

The Need for Astrosociological Awareness in Japanese Society

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1. Introduction

Recent space-related news and events such as the meteorite explosion over Russia in February 2013, Virgin Galactic's proposed space tourism venture, Mars One's Mars colonization plan and NASA's increasing reliance on third-party companies such as SpaceX for their freight uses to and from the International Space Station, have seen more and more exposure in recent years, increasing the general public's awareness in outer space and related phenomena.

In the United States, where there has been a long tradition of equating or relating progress and success in the space program with national pride since the days of the Space Race, a sentiment borne out of the bleakness of the Cold War, space enthusiasts are certainly not rare, and even those less enthused within the general public have a working knowledge of the basics in terms of space news and trends, as can be seen with the frequency of such topics featuring heavily in general magazines such as Time and the high ranking sales of books on so-called "popular science" topic, such as those by celebrity physicist Michio Kaku. This suggests a communicative network of information flow wherein individuals move from group to group, sharing and reconstructing the information within each one, and bringing it into a new area for further evolution. Evidence for this pattern can be seen within the very pages of Time magazine itself, which covers news, politics, science, literature and popular culture, with any one of these topics being devoted a cover story at any time.

In contrast, Japanese society is more suited to members of a certain group sticking to one particular area and allowing that group to develop, resulting in a rich and varied culture from a positive standpoint, but also suffering from a lack of unity, to look at the issue conversely.

It is easy to say that this phenomenon can be well observed in the behavior of the members of subculture groups such as the so-called "*otaku*" anime fans, and their seclusion from the rest of society. At the same time, however, it must be stressed that this is happening all across the board in Japanese society, and the shrinking of the mainstream culture is a direct cause of this trend.

The internet has certainly played a part in making these groups more and more active within their own boundaries, as it provides users with the tools to research on information related to what they are interested in, but not the incentives to search for that which they have no interest in, nor to communicate with those who do not have an obvious connection to their hobbies.

It is thus no wonder that the Japanese general public has only recently come to be interested in space phenomena (and that is because of a couple of specific events which we will look at in detail later), where information is not yet free to flow between different groups. Where one member of society may have a working knowledge of a phenomenon such as space debris and assume that everyone in society shares this knowledge, he or she may be surprised to find that that is not the case. This points to a breakdown in the systems for sharing information and evolving overall as a result.

This paper aims to fulfill two goals. Firstly, it will explain the term, “Astrosociology”, a young field of research which promotes multidisciplinary and collaborative investigation into outer space phenomena affecting our society in different ways, providing detailed examples. Secondly, it will attempt to frame this topic of astrosociology and why awareness of it is needed within Japan, not only as a research field, but as a concept which could improve the dissonant nature of Japanese society, which has long been criticized for having apathetic youth, exercising poor leadership skills in terms of business and politics, and suffering from economic stagnation.

It should be noted that the goal here is not to promote the concept of private companies entering the field rapidly becoming recognized as “space business” to inspire Japan to strive for new business opportunities – such an agenda would carry a heavy bias towards exploitation of the space environment and would run counter to the argument for multidisciplinary discourse which this paper is attempting to push. Rather, it is to promote awareness of the issues which lead up to that and other similar schemes of thought, and what clues Japan and Japanese students and researchers can pick up from that.

2. Definition of Astrosociology

The word “Astrosociology” has been around since 2003, when sociologist Dr. Jim Pass established the field, after which he wrote the inaugural essay, in 2004¹. Though the definition has been adjusted slightly over the years, we can sum up the basic definition of “Astrosociology” as follows:

Astrosociology: The study of astrosocial phenomena that arise from the two-way

relationship between the ecosystems of Earth and outer space.

And, additionally:

Astrosocial Phenomena: social, cultural, and behavioral patterns associated with stimuli traced to the outer space ecosystem.

The scientific study of “astrosocial phenomena”, then, is what astrosociology entails overall, which includes all social conditions, social forces, organized activities, objectives and goals, and social behaviors directly or indirectly related to (1) human spaceflight, exploration, and settlement or (2) any of the space sciences (e.g., astronomy, cosmology, astrobiology, astrophysics).

