this anti-communist suspicion. It can be shown that not only is the term “space race” now applied to the USA, and China, but also to China and India. This thesis argues throughout that there is an alternative way of seeing.

Perhaps it was Jules Verne who, in *Adventures in Southern Africa* (Verne, 1872): first showed that the exploration of matters celestial from Earth cannot proceed without the effect on international borders and alliances between or war amongst individual nations. The perception that Earth is a planet in space leads to the conclusion that certain places on the surface of this planet are relevant to particular factors in space travel. Inevitably, China’s celestial needs as a space-faring nation relate to the national governments occupying these places, but it is not inevitable that this is a cause international threat and friction. The thesis explores the importance of “place”, and the necessary dislocation of space and time in space travel are derived from experiences across the Earth, and discussed with particular reference to China.

Moving further towards the “Chinese characteristics”, the thesis explores China’s own ambition to “modernise”, and what this means for its space programme. Some words have a peculiar resonance within China. The “modernisation” programme is shown to be rooted in science and technology, and the primary driver of the Chinese characteristic conversation is “Science”, in the context of this “Modernisation”. The ideological imperatives are described and considered, and other drivers include the international nature of space exploration. As in the West, China promotes space travel in its school classrooms, but, as is shown, the outcomes are different from the Western in many ways.

Another “easy answer” is that the “Confucian” nature of modern China might apply to the popular conversation about space. At the behest of the state, its people are striving, by hard work, duty and diligence, to achieve modernity and international standing. But this thesis disposes of that myth, and recognises that the ethos of hardship and dedication within the Chinese space programme is located firmly within the state apparatus of the PRC.

Western preconceptions of China are located within popular science fiction, in the same way that they were expressed about the Soviet Union in the early days of the “space race”, as shown later to be present particularly in Australia.

To tackle this difference of cultures, an epistemology based on material cultural artefacts is described, and a critical methodology is applied to it in an iterative manner. The Intelligence Community of the West accepts this methodology uncritically under the name of “Open Source Intelligence (OSINT)”. It is an intention of this thesis that using their own descriptive language

in applying OSINT techniques to the problem, Western governments can meet this different expression of the Chinese space programme, and thereby understand it better.

Faced with a significant, continuing and increasing cooperation between Europe and China on space exploration, the public understanding in China of space exploration may be of considerable interest to ESA and European national space agencies. Therefore, although the official or deliberative reading is important, the mass or popular conversation has the potential for improving relationships between Europe and China in this area, and a mutual understanding of each other's aspirations and objectives can only be beneficial.

A unique body of work, as indexed in the frontispiece of this thesis, has already been published. Publication has contributed to developers of space policy and to sinologists. This thesis organises and structures this body of work into a coherent framework, rather than simply to summarise the content of each publication. It is organised as follows. Chapter 2 introduces the “lenses” by which the two topics, China, and Space travel, are often concerned. In Chapter 3, the methodology is discussed, and its underlying ontology and epistemology outlined. Data is divided into “High data” (official statements and archives) – and “low data” (cultural products), which form the majority of this study (Weldes, 2014)¹. Whilst “high data” archives are narrow in scope and capable of being indexed, the cultural products of “low data” are a broader collection of texts and images, often ephemeral, but essential to map the social conversation. Chapter 4 presents the “High data” in a literature review of official and archival sources, leading on to the “Low data” of cultural products. The following Chapters (5 to 7) first consider space exploration in general as settings in which to consider the Chinese programme in particular in the later chapters. In Chapters 8 to 10, key characteristics attributed to the Chinese programme are set out together with the role of the Chinese state in promoting them. Chapter 11 derives key statements to span the range of conversations, which are presented empirically in a field exercise, where Chinese people are asked to give priority to statements relative to each other. Finally, in Chapter 12, the overall argument and data are reviewed and discussed. The thesis concludes that under the ideological direction of the Chinese Communist Party, the popular narrative of space travel is promoted as demonstrating the importance of science in the modernisation of China, and consequently its enhanced international role.

