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Булгакова Дар'я Анатоліївна,
кандидат у доктори наук з міжнародного права,
Університет Міжнародного Бізнесу та Економіки (UIBE),
Юридичний Інститут
(Пекін, Китайська Народна Республіка)
e-mail: dariabulgakova@yahoo.com
ORCID ID: 0000-0002-8640-3622

ПРАВОВИЙ СТАТУС 3D-ТЕХНОДРУКОВАНОЇ КОСМІЧНОЇ ЇЖІ

Анотація. Технологія 3D-друку космічної їжі швидко стає ключовим інструментом у задоволенні харчових переваг космічних туристів. Основною правовою проблемою у вирішенні статусу такої харчової продукції є негармонізація правової взаємодії права інтелектуального права власності і космічного права. У статті висунуто твердження про необхідність у перегляді чинного космічного права та інтелектуального права власності, що повинно зайняти пріоритетну позицію у міжнародному законотворенні у зв'язку з різногалузевою модернізацією індустрії космічного туризму.

Для визначення правового статусу 3D-технодрукованої космічної їжі запропоновано її віднесення до статусу космічного об'єкта. Це пов'язано з тим, що вказана продукція та/або її конструктивні елементи та/або біологічні споживні матеріали відправляються у космос державами-розробниками. Однак, на відміну від 3D-їжі, статус космічних об'єктів не містить ознак біологічно гетерогенної природи. Юридичну стурбованість викликає і питання про трактування статусу 3D-їжі через неоднозначність визначення права власності з огляду на результат роздруківки. Перше – це право власності на кінцевий модифікований результат, отриманий під час роздрукування. Друге – слід розрізняти статус такої їжі залежно від авторства на ідейний витвір. Висунуто гіпотезу, що авторське право в цьому випадку слугує підставою для захисту оригінального твору, зокрема права космічного туриста на відтворення такого об'єкта. Окрім того, закон про авторські права захищає дані 3D-їжі за аналогією захисту програмного забезпечення та статус такої інновації може визначатися патентом.

Ключові поняття: 3D-технодрукована космічна їжа, космічний турист, міжнародне право, інтелектуальне право власності, космічне право.

Bulgakova Daria,
Doctor candidate of International Law,
University of International Business and Economics (UIBE),
School of Law
(Beijing, People's Republic of China)
e-mail: dariabulgakova@yahoo.com
ORCID ID: 0000-0002-8640-3622

LEGAL STATUS OF 3D TECH PRINT SPACE FOOD

Abstract. A primary legal concern about determination of legal status of 3D tech print space food is interaction of IP Law and Space Law. The present paper makes a variety of noteworthy contributions to determine legal status of point issue through social expertise of empirical study. These results would seem to suggest about developing law in presume of a complex dependence between the needs of space tourists and the needs of the international legal field into enforce of status tech meal.

Key concepts: 3D tech print space food, space tourist, International Law, Intellectual Property Law, Outer of Space Law.

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Introduction

3D tech print space food is fast becoming a key instrument in satisfaction of food preference of space tourists. It's release in emerging projects 3D tech design printed space food: a) Space food X Moon vision 2040 with creative 3D personalized food printing tech by Japan Space Agency JAXA [5] ; b) NASA is financing research to feed astronauts in space using 3-D printing [6]; food will be transformed from a powdered form, which has a shelf life of 30 years, into customized and nutritious meals; c) Valesco at al. [7] develop an idea about interface generation of computational food; d) feeding system for Martian mission etc.

Besides, the emergence detected through empirical research by carrying empirical social EARTH-SPACE-EARTH TRIP Questionnaire that have done at December 2019 in the frame of EARTH–SPACE–EARTH TRIP scientific international law research project continually on today at the University of International Business and Economics (Beijing, People's Republic of China). In the course of the survey that conducted through one by one instrument and through Chinese data platform. Thus, respondents considered themselves as a potential client of space tourism. In the course of the questionnaire, the author revealed the following problems of food needs in space that acquire satisfaction. Research develops social problems that may arise during space trip. Hence, the percentage data is approximate from 100 ratio on each column. Therefore, 100% of interviewer indicated on necessary satisfaction on food. (1) The respondents 100% to claim that access on a food satisfaction of space travel is a priority. (2) The response rate was a 100% about alignment of the quality a space food characteristics and design tech in accordance to international food standards (IFS) are major issue that should meet the law. (3) Approximately 30% of those surveyed did not comment on individual daily diet specifically designed for personal organism. But on another hand, that is should be leveled in law enforcement. (4) A third of those who were responded (30%) indicated about needs on a properly developed service for serving food for consumption. It can be traced on a Figure 1.

