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# "AUTONOMY" IN THE DAWN OF JAPANESE ROCKETRY: TWO DIFFERENT APPROACHES BY HIDEO ITOKAWA AND HIDEO SHIMA

**Abstract**

How does a country embark on large-scale RD programs such as the development of launch vehicle? With the launch of satellite Ohsumi in 1970, Japan became the fourth country to develop and launch a satellite on its own. Autonomous development of satellites and solid propellant rockets by the scientific community in the 1960s, under the leadership of Hideo Itokawa, made this possible. While maintaining the development of solid propellant rocket, Japan started to develop liquid propellant rocket, which would allow Japan to launch geostationary satellites. Another "Hideo," Hideo Shima, the first president of National Space Development Agency of Japan(NASDA) led this effort. After the decision to abolish the development of Q rocket, NASDA started the development of N rocket through importing US technology. The development of liquid propellant rocket in the 1970s, together with the efforts on solid propellant rocket in the 1960s are the basis of present Japanese launch capabilities. RD is a social activity; it reflects social, political, economic situations and international relations. It would be misleading to attribute the initiation of large-scale RD project to the leadership of a single individual. However, both Hideo played crucial roles in these developments. They both pursued space technology for "autonomy," but in very different ways. This paper sheds light on the development of launch vehicles, by focusing on the technological philosophy and perceptions on international relations of Hideo Itokawa and Hideo Shima, in the name of "autonomy." These are the cases of driving force behind the development of space activities, or fundamental objective of space policy, and its historical shift. For Itokawa, reliance on foreign launch vehicle was an obstacle in pursuing scientific research, which led to the complete indigenous development of solid propellant rockets and satellites. For Shima, facing the expectations from politicians and satellite users, it was important for Japan to launch a geostationary satellite on its own in a timely manner. He led the pragmatic approach to first learn from the United States, persuading the reluctant engineers to concentrate on smooth catch-up with imported US technologies, and to gradually increase the proportion of indigenous technologies.