¹ I do not allow the distinction between “High” and “Low” to reflect any value judgement other than a binary division.

2: Viewing the Chinese space programme through different lenses

Two themes to this enquiry

This thesis is predominantly about the space programme of the Peoples' Republic of China, not the technological progress of that country (rockets and satellites) *per se* but the social meaning of it within and around that country. It is framed within the imperative to voyage into outer space, and the different motivations which individuals, business and countries may have to do so. This Chapter has to respond to questions about China, and will do so next, but equally, the public understanding of space travel within language and society will be examined.

China

Many answers have already been given to the question “Why does China have a space programme”. There is continual background noise on the international stage of the USA and its allies which reflects a deep distrust of China. Within that background noise, the answer would be already understood, as military and competitive: a “space race” between the USA or India and China, and/or a threat to the national security of the USA and its allies, or to a Western post-war regulated consensus in general. But in adopting these easy answers uncritically, these commentators take no account of the lens between them and the question. These lenses will be reviewed in this Chapter.

Visible Phenomena within Chinese society

A visitor to China might experience the popular conversation of space exploration in China in a cultural expression that embraces Chinese science and thereby this modern Chinese identity. At first experience, the names given to Chinese space missions make official references to Chinese civilizational culture. The missions to the Moon are in a series called after the legend of Chang'e (嫦娥) and the tiny rover is called after her Jade rabbit, Yùtù (玉兔). An experimental satellite was named after the monkey Wùkōng (悟空), another legend made famous in a Shanghai television series. The crew of the Shénzhōu (神舟) 10 mission celebrated the Dragon Boat Festival by being seen on public TV eating the appropriate food, sticky rice dumplings stuffed with sweet red beans and wrapped in green leaves, usually known as “zongzi” (粽子). Because of the cost per gram of flying the food by rocket into space, it is evident that the choice was deliberate. And the Chinese Space Station is named Heavenly Palace, Tiāngōng (天宫), a reference which points to the Temple of Heaven (天壇; Tiāntán) in Beijing).

Chinese government sources in English refer to cultural activities about space travel within China. The Paper ”China’s Space Activities in 2016” (Information Office of the Space Council of the PRC, 2016) notes that dissemination of knowledge about space science has included: “”China Space Day”, “World Space Week” and “Science and Technology Week” to disseminate knowledge and culture about space, promote the “Spirit of the manned Space program,” inspire the nation, especially its young people, to develop an interest in space, explore the unknown, and attract more people into China’s space industry.” (*ibid.*).

President Xi Jinping’s comments about China’s space programme were gathered by Xinhua in 2017 into a background file (Xinhua, 2017a). With reference to the contemporary period (centred on 2013), he has commented that Space is “an important field of scientific and technological progress and innovation”, adding that “achievements in this regard are also important symbols of

a country's scientific and technological strength." (Xinhua, 2017a). Chinese astronauts "carry the space dream of the Chinese nation and represent the lofty aspirations of the Chinese people to explore space." Three factors can be disentangled from this presentation: Science, the "Chinese characteristics" of art and science in China, and the relations of China with the rest of the world. "Chinese characteristics" are addressed specifically in Chapter 9 of this thesis. The role and meaning of Science, and the international relations of China are discussed in chapter 12.

"Soft power" as an easy answer

The term "soft power" may be asserted as a shorthand answer. Nye (2004), in his classic analysis of "Soft power" notes explicitly that "China's investment in manned space flight also helps to increase its prestige and attraction" (p. 88) (emphasis supplied). But Nye offers no evidence for this.

Caldero et al (2008) offer a judgement that China is neither honest nor transparent about its intentions. Ever suspicious, he writes that "Even when taking seemingly offensive actions in regional events, the Chinese perceive their military stance as peaceful."