With regard to above indicators, a further study of lawmakers is suggested. In further legislative acts the use of presented analyze as a significant social point could be a means of a legal determination and developing of international space food standards as 3D tech print space food as well on focus on it too. A considerable amount of literature on this issue is problematic. There is increasing concern that proposed topic is being disadvantaged and do not study yet by researchers. The author explains this by the fact that the topic is new due to the development of technologies that are ahead of the legal Sciences. Article content is about proposition of the revision of current Space law, IP Law should be a priority in connection with the space tourism.

Likewise, Maxime Le Ster [1] analyze the problems of legal status, legal regime and liability of 3D printed food in Space and highlight that space law is immature and incomplete on legal issues of it. Researcher proposes to specify legal status of 3D print food in Outer of Space on next future treaties. Elsa Malaty & Guilda Rostama [2] seek to remedy 3D printing & IP Law on a nut-

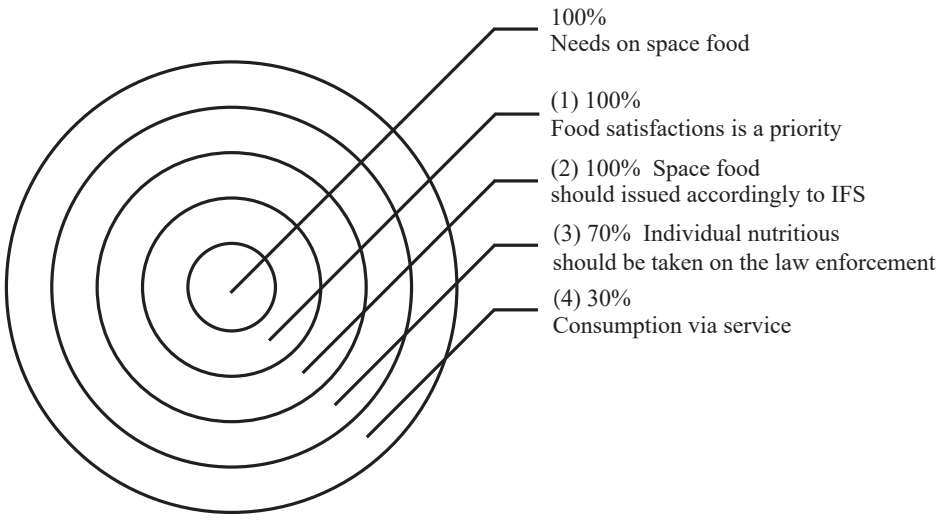

Figure 1. Priority of potential space tourists on space food

Source: Composed by the author.

shell, carb unauthorized etc. with current IP Law has a handles gap of 3D printing. Obrist et al. [3] presented conceptualization based on empirically identified factors about space travel eating experience through research on space food design interaction, tech innovations. Michael Leslie Blakeney [4] investigated the role of World Trade Organization in protection of trademarks, highlight the Agreement on Trade Related Aspects of Intellectual Property Rights. However, previous studies haven't reported about specific of legal status of 3D tech print space food in unified IP Space Law.

The main aim of this research is to assess the social physiological necessity in food satisfaction during space journey and legal standardization of it of international law related to the space issues. This article examines 3D space food that serve up to compensate physiological prior and the issue on understanding of the legal status of 3D tech print space food compatible through IP Law & Space Law. The reader should have in mind that the study is based on a point up and overview claim. Throughout this article, the term 3D tech print space food will be used to refer to design nutritious hedonic meal in the frame of innovative approach of eating experience in a space produced by tech in real form. On another hand, research states that without a reliable and developed legal regulation, further use of the proposed food contributes to legal fluctuations.

