

**A progress report on the Meiji University School
of Commerce course:
“Special Themed Practicum:
An Introduction to Astrosociology”**

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Abstract: This paper will describe in detail the aims and progress of the “Special Themed Practicum: Constructing the Future Society: An Introduction to Astrosociology” course, an undergraduate class currently being undertaken at Meiji University’s School of Commerce. After explaining the circumstances surrounding the course’s inception and its significance within the milieu of human sciences, the attention will be focused on the methodology, as well as student reactions to it. Finally, the paper will attempt to suggest further avenues for expansion and development of the key concepts outlined, in order to bring about a forum for fresh exchanges of ideas regarding possible human futures from a wide variety of perspectives.

Keywords: education, teaching environments,
practical applied knowledge, multidisciplinary approaches, social sciences.

1. Introduction

This paper will introduce and describe the objectives, methodology and results of the course entitled, “Special Themed Practicum: An Introduction to Astrosociology”, conducted at Meiji University’s School of Commerce.

From September 2010, for one semester a year, I have administered a course on the “Astrosociology”, a still-nascent academic field encompassing aspects of sociology, anthropology, cultural studies, law, economics, politics and many more areas to the end of analyzing the relevance of research and development in aerospace engineering and astrophysics on contemporary society from a human sciences perspective.

My original inspiration for (what I would later recognize as) Astrosociology as a research subject was witnessing demonstrations against Heathrow Airport’s expansion in late 2008. In the midst of the construction of the airport’s new Terminal 5, the British mainstream media was devoting heavy coverage to a group known as “Plane Stupid”, a now-defunct activist organization dedicated to the downsizing of the flight industry – such as the eradication of low-cost airlines – in the name of environmental protection due to the pollution caused by aeroplane exhaust. As I watched these arguments unfold, a thought entered my mind: “What if this was not an airport expansion project, but a pioneering spaceport construction project?” I came to the conclusion that groups like Plane Stupid would rise up against such a proposal in a similar fashion.

In January 2009, as soon as it was revealed that Scotland was in talks with Virgin Galactic to have the UK’s first spaceport located within the country (specifically, Moray’s RAF base), Plane Stupid once again made a public comment on its blog¹ to the effect that such a move would be a waste of taxpayers’ money and yield little positive realistic results (“Star Trek fantasies”), focusing instead on the environmental impact. Referring to another article – this time from 2007 – from the online edition of Discover magazine², combatively entitled “A Spaceport for Tree-huggers”, in which Virgin Galactic’s CEO Will Whitehorn is quoted as describing the carbon footprint from a Virgin Galactic sub-orbital trip as comparable to a typical New York-London round trip, Plane Stupid builds on erroneous critique and expands into hyperbole. The first obvious failure in reasoning is the Discover article’s insistence on using Space Shuttle exhaust levels as reference data in lieu of the unavailable WhiteKnightTwo specifications, which are classified.

The entire situation can aptly be described as a snowball effect of misunderstandings feeding off each other, and points to a fundamental lack of a working understanding of what these companies are trying to achieve and how they can do so. These misunderstandings can only be rectified with attempts to propagate knowledge more actively, and allow common sense and reasoning on the subject to cover a widespread area of demographics and class. The key issue that Space Shuttle technology has absolutely no bearing on how WhiteKnightTwo operates should be a conclusion that people can form for themselves, based on the information available in the same way that it is generally understood that, for example, helicopters do not need runways, but rather helipads, and so a discussion on the construction of runways for helicopters would be a waste of time. I believe that this level of understanding is required before meaningful discourse can evolve naturally and freely, and it is why I would like to push for the expansion of Astrosociological study in education.

Previously, I had published a brief outline of the course and what results were expected while it was still in the planning stages (and beginning the couple of first classes) in a paper entitled “Teaching Astrosociology: Science-fiction as classroom material for humanities-based hypothetical discourse of space exploration and development” in the Meiji University Journal of Humanities³. This paper will explore those issues introduced in the previous paper in further depth, as well as forming a contrast of how the classes were envisioned and how they eventually manifested themselves.