Caldero then considers why China may behave in this way. He writes that their behaviour" demonstrates Confucian ideals of pacifism and harmony, but also involves psychological tactics and a lack of transparency to gain a strategic advantage."

Thus, while "Some schools of thought state that the Chinese consider themselves insecure and fearful of other states' aggressions", he writes, "it also might be the case that the Chinese enforce this perception so that they are consistently underestimated by other countries ignorant of their rapid rise. A lack of transparency, partly fuelled by Xinhua, the Chinese news agency run by the Chinese Communist Party (CCP), only compounds the problem."

An alternative to this distrust of China is to consider the country as a special case. Former Secretary of State Henry Kissinger approached his analysis of China through his perception of its cultural history and considered *inter alia* that (Kissinger, 2011, p. 22) as "The Chinese have been shrewd practitioners of Realpolitik and students of a strategic doctrine distinctly different from the strategy and diplomacy that found favour in the West."

Caldaro et al (2008) continues with the analysis to offers a cultural view of Chinese space exploration. In his view, "Chinese cultural history exerts a substantial impact on China's political and strategic actions as well as how the Chinese perceive international policies. Overall, the Chinese ideal is for China to become a prosperous global power prepared to rival the U.S. in its power and prestige while simultaneously maintaining cultural heritage and beliefs."

"*Soft power*" is a form of power and as such lies behind this popular conversation. Edkins (1999) notes (p. 12) Derrida's account that in discourse, power is implicated but concealed. Edkins (1999, p. 3) calls into a question of political philosophy "the conditions of possibility that produced or made conceivable this particular representation of power".

Considering how soft power might be conveyed, Harman (on p. 33) notes that for Latour all related objects require a mediator (Latour, Harman and Edelyi, 2011 p. 33); therefore there is a mediator between the conversation and political power. Latour is "a philosopher of actors and networks" (*ibid.* p34) and so we are led to consider how networks and nodes within them function in this activity of exacting power.

Foucault introduces the concept of a network or capillary of power between the linguistic sites of processes. He considers (trans. 1977, p. 138) that “a multiplicity of often minor processes, of different origin and scattered location, which overlap, repeat, or imitate one another, support one another, distinguish themselves from one another according to their domain of application, converge and gradually produce the blueprint of a general method”. Commentators Schwan and Shapiro, explain (2011, p. 102): that “...we are held in place by a capillary network of multiple small nodes, each of which contributes to our subordination, but which can also be compensated for if one fails or is dismantled.

In contemporaneous work (Foucault 1976, p.34) he writes that the proper study of power should not be based on “juridical” expressions but oriented toward “material operations, forms of subjugation, and the connections among and the uses made of the local systems of subjugation on the one hand, and the apparatuses of knowledge on the other”. We therefore seek networks of connections by which power is expressed and maintained.

There are many definitions of the word “NETWORK”; for example, the definition in computer terms by OSI [Open Systems Interconnection] distinguishes several layers between the physical connection of cables and the application which sits at the very top for humans to use. Social Network Analysis is a technique to show by a graphic the interactions of individuals or transactions with each other; there is a developing science on the topic (see for example Easley & Kleinberg, 2010). In Chapter 9 it is used to describe a network of aerospace workers in China who, with the active encouragement of state corporations, are engaged in a social practice of commemoration and celebration.

Such networks link the “soft resources” (Guen, 2008, p6) – symbolic resources exercised “to exert influence upon others” - which are available to “soft power”. This diversion from soft resource to soft power “involves three stages: (1) application of soft resources; (2) cognitive processes of the recipients; (3) soft power production” (Guen, 2008, p. 8).

Based in East Asia, Guen (2008)’s first three categories of soft power (p125-7) include:

1. To improve an external security environment by projecting peaceful and attractive images of a country;
2. To mobilize other countries’ support for one’s foreign and security policies;
3. To manipulate other countries’ way of thinking and preferences.

