

Satellite Usage and the Development of Space Law

Speaker: Prof. Zhao Yun (John)

Associate Dean (Mainland Affairs), Faculty of Law, HKU

Moderator: Prof. Gregg Li, President and Executive Director, Orion Astropreneur Space Academy
Advisor, Lab for Space Research, HKU

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Today's Agenda

1. Introduction and Context

- Why now?
- What are the Challenges?

2. Keynote: Satellite Usage and Space Law

- From 1957 to the present
- Climate Change and Sustainability
- Relevance for Mediators and Arbitrators, Space Lawyers, and Astropreneurs

3. Q&A

- New Treaties?
- Space Lawyers?
- Relevance for Hong Kong and GBA?

Professor Zhao Yun

Professor Zhao is Henry Cheng Professor in International Law and Associate Dean (Mainland Affairs), Faculty of Law of The University of Hong Kong; Ph.D. (Erasmus University Rotterdam); LL.M. (Leiden University); LL.M. and LL.B. (China University of Political Science and Law).

He is also Chair Professor at Xiamen University. He is currently Standing Council Member of the Chinese Society of International Law, Council Member of the Chinese Law Society, Council Member of Zhuhai International Court of Arbitration, and Council Member of the Hong Kong Institute of Arbitrators. He is listed as an arbitrator in several international arbitration commissions. He sits in the editorial teams of several academic journals, including Hong Kong Law Journal (as China Law editor) and Journal of East Asia and International Law (as Executive Editor). He is winner of Professor Dr I.H.Ph. Diederiks-Verschoor Award 2006 by International Institute of Space Law in France, the first winner of Isa Diederiks-Verschoor Prize in the Netherlands, and also the first winner of SATA Prize by the Foundation of Development of International Law in Asia.

He has published widely on various topics including dispute resolution and space law in particular. His publications include *Dispute Resolution in Electronic Commerce* (Martinus Nijhoff, 2005), *Liberalization of Electronic Commerce and Law* (Peking University Press, 2005), *Space Commercialization and the Development of Space Law* (Intellectual Property Press, 2008), *Mediation Practice and Skills* (Tsinghua University Press, 2011), *National Space Legislation in China: An Overview of the Current Situation and Outlook for the Future* (Brill, 2015), and *Mediation and Alternative Dispute Resolution in Modern China* (Springer, 2022).



**Can you imagine one future where your children,
and you, are prospering in the “same” industry...
the NewSpace Economy?**

1. Introduction and Context

Because

By the time our children would graduate from their university by 2030, humanity will be living in a new world, where we will see...

- Five moon bases, one space hotel, and Hong Kong's own Space Academy, OASA.
- The NewSpace annual economy will be over US\$ 500B globally, the fastest growing economies on earth. US\$ 1 Trillion by 2030?
- AI and streams of big data from CubeSats will be powering many Smart Cities, including this one.

And do you want to wonder what have happened or how to be prepared?



THE BOOMERANG EFFECT: HOW SPACE WILL BRING PROGRESS BACK TO EARTH

MICHAL ZISO

founder and CEO of ZISO Innovation & Architecture Lab and the space tech venture The SLEEP

**Your Child Ready?
Are You Ready?**

1 NO
POVERTY



2 ZERO
HUNGER



3 GOOD HEALTH
AND WELL-BEING



4 QUALITY
EDUCATION



5 GENDER
EQUALITY



6 CLEAN WATER
AND SANITATION



7 AFFORDABLE AND
CLEAN ENERGY



8 DECENT WORK AND
ECONOMIC GROWTH



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



10 REDUCED
INEQUALITIES



11 SUSTAINABLE CITIES
AND COMMUNITIES



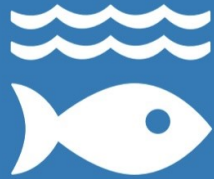
12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



13 CLIMATE
ACTION



14 LIFE
BELOW WATER



15 LIFE
ON LAND



16 PEACE, JUSTICE
AND STRONG
INSTITUTIONS



17 PARTNERSHIPS
FOR THE GOALS



18 SPACE FOR ALL
ON EARTH
AND BEYOND



What About Satellite Usage and the Development of Space Law?

Satellites and Space Law

- There are over 12,000 satellites in space, of which about 5,000 are nonfunctioning. Satellites, with numbers growing by 38% each year, eventually would run into each other at 28,800 KM per hour, resulting in a Kessler's Syndrome. This is the next "climate change" phenomenon.
 - Lower Earth Orbit (LEO) ones are cheaper to make, to launch, to teach, and with which to blanket our skies. Very soon we will be able to access the internet from all corners of the earth.
 - Satellites provide huge amount of data that would power a smart city. Satellites made us aware of climate change. What is AI without data?

So What?

Some Burning Questions from Dr. G

1. **Legal and ethical considerations** -- include questions about property rights, resource extraction, and the preservation of celestial bodies. Treaties and existing international laws, such as the Outer Space Treaty, provide a framework for these issues. Are they sufficient? What new laws are needed? Why is the latest treaty about sustainability?
2. **Who owns the moon?** Buzz Aldrin planted a US Flag onto the moon. Does it mean the US now owns the moon?
3. **If the Moon Treaty is a Global Common, then do we still need space lawyers? Mediators and arbitrators for the NewSpace Economy?**
4. **How would the NewSpace Economy ignite the need for Space Law?**
5. **What are the implications of the NewSpace Economy for Global Security and the Militarisation of Space?**

Where Are the Drivers of Business and Law in Space?