2. Aims of the course

The main aim of this course is to develop and nurture a critical faculty within the minds of the students concerning the world around them. Rather than lecturing about the entire history of the space race, aerospace engineering and space exploration, the students are expected to use the tools at their disposal in today's "information age" and establish their own contacts in order to gather data on society and its attitude towards the space industry. The role of the teacher in this case is to provide background information using a variety of resources, to act as hints for the students to conduct their own further research. Additionally, the teacher will guide the flow of the arguments presented in class by constantly providing challenges such as how the students would go about tackling opposing views to theirs – for example, the issues of budget cuts for state-funded space programs: are they missing any vital viewpoints when observing this debate? Or are they aware of the ramifications in terms of the potential dangers of undermining safety measures when considering the extent of cost-cutting measures for private firms engaging in new fields such as space tourism? Essentially the role of the lecturer/teacher ought to be more of a facilitator for the discourse to unfold in a natural and organic way, and to mediate the discussion without applying too much influence to the final outcome.

This way, the students feel that they are in control of not only the classroom environment, but also their activities outside the classroom in between sessions, during which they conduct surveys and other projects, eventually bringing about results which are then organized and presented at the final open report session.

What the course does not do:

- Set forth a pre-established set of principles or values as to the benefits of space exploration and development
- Indoctrinate the students into a rote-learning method of memorizing facts
- Convince the students into thinking that there is ever an absolutely correct answer and an incorrect answer

Though I will touch more on this in later sections of this essay, I ought to emphasize here that the "Special Themed Practicum" course is entitled that way so as to invoke a

proactive sense of problem-solving and task-managing. Thus, the students are expected to face their challenges and handle themselves using the tools at their disposal in as innovative a fashion as possible, with those students expecting the “answer” to be brought to them eventually falling behind.

3. Methodology: Syllabus and activities

The main course syllabus is as follows:

Session 1: Space exploration/development and society; Self-introductions by course participants

Session 2: Group separation; “public awareness of space issues” survey

Session 3: Space tourism business 1: Virgin Galactic case study

Session 4: Space tourism business 2: Explanation of technicalities

Session 5: Space tourism business 3: History and future

Session 6: Orbital elevator 1: Basic concept introduction

Session 7: Orbital elevator 2: Construction and usage, technical explanation

Session 8: Orbital elevator 3: Problems and possible solutions

Session 9: Guest lecture: JAXA Kibo Forum

Session 10: Space Colonies 1: Concept introduction; Gerard O’Neill’s vision

Session 11: Space Colonies 2: Problems in execution and possible solutions

Session 12: JAXA Tsukuba Space Centre field trip

Session 13: Survey results analysis; presentation preparation

Session 14: Final group discussion: Possibilities of Future Society Construction through Space Development; Final preparations for presentations

Session 15: Final Presentations and conclusions

Other specific details are outlined in Japanese on the course’s official webpage⁴.

The conduct of the classes is divided into two main formats which alternate throughout the duration of the course; firstly, a lecture-style class where the lecturer would provide background information while guiding the flow of discourse between the students in an interactive environment, and secondly, a discussion-based session where students group themselves into teams, each with their own objective, the ultimate aim of which would be realized at the end of the semester. This objective can be anything that the students feel is required in society in order to help bridge the gap between the science-engineering sectors and the general public. Before moving onto the groups’ own projects, the first task is to conduct a survey to ascertain the level of awareness within the general public regarding the activities of JAXA and the issues surrounding them, as well as opinions on expenditure for their funding.

The first problem lies in the low level of knowledge and expertise of the students

themselves upon conducting these surveys. Although some students are already aware of the basics regarding the activities of the International Space Station and the role of JAXA within it, most are not, since the course is mainly geared towards students of a letters background mostly focusing on cultural factors. Despite one aim of the course being the infusion of new contributions and opinions from a cultural studies background in order to open fresh discourse, the reality of the classroom situation calls for a considerable amount of time to be spent on explaining scientific concepts such as “low Earth orbit”, how rockets are actually launched, centrifugal force, geosynchronous orbit and such.

The challenge here is to strike a balance between the different set-ups of the classes: as mentioned above, some classes will need to be lecture-styled, some discussion-based, and others yet activity-based, in order for the participants to gain an all-round understanding of the issues as well as developing further their innate critical faculty. All the while, however, the students must maintain a high level of motivation, and it is this area which poses the toughest challenge for the lecturer. The difficulty of keeping the students interested in outer space themes is amplified if there is no discernible and/or tangible connection to everyday life and society, and it creates an insular environment, both inside and outside of the classroom, as opposed to an open, free-thinking one, which is what the goal is here. To add further complications to these predicaments, this lack of interest within the general populace is in fact one of the key issues to be tackled and researched by the students, and so it is an uphill struggle until they realize why this is so important – if they and their friends and family can get by in life without considering these issues, why problematize the phenomenon at all? Lastly, since the main focus of the course is on the students themselves and the activities which they undertake, instances of dwindling motivation could be detrimental to the final performance in the report presentation, due to the very limited amount of tasks specifically set by the teacher. As previously mentioned, the classes are set up so that the teacher provides basic background information, giving hints as to where to research further, and guides the directions of discussions and prompts students to deliver their input in many instances. However, the teacher delivers minimal instructions. Therefore, without apt motivation, the students end up with little to work with, awaiting outside input which will never come.