Guen’s (2008) fourth category of soft power is “to maintain unity of a community or community of countries” (p. 125) and is required by “the maintenance of a large political economic unit” (Guen, 2008 p. 126). The EU’s efforts to establish a common European constitution and other institutions as well as symbols can be understood within Guen’s framework as its attempt to create the fourth category of soft power over its member countries (p. 126/7).

An epistemology based on communication is applied in this thesis, and this serves relationships including international relationships well. Thus, materials opened up by Derrida’s analysis of the Logocentric (such as postage stamps of the artist Qi Bai-Shi issued by the USSR in 1957 and Ghana in 2014) as communication media convey meaning about these international relationships. The importance of Derrida’s account of communication will be considered in Chapter 3 below.

Indeed, Jang & Paik (2012, p. 197) consider that, as a precursor to soft power, “complex interdependence gets its driving force with the advent of network society”; a statement that

simultaneously refers back to Foucault's conception of networks, and Poster (1990) who refers electronic communication to Derrida's *The Post Card*.

Guen's (2009) fifth category of soft power is "geared towards a domestic audience rather than an international one", raising the question of the audience for the cultural expressions within the space programme. Guen does however continue by saying that "without an international dimension this category could not exist", acknowledging thereby that the international dimension, in his opinion, is ever present. In support, Sheehan (2013) challenges what he calls the 'China threat' school of thought" and proposes that China's space programme is "overwhelmingly driven by domestic rather than international considerations".

Domestic considerations are evident and are discussed in terms of ideology in Chapter 9. For example, in 2014 the Chinese government conducted a mass consultation by internet on the name to be given to the lunar lander accompanying Chang'e 3. These names were published by individuals who had registered their identity on the web page. The day after an editorial in the state-run newspaper, Global Times (2015), commented "The disturbing thing is that the Chinese public does not have a strong will to catch up with the US in space exploration...Perhaps it is time China sets up a special organisation for space exploration", a second activity was established to name the Chinese research satellite that will investigate "Dark matter" (Chinese Academy of Sciences, 2015). In these examples, electronic communication conveys messages, intentional and unintentional, about science, civilization and culture, and popular participation

Guen also speaks of a "soft power Balance of between the US and China" (Guen 2010) p2. The Chinese analysis of soft power is analysed by Young & Jong (2008) who warn (*ibid.*, p. 455) that "there is currently no consensus on the definition of soft power in China". They note (*ibid.*, p. 415) that in its application it "rests on three resources: culture, political values and ideas, and foreign policies" and discussions in China fall under national development strategy and foreign policy.

Mahbubani (2018), in his "provocation", argues that the West – by which he means Europe and the USA – have lost their geostrategic *savoir-faire* at a time when Asian countries, predominantly China and India, are ascending in relative world economic power. In earlier work (Mahbubani, 2005) he argues that the US view of China, which he says is erroneous, is that "the current Chinese government is a relic of the communist era, a piece of history that has mostly vanished" (p. 51). Referring to new dynamics, an interview with him is reported in China Daily with the sub-heading "Asian intellectual says the West must come to terms with a multipolar world" (Moody, 2019, p.31). *Multi-polarity*, a challenge to the *uni-polarity* of American hegemony, gives one context to consider China's action in space.

In practical terms, considering the relation of India and China, Baru (2015) considers both countries to be "civilizational states" and that "multipolarity or polycentric dispersal of power and prosperity defines the normal state of the world."

Significantly, competition in space exploration between India and China is prominent in the work of Bagla and Menon (2014). Thus the authors refer to a realpolitik (p49): ". the dream [of going to Mars] picked up steam with the loss of the Chinese mission in November 2011 and ... this was like a door being opened for ISRO [India Space Research Organisation] to sneak in a proposal for Mars exploration."

In the case of the Russian Federation, Lavrov (2011) asserted that a strong national identity is the basis of soft power, seeking” the affirmation of our country as one of the leading states of the modern world — as befits and follows from its history of many hundreds of years.”