1. Launch status of 3D tech print space food

Research has shown that importantly to highlight the legal status of such accordingly to the cover regime of 3D meal. Study proposes to analyze whether such food will be classified as a space object. Thus of applicable legislation shall be considered. According to the UN General Assembly Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies [8, 3–9] considers a space object as an object that is launched by the state into Outer Space or procures such launching (Art.7). Besides, Art. 8 require the registration of space objects.

The discussion whether 3D tech printing design space food is related to space objects or not consists mainly in the nature of the results of production a 3D tech food. After all, unlike all space objects referred to above Treaty, which relate specifically to industrial productivity, the discussion is that space objects don't have the characteristic of biologically heterogeneous inventions or another words, the biological nature of space objects. Due to the fact that the Treaty refers to characterize the space objects as were launched or controlled launching from Earth into Space, the work suggests starting from the original definition of the launch food. In order to answer legal questions, research proposes to determine the status due to the nature of the appearance and creation of meal. It is offered to hypothesize three launch status of 3D tech design printed space food.

The first hypothesis and first possible status is that the launch state sends the manufactured complete fully tech printer to Outer Space, as well as its component parts with biological material for further printing of such 3D designed food in Space. The second hypothesis and second possible status is that the launch state sends a robotic tech machine and / or an instrument with instructions for the further completion of the 3D printer manufacturing process and its installation in Outer space. The third hypothesis and third possible status is sending technical and biological material from different launch States for further design, production and installation of the printer directly in Space.

With the proposed three hypotheses research makes the assumption that all materials, both technical and biological, tools fall into Space from the launch States. That means that all materials will be a space object according to the above mentioned Treaty. If we consider the question of biologically prepared manufactured material as for recognition by machine, then study makes the following assumption about the nature of 3D food. Due to the fact that food is printed according to the principle of operation of tech machine as printer by using ink as a corresponding substance of a biological nature in 3D design, its mean that printing method is analogy method in general sense meaning. In this case, although the ink has a biological food nature, so it is also a material for printer technology. It can be assumed that the biological substance for obtaining the final result in the form of food belongs to the printer's ink, which is also launched into Space by the State.

This case study following next that 3D tech design print space food we may consider with legal status of a space object in connection with its nature of origin. Since all components of tech, including both – bio and materialistic components are a space object, because they were launched into Space by the corresponding state. This paper attempts to show that food also may be treated to the space object.

2. Copyright and patent criteria

There is increasing concern of assignments tech meal as a space object is being disadvantaged in IP Law. After wards, who will own the right on

the final result of such a meal if the idea originally formed by one person, modeled on the result by second person and printed by third person? Will the designer of the model of 3D space food and the creator of the digital model of tech be co- authors under copyright law? How to be with space tourist rights on a 3D space food? IP Law shall answer in various modification processes of 3D tech. Since the task of Space law is to attribute such food to space objects.

According to the Agreement on trade-related aspects of intellectual property [9] and article 5 of the EU Directive 2008/95/CE [10], the protection and use of such goods is restricted. Article 30 of the Agreement stating that member countries 'may provide for limited exceptions to the exclusive rights granted by the patent'. Thus, the right of the patent owner isn't protected if such products are used only for private and / or non-commercial purposes. That means, any time as a space tourist will print out a piece of steak while creating a food product, it will not be considered a violation of IP rights and encroachment on such, and such a space tourist can't have ownership rights to such an object, since the printer was used for purely personal purposes for eating needs satisfaction and replenishing space tourist organism with necessary minerals.

The problem with 3D printing is the ability to copy a space food via technology and the permission of the owners of the rights to space object such as 3D tech print space food and \ or without owner permission. The article is based on the hypothesis that copyright in this case serves as the basis for protecting the original work, including the right of the author to reproduce such an object. Therefore, if food is released in outer space using 3D technologies without permission, then the creator has an exemption under copyright law, since acted on the rights to reproduce it. By analogy, the right to a sample object is protected by the design of such products, decorative, aesthetically acceptable type of object as 3D space food.

