DEBATE

Mohamed LAÏCHOUBI
Merci. M. Laïchoubi, académicien, ancien ministre algérien. Le spatial, vous l'avez laissé entendre, est un marqueur de puissance. Comment appréhendez-vous l'émergence des nouveaux pays en termes de concurrence et de bouleversement des hiérarchies, notamment la Chine, l'Inde, etc. ?

Deuxième question, le spatial, outre ses capacités militaires, est aussi un support de l'intelligence, et donc transmission des données, télécommunications, ce qui pose pour un certain nombre de pays la question de la souveraineté et de l'autonomie de développement et pose pour les citoyens les grandes questions d'éthique et de préservation des éléments personnels, à telle enseigne que nous avons vu des grandes puissances s'accuser mutuellement d'interférences à travers le numérique pour influencer. J'aimerais avoir votre position sur cette deuxième question d'éthique.

Jean-Yves LE GALL
Sur la première question, je vous ai dit qu'il y avait six grandes puissances spatiales aujourd'hui. Je considère que les Etats-Unis sont numéro un. En numéro deux, on a ex aequo la Chine pour des raisons quantitatives (30 ou 35 lancements dans l'année) et l'Europe pour des raisons qualitatives. Nous avons des satellites à la pointe de ce qui se fait. Nous avons lancé il y a quelques jours BEPI Colombo qui est parti pour un voyage de 7 ans vers la planète Mercure et c'est une sonde à 2 milliards d'euros qui est à l'extrême limite de ce qu'on sait faire en matière technologique. Donc Etats-Unis, Chine et Europe, puis Russie, Japon et Inde. Et nous avons maintenant beaucoup de nouvelles puissances spatiales, l'Algérie en est une, vous le savez, avec les satellites ALAT et quelques autres parce que le ticket d'accès à l'espace a diminué. Et on peut donc avoir de plus en plus de pays qui font du spatial et je pense que c'est très bien parce que ça conduit à diffuser les usages de l'espace pour l'aménagement du territoire, pour l'agriculture et tout ce qu'on peut imaginer. Je vois donc avec beaucoup de sympathie de plus en plus de pays faire du spatial.

Concernant la deuxième question sur les enjeux de souveraineté, je dirais qu'il faut légiférer dans le spatial comme dans les autres domaines. Vous avez parlé des GAFA, de l'internet, des choses comme ça, mais sur le spatial, on a à peu près les mêmes problématiques. Il y a un bureau des Nations Unies à Vienne qui travaille sur ces sujets. Il faut faire attention parce que c'est vrai qu'avec un satellite d'observation, vous pouvez aller observer ce qui se passe chez le voisin, cela doit être encadré, vous pouvez écouter ce qui se passe, là aussi, cela doit être encadré. Bien sûr, il y a des systèmes militaires, il y a des systèmes civils, mais il peut y avoir aussi des entités privées qui font ce qui jusqu'alors était réservé à des entités gouvernementales. Donc on légifère, on fait attention. C'est un système qui se développe et, comme tous les systèmes qui se développent, il y aura un pas en avant, parfois un pas en arrière, mais je pense que, globalement, cela fait partie du développement du progrès technologique.

Jim HOAGLAND

Mr Ambassador.

Ichiro FUJISAKI

I have a question. I think the mainstream of thinking now on space exploration is first going to gateway that the Trump administration is proposing and then to moon again, and then to Mars. That is the sort of mainstream way. I would like to know if you think there are any relations between this low orbit Gateway around the Moon and landing on the Moon? Meaning how much would the Gateway contribute to the possibility of going to the Moon? If you are not trying to send European astronauts by yourselves, you will still be using American apparatus or Russian rockets, do you think that in order to participate in the Gateway it will secure your possibility of trying to have your astronauts on the rocket? Am I clear?

Jean-Yves LE GALL

Yes. I think that everything related to human flights should be done in cooperation because the price is very, very high. If you talk about the International Space Station, which is the biggest cooperative technology project today worldwide, it is more than USD 100 billion that is in orbit. That is why the Gateway is now considered that it should be developed in cooperation with the historic partners in the Space Station, the US, Russia, Europe, Canada, Japan and with perhaps some other ones as I said. The idea is to have a kind of mid-size space station in orbit of the earth and on the Moon and a lower orbit, but going to the Moon, with perhaps a private initiative going from this space station to the moon, because the government wants to keep part of the money available to go to Mars in the future, first with robots and in perhaps 20 or 25 years, with astronauts. This is the policy that is implemented today, but as I said in my introduction it is something that is new, because it followed the appointment of the new administrator of NASA and the US is now shaping the post International Space Station world policy.

About the question of whether we should have an autonomous capacity in either Japan or Europe to send astronauts, we are in fact in cooperative projects and it has been decided that transportation should be for the Russians or the US and we provide laboratories as you do with the HTV, as we did in the past with the ATV, so it is a joint project.

Jim HOAGLAND

We have time for one last brief question.

Peter JANKOWITSCH

Jean-Yves, there are so many fantastic developments in space that we have now seen in this CNES video, but there are of course many dangers threatening further developments in space. Two of those are firstly space debris, with the increasing number of objects floating in space and in fact threatening space objects like the International Space Station. The second one is the question of how we are going to regulate space traffic. Are there any plans for space traffic management and what authorities do you see that could address these problems?

Jean-Yves LE GALL

I think it is an excellent question and, as you know Peter, a lot of people are working today on these issues, because in fact, there are two points. The first one is the debris and in the past when satellites were launched nobody took care about the debris, until a few years ago when people realised that even very small debris at 8 kilometres per second can do a lot of damage to satellites. There is now a regulation and it means that in the past when you had to separate a satellite from a launcher, you had a kind of explosive device which created a cloud of debris. Now, you just have a system with no debris. This is the first point. We do not create anymore debris, so I think that is behind us.

Another one which is much more interesting is that there are more and more projects using constellations of satellites in particular and it is clear that if you launch a constellation of 4,000 satellites, to put the Internet everywhere on earth, this is a project by SpaceX or Google, managing these 4,000 satellites will be quite difficult and some regulations have now been implemented to avoid collisions between satellites. However, we are going to have the same regulation as we have for airlines. We are just at the beginning of satellites as we were at the beginning of airlines something like 100 years ago, so now if the number of satellites is going to increase, we are going to have space traffic management, as you say, because managing 4,000 or 10,000 satellites in low-earth orbit is not so easy. That means that satellites will have some rules to comply with and to be sure that they will not collide and so it will be done in perfect harmony.

Jim HOAGLAND

Just before we adjourn for lunch, I ask you to join me in thanking Jean-Yves for this rather uplifting presentation.