As well as this, on the cultural studies side of the coin, the history of the space industry, involving the space race and its Cold War background, the factors behind the

moon landings, the Apollo missions, and such details are examples of specific data which must be introduced to the students, then considered and analyzed. These details are important in order to establish a critical faculty within the students, with a working knowledge of the background of these issues in order to be able to ask educated questions to both experts and laymen.

These gaps in knowledge are not expected to be filled within the extremely limited class hours themselves, but through the practice of private study. Since the lecturer's role is to provide basic background information to the tasks faced in the class as opposed to a full working knowledge, the students are expected to pick up on particular points of interest and search for information out of their own accord. Then, they are expected to use what they have learnt and put it into practice in their group activities. One way in which this is facilitated is through the usage of the internet, namely the course blog⁵. The blog is designed to promote interactions between all the course participants as well as the lecturer. Here external information and materials can be shared for reference, as well as in-depth impressions of the lectures themselves, field trips or additional questions for which there was no time during the sessions. It also serves as a promotional platform through which the outside society can gain an insight into the types of activities students in the course are undertaking.

The lectures themselves are conducted with constant student reciprocation – that is, not only are the students at any point allowed to interject with opinions and questions for the most part, but also they are frequently prompted after major points within the content as to formulate an educated guess on what they think the factors for a certain aspect of the theme could be, or to hear their reactions to a certain keypoint.

Guest lectures also assist in formulating a deeper understanding of some topics such as how JAXA applies its allocated funding. As well as this, the guests from JAXA can engage with the students on an individual level, bringing to their attention a more personal image of the agency, and one which they would not otherwise be aware of through the traditional means such as television and the media, thus narrowing the distance between them and space-related activities. Some interesting conversations arise from these interactions and the students are elated to hear of the interests of the JAXA employees growing up, leading to their eventual profession. The JAXA PR divisions also benefit from these exchanges by being able to promote community exchanges, and in fact the course was featured in an article on the JAXA Kibo Forum

homepage⁶.

There is also time allocated for free discussion (almost) every week – what are the main issues and what is the nature of the controversy surrounding them? Rather than pointing these out, the students themselves can formulate the most common public opinions with light prompting. In the very first discussion session, in order to ascertain what the concept of “space” represents to each student, each individual has to share with the rest of the class what they think of when they hear the word “宇宙 (uchuu, “space” in Japanese)”. The keywords are then grouped together and we try to establish recurring themes such as space as having “mystery” and being “the unknown”; the importance of “safety”, and also whether the students feel that these concepts are reasons for evoking “fear”, or “sense of wonder”. These students would then be invited to engage in discussion with other students holding different opinions. This process serves to establish not only the fundamental knowledge of space and layman perspectives of it, but also helps to accustom the students to the discussion format, which is considerably rare in Japanese education.

The other set-up within the class in addition to the student-participation-assisted lectures and the rather more formal guest lectures is one which is oriented around the discussions within the groups themselves, beginning with brainstorming sessions in the early weeks in order to lay down and commonly share key concepts with the other members. Eventually, these evolve into planning sessions for the groups’ own projects, although ideally most of these meetings would take place outside of the classroom during the students’ own time as homework.

The short span of the course – only a half-year term, equating to four months of actual classes – calls for a smart balance of these separate teaching styles – the lecture format, the discussion and the activity. The culmination of these is witnessed at the final presentation given at the end of term, usually held to coincide with the “campus open day” at the university, so that members of the public – namely, prospective students and their families – are able to attend. This aspect has the potential to be one more opportunity to connect with society.