Also, the technical side of the released 3D print space food shall operate under the protection of the patent, and the product label acts as a distinctive category and falls under the protection of trademark law, which in turn allows space tourist to identify the space object as a source. The author of the article also refers to the hypothesis that the copyright law protects the 3D food database by analogy in the same way as any software. That is because 'the author of the 3D file must make individual intellectual efforts so that the object conceived by the author of the original prototype can lead to a printed object', says French lawyer Naima Alahyane Rogeon. For this reason, space tourist reproducing 3D space food through print tech without permission, is guided by the moral right to the product, if the authorship is not clearly defined. The Berne Convention for the protection of literary and artistic works in Art. 6 is guided by the fact that the author of product has 'the right to claim authorship of the work and object to any distortion, distortion or other modification or other humiliating action in respect of the said work that would damage its reputation' [2].

However, domestic law differentiates about the printed object, space food including, because it is protected by a patent. The French Law in article L 613-4 of the intellectual property Code prohibits offering to produce and directly supply such an object for the use of the invention without the author's permission. That is, all those States that launch 3D tech should follow the requirements for the presence of a corresponding author's individual permission on printing food in Space. The patent holders of 3D space food have the right to demand compensation from the States that launch them inventions into Space, but also compensation from third parties that have effect on violation of 3D food products in Space, because it's covered by the patent. Berne Convention on the Protection of Literary and Artistic Works [12] declared in Article 6bis has tended to focus that the inventor has 'the right to claim authorship of the work and object to any distortion mutilation or other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honor or reputation'.

3. Registration criteria

Art. 2 of the Convention on Registration of Objects Launched into Outer Space [11] require on registration of any space object. Author seeks to determine the article requiring registration as can't be executed, and consequently there may be violations and non-compliance with such requirements in the following variations. Variation 1: displays that the finished version of the space object as 3D tech print food is not sent by the launching state, but is assembled and designed into original directly in Space. In this case, all materialistic and biological materials of such an object will be registered, and the finished object itself will not have proper priority registration when it is created. Variation 2: the nature of food printed in Space is only temporary and intended for quick use and is not intended in its function and nature to be sent into orbit as implied by space objects of a material nature and does not serve for work as understood by the etymology of the space object as such. Variation 3: whenever a space tourist or any astronaut wants to eat and prints out a steak, pota-

toes, or any other food from the print tech, then the finished product will be created, which means that it requires registration. That means that each of space tourist, each of time on print space food shall apply for registration due to the fact that such 3D tech print space food is a space object. This leads to a different dilemma in mass character, especially for a long space trips.

A new legal document in above arising area is need to address, as well as the controversial issue of whether or not 3D space food is classified directly in Space is a space object due to its biological nature. After all, the registration of its food likewise potato, sausage, carrot etc. can't be avoided. Registration is necessary, an example, for cases where damage was caused through eating 3D space food, because it is a necessary element for identification responsible party. The harm raised in Space by such a food invokes applying UN commonly knowing Convention Liability entered into force in 1972. Then under that convention states should apply for international liability. Due to the fact of 3D tech print space food cover Outer Space Treaty. We may predict difficulties if that object was made and send by different states and on different process variation that mentioned above. In addition, such food has properties to decompose quickly. Therefore, it will be difficult to determine by what means the space tourist was harmed and whether the state should be responsible for this, or maybe several States, nations, if, for example, such technology or its designs were sent from different sources. In addition, the author suggests raising the issue of responsibility of inventors, since harm is possible through low-quality innovation. There can be no liability if the space tourist did not follow the instructions before printing out the food and then eating it. Then there must be a problem of the need for such an instruction and responsibility for its failure or \ and to explain properly.

All these issues should be unified in one act which the author suggests as IP Space Law, since it's cover as IP tech and further rights, conditions, obligations, liability and Space Law, because it's conduct thru space activity.

Conclusions

Due to the huge volume of international acts in the field of IP Law and the lack of interpretation in Outer of Space law of the legal status of space objects with the characteristics of food technologies and biological components of such, it serves for discussions of unclear legal understanding about legal status of 3D print space food. It is proposed to consider launch status, copyright and patent criteria, registration characteristics as the basis for legal status determination and create a unified IP Space Law act that would a) determine the nature, b) legal regime, c) ownership of inventors at different stages of the invention of 3D tech print space food, d) space tourists ' rights to such 3D print space food; e) liability in case of harm by 3D tech print space food caused to a space tourist.

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