2.1 Examples of Astrosocial phenomena – The rise of private “space business” companies: Mars One

One of the reasons for the incorporation of issues related to space activities – human or natural – into both human sciences research topics and the humanities education sector, is the recent trend of private companies entering the nascent field of space business. Many companies are taking advantage of the marketing potential of space as a “new frontier” which holds a wealth of resources waiting to be tapped, thus romanticizing the idea of pioneering into a fresh new era, the benefits of which shall be reaped by humankind alike. In reality, there is a serious lack of understanding among the general public regarding the usage of space for profit, as well as the plausibility and inherent ethical issues in the implementation of many of these plans – it may be the case that the companies are attempting to cloud these issues and establish infrastructure based on a biased (convenient) consensus, before certain issues are fully explored from all sides.

Let us look at two specific examples of currently developing private enterprises in the field of space. The first one is the Dutch-led expedition to Mars, called “Mars One”. The goal of this venture is to establish a human colony on Mars, a process which will involve several one-way trips to the planet, the first of which is currently due to launch in 2023. Participants for this mission are to be chosen from applicants responding to an official call for volunteers – already hundreds of people, many in their 20s and 30s, have applied through the Mars One official website ⁱⁱ. These people would leave Earth and never return.

The program would be funded by corporate sponsors, but the key attribute is the fact that the entire process of training the astronauts, the launch, the space trip, and

ultimately their arrival and subsequent life on Mars will be televised in the popular format of a reality TV show.

Putting aside the technicalities and issues of plausibility regarding manned spaceflight for six to eight months and the construction and operation of the resulting Mars base, including provisions, which are the focus of the natural sciences researchers, we come across several issues which demand attention from the human sciences perspective. To begin with, it is easy to imagine people from the general public as astronauts but with the added pressure of having left civilization forever, it will no doubt cause unimaginable stress – on a scale we have never seen before.

JAXA, under its Kibo (the Japan-administered Experimental Module section of the International Space station) Utilization Forum, welcomes proposals for experiments from the life sciences fields to be undertaken on the International Space Station, but the human sciences research seems to be lacking. Referring to data concerning the human interaction onboard the ISS pinpointing the causes of stress and tension, could provide clues for considering the environment of the planned Mars settlement. As the situation stands, there may be too many unknown variables to accurately predict what kind of a “society” – if such a term is applicable – the colony might develop into. Will there be a dominant ethnicity or nationality, depending on the backgrounds and cultural identities of the participants? Can the chain of command be undermined? If so, who leads? Considering that the settlers will have to be in an enclosed space for the rest of their lives, effectively, what will their psychological repercussions be after years of living in a constrained area with the same people?

Another issue to be considered is that colonies and settlements turn into natural, evolving societies when their offspring is born and raised, but nobody knows if the human body is capable of childbirth in an environment where different gravitational forces apply. Medicine and biology may provide answers, but from a sociology perspective, the settlement can no longer follow the principle of a free and developing society, when it is so dependent on an influx of new members rather than producing succeeding generations. In May 2013, Bas Lansdorp, CEO of Mars One, declared Mars to be “no place for children.”ⁱⁱⁱ In other words, he was outright banning reproduction on Mars. This leads to further issues, such as his right to exercise authority over procreation. Not to mention issues governing sovereignty, nationality, cultural identity and such.

2.2 **Examples of Astrosocial phenomena – Space Solar Power**

Space Solar Power, or Space Solar Energy, is the concept of power generation from

sunlight, that is purer and more efficient than that which can be harvested here on Earth. That is to say, Earth-based solar power – using solar panels atop rooftops and across special open-air fields – can seem like a clean and renewable energy source to the average person, but in actual fact it has several issues which prevent it from becoming a true alternative energy source to replace fossil fuels, namely the thickness of the atmosphere filtering out a lot of the sunlight (for a highly simplistic example of how much this can fluctuate, imagine the amount of energy a cloudy, rainy day can provide, as opposed to how much power can be generated on a bright, sunny day), and, of course, the bother of having to deal with night, a long period where no sunlight can be collected.