4. Results:

The students vary in gender, interests and even ideas of what space and our society's relationship with it is like. Due to this, there has been a wide range of topics on which the activity groups undertook their respective projects, some from a hypothetically teleological perspective, such as the issues expected to arise if one were in charge of the administration of a nursing home in outer space, for example the problems of nurse shifts (cosmic radiation would be more harmful to a younger person than to an older citizen, thus a rapid rotation for the staff is necessary, but were that to be implemented the important relationship between the resident and staff member would be somewhat diminished). Others presented on issues specific to current affairs such as JAXA's role in society, most notably its recognition among the general public and the difficulty of managing PR for a government-subsidized agency.

In September 2012, I asked former course participants from the past three years to share their retrospective views on the class and how it had affected their ways of thinking, if at all.

Student A was the leader of a group of four students who planned and carried out a project entitled "Space for Kids". The concept was to help create the foundation for an interest in space by teaching the most fundamentally basic aspects of the Earth and space to pre-schoolers. He and his teammates did this by organizing a session at a kindergarten involving story-reading, painting activities and a whiteboard brainstorming session. Student A writes:

"In particular, the opportunity to conduct freely my Space for Kids activity was one of the few experiences which made me feel glad that I entered the School of Commerce at Meiji University, plus it gave me confidence to have gotten the actual results we did as a result of that activity.

"Personally, I have little interest in the scientific or political aspects of space research. Rather, I am obsessed with "the charms of space", such as the beauty of the stars in the night sky and the mystery of the universe. As I got more interested in these "charms of space", I realized that to many people, especially children, it is very important to feel these emotions – and that can be a good opportunity for people to gain more interest in various aspects of space. Had I not taken this course, I am sure without a doubt that I would not have thought of things this way. These days, I love space to the extent that I regularly climb Mt. Fuji to look at the view of the stars. As a

result, I can say that I feel the Astrosociology course has definitely had an effect on me.”

Student B had a slightly different experience, as her group focused on the commercialization of space-related products, and how through this, JAXA manages their public relations and thus may gain more awareness in the general society.

“Through this class, I felt that the topic of “space” became closer to me. I also thought that it was a valuable experience to have visited the JAXA facilities, which I consider to be the pride of Japan. Recently, thanks to Hayabusa and manga works, opportunities for everyday people to learn about space have increased, however, upon learning of the reality that the allotted budget is being reduced, I realized that much more needs to be done in order to raise public awareness of space. I felt that in that sense, people from a human sciences background such as myself have their own approach to the issues as much as natural science-oriented people like engineers.”

Student C was another student from 2011 who gained a keen interest in the nascent field of Astrosociology to the extent that he made a Twitter account which he used to help spread a variety of space-related news in simple terms to the general public in the Japanese language, as well as contributing to the recognition of the course itself.

“‘Conceptualizing the Future Society’ – that is the background of ‘Astrosociology’. ‘Conceptualizing’, rather than ‘constructing’. Through this course, I have thought about the relationship between ‘space’ and ‘society’ (perhaps I even thought about the functions of society through the prism of space).

“Originally, I imagined ‘astrosociology’ as a field of study through which the future society could be ‘created’ (or rather, that ‘astrosociology’ was a field for the ‘construction’ of the future society). However, looking back now, I see ‘astrosociology’ not as a field of ‘constructing’, but a field of ‘conceptualizing’. We may imagine societies, but we cannot create societies (or, to put it another way, realizing the ideal is extremely difficult...).

“It is true that if the costs required for travel between Earth and space fall, it may be possible to build a society in space. However, one cannot build a utopia. I believe that society is convergent evolution, like a living being (society is perhaps like a Leviathan...).

“In that case, if creation has no role, what is the role of ‘astrosociology’? In my view, that in itself is ‘conceptualization’. It may be difficult to build the ideal, but it is simple to conceptualize the ideal. Conceptualization is, in other words, a hypothesis, so we

can reduce the instances of ‘unforeseen circumstances’. To asymptotically reduce the ‘unforeseen’ in society is what I believe to be one role of ‘astrosociology’. However, this is limited to its relation with the field of space.

“I have reached one fragmentary conclusion to the issue of the relation between ‘astrosociology’ and ‘society’, but I still have not reached one in terms of the relation between ‘society’ and ‘space’. I want to continue to consider this in the future.”

Finally, Student D was one of the students in the very first year of the course, and he shares his reminiscences here.

“Although at the time I had no knowledge of space development, through this course I gained an awareness of Japan’s position in the global playing field of space development, as well as the concepts of space tourism and the space elevator; I gained an understanding of things which I had no idea about.