Andreev (2014) added that “By its nature, national identity has clear international dimensions. First, national identity is evaluated by public opinion and elites around the world. This is the matter for soft power. Second, the external environment influences – indirectly or intentionally – the formation or transformation of national identity at home.

Andreev concludes in his paper that “Both factors are closely interconnected. A country that takes a more deliberate approach to formulating a conceptually cohesive identity will be more successful at projecting its image abroad. Conversely, a less cohesive national self-consciousness is more susceptible to outside propaganda and its image is more vulnerable to distortion.”

Makei (2014) comments that “Identity politics” are gaining in importance, or at least, in recognition as important. He considers that “It is becoming vital to all countries, because all of them need to address the causes that give rise to discrimination, aggression, and alienation. They need to do that, first and foremost, for the sake of their own domestic peace and stability.”

In addition to the assertion of identity as a significant factor in our analysis of the soft power relationships between states, and in the power relationships within them, Makarychev (2011) examines “multipolarity” (external and internal). He applies (p3) “the idea of resignification” to trace “the discursive trajectories of the multipolarity concept”, and introduces Polycentrism (Makarychev (2011) p.18). Finding it to be “in tune with Michel Foucault’s (and Gilles Deleuze’s) theorizing of power as a combination of different spaces which may overlap yet preserve their relative autonomy”, he seeks to “single out domains of *political power* with its key holders possessing of vast military resources and securitization abilities; *managerial power* which manifests itself through the instruments of governmentality, including technical (de-politicized) administration and policing; *disciplinary power* that acts in the forms of regulatory mechanisms of constantly – though slowly – evolving norms; and *bio-power* which trans-nationally takes the forms of “responsibility to protect” and “humanitarian interventions”.

Makarychev concludes that “The fragmentation of power relations into spaces/segments, which is at the core of the Foucauldian approach, seems to be quite consonant with the poly-centric worldview, since each of the forms of power presupposes its own key subjects that are in principle unable to balance – in a traditional sense – each other due to different mechanisms, institutions and resources they are based on”.

Lukyanov (2014) introduces, within the world order, “Polycentric Transformation”. He comments that “A new world order, much spoken about at the turn of the 1990s, has never emerged, and attempts to establish it (unipolarity, American leadership) have failed”

We locate, then, a national identity as the root of soft power, within a multipolar world, and a polycentric country. This applies to China as much as to Russia. The action is polycentric, multipolar and extends upwards into space.

Other easy but non-threatening answers

Commentators have been addressing the imperative for China to have a space programme in formulations alternative to military domination and hegemony. They have considered: prestige; a

“place at the table”; science and technology; affirmation of national cultural identity; a national and cultural dream; and/or a threat to the United States.

Sheehan (2013) considers that (p. 111): “One of the key motivations for the Chinese space programme is the pursuit of prestige. Such prestige provides political benefits for the Chinese government and the CCP [Chinese Communist Party], and affirms China’s 21st century status as one of the most important countries in the world”.

Dupas (2010, p.147) in his review of the history of space exploration in China by particular historical reference to the former Soviet Union and to the contemporary Russian Federation (*ibid.*, pp. 233ff), considers that China follows its own path in independence, but without excluding international co-operation. He raises the prospect of a China in co-operation with the world at large.

Kulacki and Lewis (2009, p.30) consider that China is seeking what they call, in metaphor, “A place on the mat”. They observe that during the Cold War there could be only one “first”, only one winner of the “Space race”, in which both sides feared “falling behind” (p.31), but “By contrast, the Chinese metaphor carries the connotation of joining a club, becoming a member”. They distinguish this from other explanations including seeking national prestige or boosting the legitimacy of the controlling regime.

Yao (2010) considers the importance of manned spaceflight to China and highlights “two themes: Science and Technology” and “Chineseness”. These two are interrelated. By “Science and Technology” she refers to “the important role of military, science and technology concerns” in the late Qing dynasty (early twentieth century) and notes that “it [the role] was a product of the national-identity making and a demand of the national spirit”. This point expresses the significance of Chinese characteristics, national direction and historical significance, which continue within the Chinese space programme as institutional reform.