As the development of infrastructure in space continues, from the space hotel which Russia is planning to the development of other facilities set to replace the current ISS, construction of a space solar power generating station is an idea which has gained considerable traction in recent years. The idea is very simple, yet carries clear conviction. Since there is no atmosphere to act as a filter in space, and there is no “night” per se, a space solar power generator can provide enormous amounts of electricity to Earth, 24 hours a day, and at minimal risk compared to more traditional methods of procuring energy.^{iv}

The sales spin, however, carries certain political subtexts which are one-sided and perhaps rather alarming.

Firstly, one poster shows a computer image of the space solar power panel satellite concept floating above Earth, with an all-capitals headline reading, “UNSPILLABLE.” Instantly, this calls to mind a reassurance that this method of power generation is safer than mining for crude oil. However, it is our applied connotations being manipulated that lead us to this conclusion. To begin with, the first thing we, as average citizens not so well-versed in the technicalities of energy production, are being told about this entirely new concept is that the accidents and damage caused by errors in the drilling and transportation of oil are guaranteed not to occur in this case. This points to a push factor, rather than a pull factor, because we are learning very little about what the particular attributes of space solar power are, other than how it differs in terms of safety (in one specific element – its “spillability”) from oil.

The paragraph which follows the headline goes on to make further cases for space solar power, but the language used is intriguing. It pushes the prospects of space solar power by promising “...no more energy wars, no more dependence on foreign oil... a new economy, new jobs, power to the global poor, and a new American future.” Aside from the environmental aspects, which, other than the headline, are somewhat muted, a

lot of the beneficial attributes appear to be political and economical in nature. Indeed, from the American perspective, pursuit of oil has resulted in the loss of jobs and dependence on foreign suppliers – the “energy wars” clearly referring to the conflicts with the Middle East. Thus, from this viewpoint, space soar energy can be seen to be an almost-literal gift from the heavens. However, the benefits of “power to the global poor, and a new American future” seem to clash somewhat with the subsequent phrase, “...no nation can hoard it”. Here we return to the aforementioned Space Treaty, which dictates that no nation can “own” any part of space. Yet we are clearly witnessing space’s exploitation by one country: what does one make of the ad’s promise of “power to the global poor”, but an attempt for the United States to shift the tables from recipient to supplier? One nation may not be able to “hoard” this resource technically, but the entire ad appears to be promoting the concept of having the U.S. at the top of the energy chain, as a provider of this resource, with “poor” nations being relegated to having to feed off it, thus manifesting the ideal economic situation. If this is the case, it is in the United States’ interests to perpetuate a monopoly-like system to reap maximum benefits. However, this is bound to cause conflicts and complications in the future, and we need not only further analysis of how these situations can develop, but also a firm establishment of laws concerning space governance and space use. Additionally, this has to occur promptly, before lobbyists and others with agendas to push specific enterprises can be allowed to influence lawmakers by highlighting certain aspects of space use without touching on others.

These examples show that without proper multidisciplinary dialogue being exchanged from both the technical and social perspectives, space as a subject presents an all-too-broad area which can easily be over-simplified, and the danger of this is that it can lead to naïve backing of unilateral profiteering ventures, or even propaganda, rather than first establishing services and resources beneficial for all mankind, no matter their background. The Space Treaty and such laws ought to guarantee that no one individual nor group can take advantage of this – indeed, race, creed and nationality ought not be a factor for any activity once in space.

3. The case of Japan

3.1 Akiyama and the TBS deal

Japan is a curious example in terms of its space development efforts, in that it has a rather large investment in space research and technology considering its independent nature – the country is tiny compared to the US and its budget reflects that, yet it has had a streak of successful missions which neither NASA nor the ESA can boast, to say nothing of JAXA’s own relatively-short history. As such, Japanese astronauts on the ISS and Japanese satellites and exploration probes are held in very high regard globally.

Yet, public awareness of these achievements remains elusive – at least until very recently.

