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SPACE EXPECTATIONS: LATEST SURVEY RESULTS

Dr David Raitt
European Space Agency, Noordwijk, The Netherlands
david.raitt@esa.int

Dr Cathy Swan
SouthWest Analytic Network, Inc., Paradise Valley, AZ, USA
pcswan@cox.net

Dr Peter Swan
Teaching Science and Technology, Inc., Paradise Valley, AZ, USA
dr-swan@cox.net

Arthur Woods
spaceOp sàrl, Yverdon-les-Baines, Switzerland
arthur.woods@spaceop.com

ABSTRACT

At the 59th IAC in Glasgow, a paper was presented describing two studies being carried out by Commission VI of the International Academy of Astronautics on the impact of space activities upon society. One of these studies sought to discover the hopes, aspirations and expectations of those outside the space field - the person in the street - regarding space activities. The paper reviewed the thought processes and decisions leading up to the commencement of the survey, documented the reasoning behind the questions which the public were to be asked; described the efforts to translate the questionnaire into the six Unesco languages to achieve wider participation, and provided an overview of results to date.

This present paper provides an update on this Space Expectations survey as the study comes to a close. The paper briefly discusses the addition of new languages for the questionnaire and the drive to make the survey better known and encourage greater participation worldwide, before going on to provide a detailed analysis of the latest results of opinions. Insights include respondent's thoughts regarding the visions and costs of space activities, how much people feel part of them and whether and how they would like to be more involved. The results should prove of interest to space agencies and related bodies.

INTRODUCTION

In 2005, the International Academy of Astronautics (IAA), concluded a study (under the auspices of its Commission VI, Space and Society) on the impact of space activities upon society¹. The study solicited the opinions and views of senior individuals within the space community as well as the voices of leading politicians, scientists, managers and artists. Following this effort, however, the members of Commission VI considered that this study gave only one side of the coin and that a complementary study was required which sought to ascertain the hopes and aspirations of those outside the space field - the person in the street - what was their take on space activities? Accordingly, Commission VI instituted a new survey named Space Expectations in 2006. This study is due to conclude in Autumn 2009.

At the 59th IAC in Glasgow in 2008, a paper was presented describing this new survey (as well as the previous one)². The paper reviewed the thought processes and decisions leading up to the commencement of the survey, documented the reasoning behind the questions which the public were to be asked; described the efforts to translate the questionnaire into the six Unesco languages to achieve wider participation, and provided an overview of results as at summer 2008.

The present paper provides an update on the Space Expectations survey one year further on and shortly before the study is formally closed. The paper describes the addition of new languages for the questionnaire and the continuous drive to make the survey better known and encourage participation worldwide, as well as an analysis of the latest results and opinions.

SPACE EXPECTATIONS QUESTIONNAIRE

As described in the 2008 IAC paper, the approach taken by the IAA Study Team was to develop a web-based questionnaire survey that would be aimed at the general public to determine their understanding and expectation of space activities.

The questionnaire (to be found at www.space-expectations.org) was initially made available in the six Unesco languages, namely English, French, Spanish, Russian, Chinese and Arabic. A Simplified Chinese version was also included. In late 2008 versions in Hungarian and German were also provided by volunteers and in early 2009 an Italian version was also subsequently added. The inclusion of these additional languages, together with a more concerted effort to distribute the web site for the questionnaire as widely as possible, helped to boost the numbers of people replying. Efforts to have the questionnaire translated into Japanese and various Indian dialects were unsuccessful, although there was an offer to have it translated into Serbian.

Strenuous and continuous efforts to create awareness of the survey web site and questionnaire through formal channels such as Unesco, Scouting bodies and space agencies were likewise largely unsuccessful. For the latter this was particularly disappointing since the results should surely have been of interest to them regarding how young people conceived of their space expenditure and activities. Although Unesco assisted in having the questionnaire translated and promised distribution to education ministries and offices around the world, this never happened. Similarly, initial

contacts made with the Scout and Guide Association in Switzerland failed to produce the anticipated distribution of the questionnaire to the millions of scouts and guides throughout the world.

Consequently it was down to the efforts of certain motivated individuals, mainly members of the IAA Space Expectations Study Team, who personally managed to persuade (non-space-oriented in particular) university students in many different countries to complete the questionnaire.

