6
Conclusion: Beyond Success or Failure

From 3 to 7 July 1911, just one year before the end of the Meiji period, the jubilee of the INA was held in London. It began with a private dinner at the Ritz hotel given by Mr Charles E. Ellis (Hon. Treasurer of the Institution) on the 3rd, and ended with a dinner and reception at the Savoy hotel given by His Majesty's Government on the 7th. The International Congress in Naval Architecture and Marine Engineering was held in between. Seventeen foreign governments were invited to attend the official meetings. Japan dispatched six delegates to the meetings including Kyoji Suehiro, mentioned in Chapter 5. It is noteworthy that to the Proceedings of this International Congress in Naval Architecture and Marine Engineering made up of twenty-one papers including eleven foreign papers, Japan contributed four, the largest number of any foreign country.\(^1\)

The first paper was by Motoki Kondo, Rear-Admiral of the Imperial Japanese Navy, with the title ‘Progress of naval construction in Japan’. The second, ‘The development of merchant shipbuilding in Japan’, was by Seiichi Terano, mentioned in Chapter 3, and M. Yukawa, Director of the Mercantile Marine Bureau. The third, ‘Remarks on the design and service performance of the transpacific liners *Tenyo Maru* and *Chiyo Maru*’, was by S. Terano and Chuzaburo Shiba, also mentioned in Chapter 3. The fourth, by Terugoro Fujii (also mentioned in Chapter 3), was entitled ‘Progress of naval engineering in Japan’.\(^2\)

All four papers described the rapid progress in naval architecture and marine engineering in Japan that had been achieved within the extremely short period from the Meiji Restoration to 1911, even shorter than the history of the INA up to that time. And these descriptions of the Japanese success were warmly welcomed by those attending, partly because of the general atmosphere of courtesy of the jubilee. There was, however, one important and delicately expressed exception to this general attitude. During the discussion of the second paper, read by S. Terano and M. Yukawa, William H. White, who was then an Honorary Vice-President of the INA, remarked as follows: ‘I should not wonder if Japan eventually becomes a
serious competitor with European countries in the production of shipping of all classes, although at present that condition has not been reached.\textsuperscript{13}

This remark is a typical expression of the ambivalent feeling of forerunners in industrialization when they see the advance of latecomers' industrialization which they once assisted and which has turned out to be more rapid than they expected. The feeling is usually a combination of admiration at the rapid advances achieved by latecomers and a warning of severe competition and possibly conflict with them in the future.\textsuperscript{4} In fact, thirty years later, Japan went to war with the US and Britain based on such rapid progress in naval architecture and marine engineering for both commercial and military purposes, backed up and utilized by the wartime mobilization of science and technology which started up full-scale in the 1930s. This final chapter extends the examination of the characteristics of the military-industrial-university complex within the broader context of this wartime mobilization of science and technology, and explores a pitfall inherent in the development trajectory of the ship revolution in Japan, a trajectory which had been determined by the technology gatekeepers as described and analysed in the previous chapters.

The chapter first summarizes the main points made in the previous chapters, and integrates these points into the overall structure and function of the ship revolution. It then gives the broader context of the wartime mobilization of science and technology in Japan around the 1930s with particular reference to the setting up of the Japan Society for the Promotion of Science (Nihon Gakujutsu Shinko Kai) and the Board of Technology (Gijutsu In). The earlier chapters' description and analysis of the spontaneously formed military-industrial-university complex will be elaborated within this broader context in order to extend the examination of its characteristics further. In particular, based on the trajectory of technology development in prewar and wartime Japan along the path set by the technology gatekeepers, the military-industrial-university complex and the wartime mobilization system, a pitfall in the trajectory will be clarified with particular focus on a little-known but serious and, at the time, mystifying failure of the Japanese type naval turbine which occurred immediately before the Second World War. After demonstrating the significance of this failure in the development of prewar Japanese marine science and technology, the chapter examines references and records written at the time of the failure to show how it was kept secret for so long. It then describes and analyses the failure in detail, based upon newly discovered materials in the possession of Ryutaro Shibuya. Finally, it discusses the implications of the failure for the development trajectory of the technology. Based on the above description and analysis, this final chapter presents a new perspective incorporating the ‘spin-on’ and ‘spin-off’ described in Chapter 4 and 5 in the overall structure and function of the ship revolution in both peacetime and wartime. And Japanese industrialization is redefined, not only from the perspective of the roles played by