Much like the Mars One example from earlier, Japan had already in 1990 experimented with its own corporate-sponsored, live-broadcast space event. The first Japanese astronaut was not provided by NASDA, the former JAXA, but rather, Toyohiro Akiyama, a journalist with the TBS television network. The enterprise came at a crucial time where a variety of factors came together – right at the end of the Cold War, with Japan right at the brink of the bursting of its economic bubble. Having been a sideline spectator to the great Space Race between the US and the USSR, TBS and a group of Japanese corporate sponsors made a deal with the USSR to use one of its capsules to send Akiyama into space as the first Japanese astronaut. The result was a television event very similar to the one the Mars One entrepreneurs are trying to push.

This resonated well with Japanese audiences because it created a form of drama from a real-life scenario – which is what that which we know as “reality television” forms its basis on. In a sense, the Japanese corporate deal with the USSR to send a civilian in space, the first of its kind in history (as was the sight of a rocket emblazoned with corporate logos to represent sponsors such as Sony, Otsuka Seiyaku and Uni-Charm), was a precursor to the Mars One enterprise, and one which we have the luxury of hindsight to look back on and analyze. Clearly, little is remembered about this event, in spite of the large investment at the time. Akiyama’s lack of acknowledgment from JAXA seems to point to an “unofficial” air, of almost having been swept under the rug.

3.2 The case of Japan: Hayabusa

The Hayabusa (MUSES-C) probe is important in Japanese society not because of its significance as being the first probe of its kind to successfully land on an asteroid, retrieve a sample and return it to Earth for analysis, but because of its perseverance and endurance despite all of its trials and bouts of hopelessness during the mission. Hayabusa did not undergo the mission perfectly according to plan without a hitch; rather, it encountered multiple system errors and losses of power to its main thrusters, and used alternate methods to re-orientate itself back on track, in the interim having gotten itself lost and out of communication for a long time.

Hayabusa captured the hearts and minds of the Japanese public precisely because of its eventual, triumphant return back to Earth after many failures – had it been a problem-free expedition, the craft would not have raised much interest within the general public. We can attribute this, once again, to a sense of longing for dramatic situations, and in this particular case, Hayabusa is considered by the general Japanese public to be alive and have emotions. Hayabusa has been anthropomorphized into a

Japanese child trying to realize its goals despite all of the harsh realities it has to face head-on – as if it were an avatar of the Japanese psyche. It thus created a relatable narrative for the Japanese, one of the exploitative possibilities of which could not be underestimated, as one can see in the multiple renditions of the Hayabusa story in film and animation (some of which go as far as making Hayabusa an actual character, even with its own voice).

The personification of Hayabusa into a character not dissimilar to the *Yuru-kyara* regional mascots now highly popular around Japan has its roots in the traditions of storytelling and richness of “*kokuminteki*” (national, but with a nuanced folk-tradition, rather than a patriotic angle), thus is by no means a rare occurrence in Japan that such an object can capture the hearts and minds of the public at large.

3.3 *Space Brothers*

Hayabusa served an important purpose as a vessel within which Japanese emotional quotient was carried and subsequently acted as a gateway into the wider topic of space exploration and development – almost a full-fledged national space boom – a wave which many projects have since been riding. One of these is *Uchuu Kyoudai (Space Brothers)*, a manga by Chuya Koyama about two brothers who train to become astronauts and dream of going to work at a Moon base together. The story has a simplistic plot yet a rather immersive narrative, due to its intricate melding of everyday life and technical scientific phenomena.

Space Brothers was turned into a television series in April 2012, and has since April 2013 moved from an early Sunday morning slot to Saturday evening prime time – something which for a modern animated show in Japan, where midnight slots are common for new titles due to cult audiences, is extremely rare. Thus the popularity of the show appears to be increasing and the title seems to be gaining traction among the general public. This is due to the humanistic elements of the series, such as the importance of teamwork, the realization of one’s childhood dreams, the surprising results which come from thinking outside the box, and such plot points, all of which are relatable to the younger generation in today’s Japanese society. The fact that the series frames all of these factors within a scientific and technological environment without letting that be the main focus of the story is the key aspect of its resonance with its audience and as an extent, the reason why it has given opportunities for further space-related events, such as talk shows and exhibitions.