“Also, I learnt about the controversy surrounding space development and that it is a very difficult situation in many respects. Personally, I thought that the continuation of space development is necessary as we can see the results of it in everyday items which have utilized space technology (such as medical equipment, deodorizing technologies, and such). On the other hand, I felt that space research based on a mere adventurous spirit would not be widely supported, and I sympathized with that sentiment.

“There are other problems we need to solve both around the world and in Japan, and if space development and technology can be brought in to be useful for people’s everyday lives, then I feel it is significant to continue that, therefore I hope that JAXA uses that technological power to improve our everyday lives.”

To summarize, the results gained from the course can be said to be most effective in establishing a critical faculty within the minds of the students, having been given the opportunity to problematize several issues in society through the lens of space research and development. Essentially, rather than the students having learned a handful of space-related facts which may or may not prove fruitful for their prospective carriers, they have grown to learn about tackling issues objectively from a variety of perspectives, through the task of planning out a project, putting it into action and lastly presenting the results. These skills have the potential to be applied to any milieu and will no doubt prove to be indispensable no matter the field the students eventually enter.

There is very little praise heard regarding the critical thinking faculty of young

people in Japan – in general terms, approximately two decades of rote learning in the classroom and interminable examinations take their toll on the imagination of normally malleable minds. A university as an education institution has the responsibility to raise able thinkers and innovators to bring about a brighter future. The name of the course – the construction of the future society – is designed to invoke all of these connotations, because ultimately, a future must be sustainable. Sustainability is achieved by the members of society being aware of the past (through both study and interactions with those of other generations and backgrounds), and incorporating it in their decision-making process regarding future plans. This process of research, discussion and application should be continual and frequent, as well as rotary. Members of society involved in this process – and it should be emphasized that everyone has a role to play – learn through a combination of reading, listening and doing. They then relay their experiences to the next generation, who in turn use their critical thinking faculty to adapt these methods so that they are most effective for their generation.

It is my hope that in administering this course I have been able to plant a seed to be sown by a later generation, eventually leading to this process of sustainability in the construction of future societies. Certainly there is much more work yet to be done, in particular in helping the process to expand and reach others who may see the potential in these methods and provide their own input.

5. Expansion and Development - 2013 Symposium ; Astrosociology Research Institute

Having established this course and attempted to build upon each previous year's results through the participation of recurring students, in early 2012 I felt that there needed to be a boost towards further expansion in this field within the education milieu – one which would draw in a far wider array of young people with more varied interests than the limiting method of recruiting students merely from the School of Commerce. To that end, I proposed a workshop which would gather experts in diverse yet interconnected fields of research and activity, and invite discussion between this panel and young – as well as older – members of society. The most noteworthy result so far is the symposium entitled “Constructing the Future Society: A New Japan for the Space Age”, although still in the planning stages, to be held March 31, 2013 in Meiji University: an event open to the public and featuring talks from JAXA members, anthropologists, sociologists, astrophysicists, even animation directors. Most importantly, students will also be encouraged to actively participate in the panel discussions and have virtually equal footing to present their ideas as the guests. Lastly, audience participation and the promotion of dialogue is key to the success of the event and to its eventual follow-up, therefore great efforts will be taken to make this interaction be a central factor in the conference.

The keynote presentation for the symposium is scheduled to be delivered by Dr. Jim Pass and Christopher Hearsey, members of the Astrosociology Research Institute in California, a non-profit organization for the recognition and promotion of the role of human sciences and critical studies on the themes of space in academia in which I am participating as an advisor. My experiences circa 2008 regarding my realization of a lack of discourse and general understanding in society related to space sciences mentioned in the introduction drove me to seek out any academic publications or discussions related to these areas, and I eventually found ARI. Coincidentally, Dr. Pass established an online course entitled “An Introduction to Astrosociology”⁴ at the Kepler Space Institute⁵ at around the same time (2010) that my own was launched in Meiji University. Therefore, I believe the time to be ripe for embarking on a concentrated effort to approach more disciplines and invite experts from seemingly disparate fields, since ultimately we are all human and concerned with our survival, thus it is appropriate that we should share common knowledge of our position within the universe. Astrosociology and its implementation in education institutions is more than the sum of its parts, it builds an international, or moreover, universal, awareness of our society that leads to more open, critical thinking and is conducive to heightened

problem-solving skills. Within our globalized information age, these skills are in demand now more than ever, and it is our duty as educators to instill them through the careful guidance of the newer generations.

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