Opportunities Await the Prepared Mind

- Tele-Communication and Cybersecurity
- Compliance, Climate Change, Big Data and AI Applications
- Digital Mastery
- Frictionless Machines and Robots
- Asteroid Mining
- Capital Raising for Space Tech
- Space Law and International Relations
- Space Forces and Space War
- Space Tourism and Mobility





**Grounding New Ventures for
the NewSpace Economy in
the Greater Bay Requires a New Mindset.**



| FUTURE OF |
SPACE
Travel

OASIA



Has space tourism already arrived in Hong Kong?





Long March-7 Y7, a rocket carrying the Tianzhou-6 cargo craft, takes off from Wenchang Spacecraft Launch Site in Hainan on May 10.
Photographer: Andrea Verdelli/Bloomberg

17 OCTOBER 2023

The Orion Astropreneur Space
Academy (Hong Kong) Ltd,
a micro NGO with global aspirations.



2. Keynote

Satellite Usage and the Development of Space Law

- **Phase 1 (1957-1979)**

- 1957 Sputnik I became the first satellite to orbit the Earth in outer space;
- 1957-1958 The International Geophysical Year;
- 1961 Yuri Gagarin conducted the first manned space flight ;
- 1969 Neil Armstrong became the first human being to set foot on another celestial body, the Moon;
- 1959 (1958) The Committee on the Peaceful Uses of Outer Space (UN COPUOS) was established; (Res. 1472 (XIV), 12 December 1959.)
- 1963 declaration; 5 treaties

- **Phase 2 (1980-1992)**
- 1982 Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting;
- 1986 Principles Relating to Remote Sensing of the Earth From Outer Space;
- 1992 Principles Relevant to the Use of Nuclear Power Sources in Outer Space.

- **Phase 3 (1993-2015)**

- National space legislation: Argentina, Australia, Canada, Finland, France, Germany, Hungary, Indonesia, Japan, New Zealand, Philippines, Republic of Korea, Russian Federation, Slovakia, Sweden, South Africa, Tunisia, Ukraine, the United Kingdom of Great Britain and Northern Ireland, and the United States of America;

- 1996 Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (Cooperation Declaration);
- UNGA Resolution on “launching State”; Registration; National Space Legislation

Space Law

- The above space treaties and UNGA resolutions, constituting the core of the *corpus juris spatialis internationalis*, offer important principles and rules in regulating space activities; they will continue to play an important role in furthering the process of space commercialisation.
- Space law can be broader than what we normally think, for example:
 1. The 1963 Nuclear Test Ban Treaty bans nuclear weapon tests not only in the atmosphere and under water, but also in outer space.
 2. The International Institute for the Unification of Private Law (UNIDROIT) enacted the space protocol of the Cape Town Convention, aiming to regulate the financing of space assets.
- All these documents will further enrich the substance of space law and provide fresh blood to address new issues arising from space activities.
- Space commercialisation proceeds much faster than what we may expect. Many new legal issues arise and no ready and easy solutions can be put forward. Under such circumstance, national space legislation came to the forefront to fill in the loopholes in the international space law regime.

With the rapid commercialization of outer space activities, a series of new space activities emerged and stimulated the development of space law.

- 1. Satellite launch services
- 2. Satellite Direct Broadcasting
- 3. Telecommunications
- 4. Satellite remote sensing
- 5. Space Stations
- 6. Space Tourism
- 7. Small Satellites

Space Law-making by Other Entities

- UNCOPUOS
- WTO
- UNCITRAL
- Involvement of private entities

Soft-Law Making

- UNGA resolutions
- EU Code of Conduct

National Space Legislation

- UNCOPUOS Space Law Workshops
- ILA Model Law
- UNGA Resolution
- National laws fill in the gap and also provide a testing bed

Further Elaboration of Space Law Principles

- Peaceful Uses of Outer Space: Code of Conduct; Russia/China Efforts
- Space Environment Protection: UNCOPUOS Space Debris Mitigation Guidelines; working group on space sustainability
- International space cooperation: UNCOPUOS working group on the review of international mechanism for cooperation

Conclusion

- Space era started with satellite usage
- The dual-use nature means that space commercialization and privatization is an inevitable trend in the space field
- The development of space law is more diversified with the ongoing space commercialization process

3. Q & A

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If we have more time ...

6. Why is 1967 a significant date in Space Law? For China?
7. Astronauts would be deemed as envoys of mankind in outer space and as in the high seas, assistance should be freely given in the event of accident, distress, or emergency. But what if a space craft lands upside down or side ways, would other nations who has the means to help, be obligated to assist? What if that space craft has an astronaut in it?
8. If a launch vehicle, or a space craft or a satellite that belongs to one state, causes harm to another spacecraft belonging to another state, is the former held liable?
9. If someone in Hong Kong launches a space object, who would be held responsible? But according to the HK Outer Space Ord, that party must be a corporate, of a certain size, etc. (Seems presumptive and outdated to me.) Students interested in STEM wouldn't be able to launch toy rockets above 60 meters. Should we change this outdated HK Law?
10. Does HK's space activities fall under the umbrella of China's when dealing with NewSpace or commerce in space or are we free to negotiate our own?