3.4 Japan and astrosociology

Additionally, the timing of further astrosocial events such as the solar eclipse of

summer 2012 also brought out the more romantic aspects of space topics within Japanese society by providing budding photographers, both amateur and professional, with opportunities for stunning imagery, once again underlining the sheer richness of Japan's creative culture. Television shows also reported on the event not so much in technical, astronomical terms, but rather on how the beautiful corona shape would remind people of a diamond ring, and how it was a unique opportunity for a perfect marriage proposal, and other such examples of "humanizing" the extraplanetary phenomenon.

As a result, through the medium of popular culture, we can see several examples of a "space boom" currently underway in Japan. However, we must be clear to differentiate it from the American traditional sentiment of such a boom, which carries a noted nationalistic angle. The Japanese are traditional storytellers, with practices dating back far into history with manga and animation having direct roots in *kami-shibai*, *kibyoushi* and scrolls; their focus on characters even for the usage of regional promotion gives some clues as to how they communicate with each other, even in topics otherwise seemingly completely separated from everyday life such as space phenomena, exploration and development.

Lastly, the particular relevance for Japan of astrosocial phenomena and their observation comes in the idea that some parts of Japanese society, in its avid consumption of science-fiction of the 1950s through to the 1970s, such as Robert A. Heinlein and Arthur C. Clarke, gave rise to several home-grown classic works in animation and the *tokusatsu* genre through its appropriation and reconstruction of these concepts into formats it could take advantage of to their limits – a major characteristic of Japanese ingenuity. The subculture known as the *otaku* developed through sharing information on the rich worlds presented within these literary classics – and this coincided with the 1970 Osaka Expo, the opportunity Japan was waiting for to reveal to the world its technological prowess, kicking its economic growth into high gear.

The inspiration these classic works of sci-fi drew can be summed up as follows, through the benefit of hindsight: the authors themselves were astrosociologists. That is to say, they used the format of novels and short stories to merge the human sciences and the natural sciences by creating a world different from our own, which could easily be considered fantasy in many ways, but still making it relatable by including human characters with familiar logic to us, performing actions which were understandable to our current logic, through which we can see the way this world presented to us works, alien and odd though it may be. This concept is of utmost importance because it allows us to imagine hypothetical societies and situations within them that give us clues on

what could happen within our world. Additionally, it also serves to carry a rather cyclical attribute in that it inspires real-world individuals to try and realize the concepts presented in the real world. This however, requires much more debate.

For example, Clarke's groundbreaking novel, *The Fountains of Paradise* (1979), is a story surrounding the construction of a "space elevator". The concept of a space elevator as a structure which extends from the surface of the Earth into space with a counterweight at the end, using the centrifugal force of the Earth's rotation to offset its own weight and stay taught, is one which several academics have postulated and refined, but this information remained buried within scientific journals until Clarke incorporated it into his story and added the social factors into the usage of the technology – who would build it? How? What would be the reaction to its construction? In the story, the natives of the land upon which the structure is built heavily oppose its construction on the grounds that it goes against their traditions, recalling the Biblical Tower of Babel story. These factors helped relate the narrative to everyday folk and made the seemingly fantastic merely a hypothetical concept, which like any other scientific experiment, needed analysis from a variety of viewpoints. Thus, Clarke helped to popularize the concept and introduce it into the general public's mindset.

Obayashi Corporation of Japan has already announced plans to build a space elevator by 2050, but clearly what is needed is a return to the multidisciplinary analysis of such concepts which astrosociology can provide, and popular culture has the ability to channel, in order to more accurately predict what will be the social, environmental, political, legal and economic effects of such an undertaking. There are far too many factors to consider from just one single discipline.