GENERAL DEMOGRAPHIC ANALYSIS

Within the first month of going live in late 2007 nearly 1500 people had completed the Space Expectations survey. To date the number has doubled to some 3100 with the breakout for each questionnaire as follows: English 1883, Hungarian 291, Traditional Chinese 242, Russian 206, Spanish 124, Arabic 116, French 111, German 60, Simplified Chinese 32, and Italian 31. Of course, not everyone answered every question and not everyone completed the questionnaire in their own language. For instance, some Chinese filled in the English questionnaire as did Swiss and Italians (before the Italian version as available) amongst others and of those completing the Russian language questionnaire only three quarters gave their nationality as Russian.

Questionnaires were returned by people of over 100 different nationalities. The most productive being the Americans who returned just over half of the English questionnaires (10245, 54%). Next highest was Taiwan with 220 (91%) people completing the Traditional Chinese version. 134 (7%) people with British nationality completed the English survey. Other relatively high nationality scores for the English questionnaire were India 85,

Hungary 66 (some before and after the Hungarian version was online), The Netherlands 52, Serbia 48, Australia 37, Yugoslavia 35, Ireland 33, and Germany 30 (again, before the German version was online - 47 people complete that one). Also worthy of mention were 24 Iranians, 30 Belgians (7 people completed the French version) and 37 Canadians (8 people completed the French version). Over half the people replying to the Arabic questionnaire were from Saudi Arabia and Kuwait.

The relatively good response (in terms of ages and occupations such as students, libraries/museums, art, education) from certain countries (or nationalities) such as Serbia, Yugoslavia, Taiwan, Iran, Kuwait, Greece and India illustrate excellent efforts by individual Study Team members.

Regarding the ages of those completing the questionnaires, 46% of the English were between 26-45, as were 47% of the French, 52% of the Russian, 62% of the German, 69% of the Simplified Chinese and 71% of the Italian. On the other hand, some 65% of the Arabic were under 25, in fact 19% were under 17. Likewise 71% of the Traditional Chinese were under 25 as were 68% of the Spanish (10% under 17).

Around 70% of all respondents were, not surprisingly, male - although 52% of those completing the Italian questionnaire were female, as were 47% of those replying to the Traditional Chinese version (virtually all from Taiwan) and 44% of those responding in Arabic.

Concerning level of education, of those replying to the English questionnaire some 46% had a Masters or PhD degree, while 35% of French, 36% of German and 66% of Simplified Chinese respondents had such degrees, compared to only 18% Spanish, 15%

Russian, 14% Arabic, 13% Italian, 12% Traditional Chinese and 6% Hungarian respondents. On average about one third of all respondents had either not (yet) finished or else had completed secondary/high school (but did not have a degree of any kind). The percentage was as high as 57% for Hungarian, 38% for German, 37% for Spanish and 34% for Arabic - this compares to only 17% of respondent to the English questionnaire and 0% for Simplified Chinese. This could show either a low level of educational achievement for those respondents, but it is more likely to be that the questionnaires were in fact completed by school children and those still studying at university.

When it came to occupational field, some 30% of those completing the English questionnaire said they worked in aerospace, while 19% of the Russians worked in telecommunications. No less than 26% of those completing the Arabic questionnaire were working in education, 19% of those completing the German version were in media and some 16% of the Italian respondents were working in public administration/civil service.

In so far as the English questionnaire was concerned, the responses relating to age, education and occupation were not really what was wanted. The Study Team anticipated, and hoped for, responses from young people and wanted to avoid getting numerous answers from older, highly educated people working in the aerospace field. Such people were already involved in space and thus presumably were predictably positive and would consequently agree strongly with many of the statements. The reason for this high aerospace connected response was undoubtedly due to the fact that the Space Generation (comprised of

young adults with a common interest in space) were instrumental in getting the questionnaire translated into several languages and subsequently distributing them to their members, particularly in the USA.

However, for most of the other language questionnaires there was a significant proportion of students who replied. For instance, no fewer than 63% of those completing the Traditional Chinese questionnaire (mostly from Taiwan) said they were students, as did 61% of those completing the Spanish questionnaire and 34% completing the Simplified Chinese one., and 22% of those doing the Hungarian version. These figures compare to 19% students for the English language questionnaire.

ANALYSIS OF ENGLISH QUESTIONNAIRE

Given the demographic breakdown of those completing the English language questionnaire, then it comes as no real surprise to learn that the figures show that in general the majority of respondents tended to agree with the statements. Indeed, there is very little change in percentages even after one year and twice as many respondents. Almost 83% of respondents thought space was exciting and three quarters strongly disagreed that space research was a waste of money. Two thirds strongly agreed that products derived from space as well as space technologies themselves were useful in everyday life and contributed to the improvement of life. In fact, over 85% agreed that space had improved their lives. Three quarters (74%) strongly agreed that their country should play an active role in space activities - partly because space

helped create new jobs and encouraged young people to become scientists and engineers.