The “China Threat” as an easy answer

A most prominent and easy answer – but not the only one - is that of the “China Threat”. This is an easy answer which is found frequently in proponents of the national security of the USA and its allies. As Roughneen (2018) reports, succinctly, “With the U.S. Government pledging to resume manned missions to the Moon, and eventually send a mission to Mars, Cold-War-style competition over space exploration is re-emerging – between China and the US this time”. Allison (2015) considers that China, as a rising nation, falls into the “Thucydides’ Trap” of unavoidable war with the USA. Considering all the “others” who might threaten the national security of the USA, he writes: “The preeminent geostrategic challenge of this era is not violent Islamic extremists or a resurgent Russia. It is the impact that China’s ascendancy will have on the U.S international order, which has provided unprecedented great-power peace and prosperity for the last 70 years”.

Forden (2008) reviews the likely consequence of a Sino-American war in space, and concludes (p. 151): “The short-term military consequences of an attack by China on U.S. space assets are limited. Even under the worst-case scenario, China could only reduce the use of precision-guided munitions or satellite communications into and out of the theatre of operations. They would not be stopped”. But Wang (2010, p.565) claims that China’s “Intentions can change as capabilities rise”, thus leaving entirely open the possibility that military aggression on the part of the PRC would be intentional and could not be stopped.

Co-operation with China in space technology remains a contentious issue in some quarters. Joske (2018) reports on the Chinese military’s collaboration with foreign universities on such things as the 北斗 Bēidōu navigation system, “risks harming the West’s strategic advantage...Helping a rival military develop its expertise and technology isn’t in the national interest, yet it’s not clear that

Western universities and governments are aware of this phenomenon.” Hamilton and Joske (2018) extract the central information and claims in this report for a public but non-technical audience in Australian news, thus perpetuating the answer in the Western consciousness.

By simply asserting the opposite, the idea of a competition or race between China and the US (or India), or even a threat to the USA from China, does not entirely go away. It is therefore important to broaden the discursive arena and consider if there are any other settings for space policy and the Chinese conversation about it, which might have validity.

The First Lens between Western commentators and China

The Chinese Government is itself promoting a national space culture, which is the object of study in this thesis. This term “space culture” is accepted by Dunnet (2016), concerning the history of the British Interplanetary Society, who writes (p. 17): “we have seen the significance of culture, place and narrative in formulation of this discourse” [the geopolitics of outer space]. It is possible, then to talk of ‘Culture’ as an accepted term not only in the reference to nation or civilisation and this examination also addresses the concept of “Place” (Chapter 6) and the term “narrative”, discussed in Chapter 3.

It is acknowledged that within this culture of China the Chinese Communist Party’s ideology is paramount. The comment made at the lecture to the Shanghai Aurora Vocational College, presided by the Party Secretary of the Shanghai Satellite Engineering Institute, the keynote speaker to an audience including students of the 18th Senior Party School presenting the ideological and political framework of “Chinese Spaceflight Across the World”. (Huang Min, 2017), speaking of “national humiliation” in the twentieth century, is profound. “Humiliation” is a frequent word seen in twentieth century Chinese history.

But it is important to note that this thesis is written in the West. If, in the aerospace spirit, China recovers from this twentieth century humiliation, then it is the culture implicit in the methodology and epistemology of this thesis that has been at least partially responsible for the humiliation.

Schudson (1997) refers to the need for “a normative order that insists on equality and a social order that insists on a certain level of public-ness in talk.” Crucially, looking at the outsider to the public conversation, he writes (p. 306): “Strangers will miscommunicate because they do not share background knowledge and communicate to common norms”.