4. Astrosociology in Education: Meiji University Special Course

Having established this notion concerning the Japanese attitudes towards astrosocial phenomena, and considering the rapid rise in private companies entering the nascent field of so-called "space business", the rather conspicuous lack of information and discussion in Japanese on these issues in 2010 was somewhat alarming. The reason being that it was clear that Japanese attitudes towards space as a topic in general were reserved for the more eccentric, and it was seen as something irrelevant to everyday life – to the extent that "JAXAi", JAXA's small information centre next to the central Tokyo railway station was closed in summer of that year as part of the government's budget screenings (which are famous for then-Minister for Administrative Reforms, Renho's strict lecturing about wasteful spending of government funds, spawning the now-ubiquitous phrase, "is number 2 not good enough?"). Thus, in order for a greater

awareness of these issues, I began the Introduction to Astrosociology course in Meiji University as part of the School of Commerce's Special-Themed Practicum series of courses. The relevance of this topic in the field of Commerce was precisely the forthcoming flood of international private companies using the space environment – early in 2010, the weekly *Shuukan Diamond* had a large feature entitled “2010: A Space Business Odyssey”. The article was one of very few materials available for reference in the Japanese regarding how space business was unfolding, and even though The Japan Times newspaper often headlined new space-related developments on its front page, the Asahi Shimbun and others relegated those news to its science pages, thus muting its significance on overall society.

At the same time, the course was not designed to be a promotion for space business in any way, rather, it was supposed to be an attempt to stimulate forward-thinking within the students. This was achieved through the medium of space and space-related topics. Japanese society is not internationally recognized as being innovative – rather, Japanese products and systems tend to work within a pre-established framework, but take advantage of that framework as effectively and economically as possible, thus resulting in world-leading products and services in terms of cost-performance. This characteristic manifests itself within the language, within tradition, and many aspects of Japanese lifestyle involving interaction and communication, from the *sempai-kohai* and teacher-pupil relationships to the conduct of manners in a public space. The weakness in this trait is that it gives little room for pioneering and enterprising.

Naturally, there were few prior examples of successful space business enterprises in Japan (not counting the TBS-USSR deal, but as mentioned earlier, this was long forgotten in the public consciousness by 2010), which meant that it was a clean slate upon which brainstorming could occur and perhaps flourish into a wealth of potential ideas – not just for business, but of how to better synchronize social aspects with astrosocial phenomena.

Giving students free-reign to think up their own projects without any previous examples, without any “sempai” nor a manual to follow, in some cases resulted in confusion, but in others the assertiveness of the students brought them to research a wide variety of topics and develop a multidisciplinary faculty where they can observe how many aspects of society interact and affect others, and how this process can be extended to outside of our planet.

Ultimately, the students learned how to be mediators in society, navigating through the available information instantly accessible to them, and utilizing and applying it,

rather than following a preset pattern, outdated in today's fast-paced world of innovation. Essentially, the situation of our modern information age is such that between libraries, which hold official data, and the internet, which provides a wealth of user-generated content, plus the ease with which this information can be accessed using mobile phones and tablets, the level of intelligence in an average person ought not to be measured by the amount of information he or she "knows", if knowing something is to be considered as having the information stored somewhere. Any person can answer a question as random as "What was the title of the episode of *Happy Days* in which Tom Hanks made a guest appearance?" given no more than a couple of minutes on a smartphone. But it takes a rather different sort of intelligence to apply that information to a separate situation, analyzing the correlations for example, between guest-star recurrences and rising popularities of both the show and star in question. Thus the drive to promote media and technological literacy is intrinsic to further development in society because separate sections of society without outside influences of stimuli result in mere seclusion and run counter to an evolving, progressive culture.

The students of astrosociology deal with a field which is so new that pre-established patterns are difficult to spot, and thus are better for it. The course is now in its fourth year, and the Japanese-language materials have increased significantly, mostly due to the growth in general interest of space due to the factors mentioned earlier such as Hayabusa. The work is done by making contributions from disparate realms and incorporating ideas from these areas, thus expanding their fields of communication and exposing themselves to a wider field of thought.

5. Developing Astrosociology as a Global Forum for Research and Discourse: Symposium and beyond

Several institutions and academics in Japan are currently making headway to incorporate space issues into the human sciences, including Kyoto University and Kobe University with Dr. Hiroki Okada, an expert in anthropology and Dr. Hiroaki Isobe, from the perspective of the social sciences, and they are working in tandem with JAXA, collaborating to spread knowledge of space outside the laboratories and into the literary fields.