Again, the vast majority of respondents strongly wanted their country to be involved and spend money in the main activities of Earth observation (81%), navigation (76%), satellite communications (74%), and exploring the universe with robots and telescopes (72%). Regarding funding, 61% strongly believed that the money spent on space benefits society, 60% also strongly agreed that spending on space activities should be increased. Over three quarters of people replying strongly believed that space should be used for peaceful purposes and that weapons of mass destruction in space should continue to be banned. Nearly two thirds were of the strong opinion that exploration of planets could lead to the discovery of new resources, but only slightly more than one third were strongly in favour of actually commercializing or exploiting these resources - though overall 18% tended to disagree to a greater or lesser extent that nations should be able to.

Just over half agreed that space exploration should be done by robots (30% were undecided), whereas 45% strongly agreed that humans in space are needed for exploration activities with another 36% tending to agree with the statement. Responses to the English questionnaire also revealed that three quarters of respondents thought humans should return to the Moon (52% strongly) and establish a base there (50% strongly) and similar numbers said humans should go to Mars (52% strongly) and establish a base there (45% strongly). They were pretty much split when it came to deciding whether human

space travel would be common in their lifetimes - though only 28% didn't think it likely.

In so far as going into space was concerned, two thirds agreed that the general public should be able to fly into space. 79% said they would like to go there themselves - mainly for personal reasons: to view the Earth from space (78% strongly agreeing) and to have new experiences (76% strong). Two thirds or so wanted to explore other worlds or experience weightlessness. Over half wanted to gain knowledge about themselves and the world while a few more wanted to contribute to science. To go because they wanted to be among the elite was not really a strong consideration for the English questionnaire respondents. Over 40% of those replying (24% strongly) said they would participate in a planned one-way human mission to space - though an equal number said No way!

Regarding their own expectations, most people expected space activities and systems to increase our general scientific and technical knowledge (84% strongly), allow us to gain a better understanding of the universe (79% strongly), contribute to monitoring environmental change on Earth (77% strongly) and enable us to have a better understanding of the Earth (74% strongly). About two thirds expected contributions to disaster prevention & management and monitoring & preventing pollution, as well as improving daily life through space spin-offs, while at least half of the replies strongly agreed that space activities could support agricultural development and food production, provide medical breakthroughs, and protect earth from asteroids. They were more pessimistic

about space activities being able to provide solutions for waste disposal (nuclear, chemical, biological).

ANALYSIS OF OTHER LANGUAGE QUESTIONNAIRES

The results from the other language questionnaires are pretty much in agreement with those from the English version. This is partly because of the nature of the questions and partly due to the way they were framed. There are some cultural or national differences and these can largely be attributed to the fact that many more students outside the aerospace field completed the non-English questionnaires. Interestingly only 1% of those completing the Spanish questionnaire (compared to 18% for Italians, 13% Arabic, 10% German and 10% Hungarian) strongly agreed that their country was a space faring nation - they clearly do not know much about their own national efforts and those of the European Space Agency to which Spain, Italy and Germany belong. On the other hand, 58% of the respondents to the Simplified Chinese version (mainly from China) knew their country was a space faring nation, as did 72% of the Russian respondents, and 42% of those completing the French version (though, of course, not everyone filling in the French questionnaire was actually a French national).

As with the English questionnaire, very high percentages from all the other language questionnaires found space to be very exciting - except for those completing the Spanish version where the percentage was a little over one half compared to well over three quarters for everyone else. Otherwise everybody wanted pretty much the same thing as the respondents to the English questionnaire when it came to whether their country should be involved in space and on

what space activities their governments should spend money. For example, 61% of those completing the Arabic questionnaire strongly agreed their country should play an active role in space, as did 56% of those completing the Hungarian questionnaire.

Compared to all the other language versions, the Traditional Chinese (and to a somewhat lesser extent the Simplified Chinese) questionnaire had far fewer people answering that they strongly agreed - more people preferred to use the option that they tended to agree. Thus only 44% of the Traditional Chinese respondents strongly agreed with the statement that WMD be banned in space (compared to 67% of Simplified Chinese and 84% Arabic and 83% Russian). Further, only 22% Traditional Chinese tended to strongly agree that more money should be spent on space activities, compared to 42% for Simplified Chinese. Of course, as noted, the vast majority of those completing the Traditional Chinese questionnaire were from Taiwan, and as that country does not have an active space programme then such less strong responses are to be expected.