For this thesis, while permitting the eclectic use of concepts across twentieth-century analytic thought, while permitting Foucault, Derrida and Habermas to work together, as it were, the use of a critical discourse analysis or OSINT owing to them can avoid neither their own cultural background nor the walls of the Enlightenment, Renaissance and Classical philosophy against which they kick. To acknowledge our differences is a step forward in overcoming them.

The Second Lens on China

Some commentators of the Twentieth century protested that the opprobrium attached to the word “Communist” in relation to the Soviet Union might not or should not apply to the Peoples’ Republic of China. The question about the nature of Chinese communism arose before and after the founding of the People’s Republic, in the 1940s. In a wartime pamphlet, Owen (1942) reports on both Chiang Kai-Shek and Mao Tse-tung (contemporary spelling). Asking “Was it really Communism?” Owen, journalist and former and future Liberal Member of Parliament, draws attention to the rural and peasant origin of the Chinese Communist Party (CCP), and introduces the idea of “Rural equalitarianism” as its root.

Similarly, the respected author on China, Edgar Snow commented that (Snow, 1968, p.219): “Chinese communism as I found it in the Northwest might more accurately be called rural equalitarianism than anything Marx would have found acceptable as a model child of his own.”

John F. Kennedy, later President, referred to this idea in a 1949 speech (Kennedy 1949). In a context of the recent victory over Japan, he wrote, in a rhetorical disagreement: “There were those who claimed, and still claim, that Chinese communism was not really communism at all, but merely an advanced agrarian movement which did not take instructions from Moscow.”

Stormer (1964) followed this line of argument in his claim that the description as “agrarian reformers” was a product of conspiratorial manipulative obfuscation (p.30, 56) and that China was as Communist a state as the Soviet Union, and by implication, the enemy of the USA.

This debate does obscure the origin of the CCP in rural society at a time of lesser urbanisation. This urban /rural split is important in contemporary China. In a review of the Belt and Road Initiative, Wang shows (Wang ,2017, Figure 13 p.116) a geographical split along what he calls the “Hu line”, a diagonal from the North-East to the South West, isolating the rural society of the West of that line from the (mostly coastal) cities to its East. Despite the argument that China may or may not be a fundamental movement proposing rural equalitarianism, following urban migration and the growth of urban areas the Chinese Communist Party is faced with a geographical inequality and an adaption to modernity.

The Third Lens on China: ethnic group and regional differences

Within China, not only is seen the split along the Hu line, but also a society which is admitted to be multi-ethnic. How could it be otherwise, when the modern country extends over such a distance to all points of the compass, and dispute continues over lands? Yet, as Lee points out (Lee, 208 p.8) the “West’s experts and specialists” “had long been treating this vast and ethnically, culturally and linguistically complex land as a homogenous entity.” Lee writes that (*ibid.*, p 15): “it is assumed by scholars trained in the dominant tradition of sinology that ‘Han’ is generally equal to ‘Chinese’ – a convention maintained by the current regime.”

The cultural products reviewed in this thesis include references to this ethnic dominance. Astronauts propose a legend from space which can be interpreted as reference to unification of North and south, and cultural items are generated and postmarked from places in Inner Mongolia, Xinjiang and the South China Sea, with the encouragement by the national space programme, as a means of promoting solidarity amongst aerospace workers.

Lee considers that (*ibid.* p.113): “The old only becomes problematic when aspects of premodern culture are recycled as ideology to justify conservatism and repression of both the individual and society as a whole, as has been the case with Confucianism since the 1990s”. The question arises whether the Chinese use “culture” within its space programme to support the programme or to support a unified Han culture across the PRC. The social construct of Confucianism will be visited later in this thesis (Chapter 9).

Lenses between researchers and space exploration

The fundamental question is to ask why space exploration exists: why, as Kennedy asked, go to the Moon? Arguments by space advocates will be addressed directly in later chapters of the thesis. Here, we shall just establish dominant assumptions which may come between researchers and the phenomenon.

The military/civilian relationship in space activities