In March 2013 I organized a Symposium held at Meiji University entitled "Constructing the Future Society" ^v, to the end of establishing a forum where experts of various fields, students and members of the general public from various generations could exchange opinions and ideas concerning how space affects us now and in the future, from a multitude of different perspectives. The guest speakers included, among

others, the aforementioned Hiroki Okada (Kobe University Graduate School of Intercultural Studies) and Hiroaki Isobe (Kyoto University Center for the Promotion of Interdisciplinary Education and Research) from the academic perspectives, Norio Saito (Jaxa Kibo Forum), who is involved in projects with the aim of teaching space-related topics to children and thus establishing more inquisitive attitudes in young people, and world-renowned science-fiction manga and animation creators, Yoshiyuki Tomino (Animation director/Kyoto Seika University Guest Professor) and Leiji Matsumoto (Manga artist/Young Astronauts Club Japan). Also presenting was Nasa Yoshioka, then-head of the Space Development Forum, an organization for the promotion of awareness of space issues in society, and also through video presentations, the Astrosociology Research Institute founder, the aforementioned Dr. Jim Pass and deputy head Christopher Hearsey.

Undergraduate students of the Constructing the Future Society course were also given the opportunity to present in the symposium, as well as sit alongside the guest speakers for the final discussion wrap-up session, where hot debates sprang regarding the controversies surrounding military usage of space technology and the responsibility of its development in the future.

The aim of the symposium was, ultimately, to provide an actual forum for intelligent discussion, where there would be no preconceptions and no pre-established notions, regarding space business, exploration and development, and its effect on our everyday lives, past, present and future. The discussion was to be multidisciplinary, international and multigenerational. The cross-section of attendants and the feedback from the questionnaires retrieved pointed to a wide range of participants, from students of topics as diverse as law and engineering, to children and the elderly. To have a space reserved for cross-communication on this scale is a rare opportunity indeed in this day and age of disparate interests, discussions upon which can be only realistically undertaken with individuals of a similar mindset. In contrast, astrosociology has proven to serve this end well.

Thus, there was no expectation to come up with any answers to some of the difficult issues that we face in considering the future of space development and its relationship to society simply in one day – but the goal of realizing the first step towards that end, the establishment of a multidisciplinary panel of experts and its accessibility to the public, was certainly met, and in that sense it was a success. It now paves the way for the real beginning of discourse on these topics.

6. Conclusion

Japan is a land of rich subcultures, borne from a tradition of storytelling customs and highly close-knitted interactions within groups. However, overall, once these groups reach a certain depth, they no longer are able to interact with each other and instead focus on a self-sustaining path independent of outside factors. It is the groups' relations with each other which move society forward as a whole, and opening the channels of communication to bridge these gaps is of utmost importance. Today, the ability to do this rests within the young generation. Astrosociology, being a field which attempts to unite the natural sciences with the human sciences, is one such topic which has been seen to be an apt catalyst for such a level of communication to take place.

These days, communication ought not be any longer a matter of language, or a means in itself, but rather a tool through which mutual understanding can develop between otherwise seemingly unrelated groups. Thus, language and communicative abilities ought to be tools to further society's common aims. Here I should point out that the aim is not to achieve a unification of society, bringing about a blanketing of a homogenous set of values to which all members must adhere, and thus eliminating peculiarities of different sections of society. Rather, I propose a sharing of ideals based on a few common aspects, as simple as all of us participants being social animals by our nature and thus requiring to communicate in order to survive. There is a necessity, in particular within Japanese society, for "mediators", those who have the ability to move between the groups and the sub-groups and be aware of the changes and trends which are occurring.

This needs to be established as quickly as possible, before the space business boom bubble really kicks into gear, at which point business entrepreneurship and exploitative business practices may very well have created a monopoly on not only space usage, but also on ethical stances towards space usage. This is already beginning to happen with Paypal Galactic, pushing for the implementation of a space currency. This has profound effects on our future society, the implications and ramifications of which have not yet been fully discussed in a public forum.

It is in education where we can look towards raising not only a workforce, but also a general public aware of the issues to be able to make reasonable decisions regarding our ever-increasingly close rapport with space in the future. However, for this, the first step is making sure that everyone is able and willing to interact.

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