Respondents to the Arabic and German questionnaires were 100% agreed that space should be used for peaceful purposes. And most other countries were only slightly less convinced. When it came to exploiting resources on other planets, fully 71% of Arabic respondents strongly agreed that nations should be able to exploit these resources with a further 18% tending to agree. This figure contrasts greatly with the responses from the other surveys who generally seem to feel that nations should not really exploit these extra-terrestrial resources (55% Spanish respondents strongly agreed resources should be exploited, as did 46% Russian respondents, 44% Italian, 39% English, 37% Hungarian,

33% French, 25% Simplified Chinese, 20% German and 18% Traditional Chinese). However, if the percentages of those just agreeing (as opposed to strongly agreeing) that resources should be exploitable are added in then the picture changes - for instance, in this case fully 74% Italian, 71% Russian, 60% French and 53% German believe in exploitation as do 68% English.

And as for wanting to go into space - as expected with so many younger people answering the non-English questionnaires - in just about every case over three quarters wanted to go. Breaking it down for the reasons, most people strongly wanted simply to view the Earth from space (82% in case of Russian responses, 81% for Arabic) - though, as ever, Traditional Chinese respondents were not quite so definite with only 50% strongly agreeing that they wanted to view the Earth from space. Arabic and Russian respondents were among the highest for strongly agreeing (78% and 73%) that they wanted new experiences). Interestingly, the Traditional Chinese questionnaire had the highest number (69%) of people who agreed that they would like to go into space to be among the elite, closely followed by the Arabic (64%). Status was much less important for others: 37% Hungarian, 30% English and only 17% German, 15% Russian and Spanish, 13% French, 12% Simplified Chinese and a mere 4% Italian.

A surprising number of people said they would be prepared to participate in a one-way human mission into space. These include 51% of the Hungarian responses, 46% of the French and 42% of the Russian, Arabic and English ones - though 69% of Italian respondents did not want to go on such a one-way trip, nor did 59% of Simplified Chinese nor 56% of the Spanish. The overall tendency of the Traditional Chinese

responses (40%) was also not to make such a trip, as were those of the Germans.

In general, respondents believed that human space travel would become common place during their lifetimes: 81% of Traditional Chinese respondents thought this would be the case, as did 79% Simplified Chinese, 66% Hungarian, 65% Spanish, 61% Arabic, 49% German, 40% Russian, 39% Italian - compared with 51% English. On the other hand, only one quarter of the French respondents thought this would happen.

Coming to their own space expectations, the results from the other versions of the questionnaire are pretty much in line with the English except in a few instances. For example all were much more in agreement than the English that space activities and systems should provide solutions for waste disposal (nuclear, chemical, biological). The Arabic community was the highest here, with 54% agreeing strongly and 29% tending to agree - compared to 33% and 25% of all the English respondents. This was also highly important to the Traditional Chinese (42% and 32%), the French (38% and 26%) and even more so to the Spanish (56% and 24%). The Arabic respondents were also strongly hopeful (62%) that space efforts could protect the Earth against asteroid impacts.

And for the most part most non-English respondents did not have so many expectations as the English (53%) regarding whether we can find life elsewhere in the universe. The exceptions were the Hungarians (65%) and the Russian and French (56% each) - countries very much involved in SETI. This was, however, a fairly low priority compared to the other more useful and beneficial things that space exploration could offer such as increasing

our general scientific and technical knowledge and gaining a better understanding of the universe and in particular the Earth. Oddly enough, apart from perhaps monitoring environmental change, such things ranked higher than medical breakthroughs, agricultural advances and space spin-offs to improve daily life for respondents to not only the English questionnaire, but also all the other language versions. And in each case the number of answers was similar - around 80% for each.

CONCLUSION

The intention of the Space Expectation study, conducted by members of the International Academy of Astronautics as part of its space activities and society endeavours, was to try and get a feel for how young people, in particular, thought about space programmes and activities and what they considered the future might hold for them. They seem to understand and accept that, despite the high costs of space activities, there is a tremendous return to the community in terms of jobs, technological know-how and scientific knowledge. People in general, from all walks of life and from all corners of the globe, appear to be very positive toward space activities and their individual expectations for the future. Indeed so many want to go

into space themselves and believe that the general public should have the opportunity to fly in space, that this augurs very well for the fledgling space tourist industry.

However, although space activities have a positive and beneficial impact on everyday life and society, this does not seem to be reflected too much by the responses to certain questions in any of the various questionnaires. Perhaps this reveals a need for more public awareness of space spin off and technology transfer activities, in addition to the publicity which surrounds the glamour of space exploration.

The results from this study should help encourage space agencies and governments, as well as private companies, to continue their space programmes and exploration efforts because, even though they might be expensive, for the most part they have the backing and support of the public.

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