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RESEARCH ARTICLE

Transnational scientific advising: occupied Japan, the United States National Academy of Sciences and the establishment of the Science Council of Japan

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Abstract

Given that the practices and institutions of knowledge production commonly referred to as 'science' are believed to have 'Western' origins, their apparent proliferation entails negotiations and power dynamics that shape both science and diplomacy in specific locales. This paper investigates a facet of this co-production of science and diplomacy in the emergence of knowledge infrastructure in Japan during the Allied Occupation. It focuses on the 1947 delegation from the United States National Academy of Sciences to Japan and its role in creating the Science Council of Japan (SCJ). While historians view this mission as having been dispatched to provide advice on the foundation of the SCJ, it was in fact an unintentional outcome. The original plan was to recruit long-term scientific advisers on science policy to Douglas MacArthur's headquarters. The creation of the SCJ was not the brainchild of any individual but the result of an unforeseen alteration of the original idea through negotiations among various actors. By examining the transnational aspects of this process and the complex social process underlying it, and drawing on Manuel DeLanda's assemblage theory, this paper proposes the concept of 'techno-diplomatic assemblage' for understanding the transnational construction of knowledge infrastructure such as the emergence of the SCJ.

The Science Council of Japan (SCJ) was established in 1949 as Japan's premier scientific advisory body. It was a kind of national academy in the lineage of the Académie royale des sciences in France and a direct successor to Japan's National Research Council (NRC), founded in 1920 and modelled on the US National Research Council.[1] The SCJ was created in an attempt to adopt democratic principles to ameliorate the elitism of

[1] On the Académie royale des sciences see Roger Hahn, *The Anatomy of a Scientific Institution: The Paris Academy of Sciences, 1666–1803*, Berkeley: University of California Press, 1971. On the US National Research Council see R.C. Cochrane, *The National Academy of Sciences: The First Hundred Years, 1863–1963*, Washington, DC: National Academy of Sciences, 1978, pp. 200–41; Helen Wright, *Explorer of the Universe: A Biography of George Ellery Hale*, New York: E.P. Dutton & Co., 1966, pp. 285–97; Daniel J. Kevles, '"Into hostile political camps": the reorganization of international science in World War I', *Isis* (1971) 62, pp. 47–60; Kevles, *The Physicists: The History of a Scientific Community in Modern America*, New York: Alfred A. Knopf, 1978, Chapters 8–9; Frank Greenaway, *Science International: A History of the International Council of Scientific Unions*, Cambridge: Cambridge University Press, 1996, pp. 19–24. On the establishment of Japan's National Research Council see James R. Bartholomew, *The Formation of Science in Japan: Building a Research Tradition*, New Haven, CT: Yale University Press, 1989, pp. 254–63; Yoshiyuki Kikuchi, 'World War I, international participation and reorganisation of the Japanese chemical community', *Ambix* (2011) 58(2), pp. 136–49; Yoshiyuki Kikuchi, 'International science in Japanese eyes: Jōji Sakurai, European multilingualism and Pacific monolingualism', *Historia Scientiarum* (2021) 30(2), pp. 113–29.

ordinary national academies and avoid the path of the NRC, particularly its involvement in the military mobilization of science in the recent past. Probably the only one of its kind, the SCJ was a national academy with features of a trade association of scientists, akin to the Gesellschaft Deutscher Naturforscher und Ärzte, the British Association for the Advancement of Science, and the American Association for the Advancement of Science.[2] Conceived in a political atmosphere that aspired to democracy, its members were elected by direct votes of researchers, including even graduate students. One of its early primary concerns was maintaining the living standards of scientists. Although it was a part of the Japanese government and entirely funded by public funds, it retained some degree of autonomy until 2020, when Prime Minister Suga Yoshihide refused to appoint six left-wing or anti-war scholars recommended by the SCJ as new members. The SCJ's power is limited to advisory functions, but in its early years it possessed sufficient scientific authority for the Japanese government to heed its recommendations. Its members were invited to attend government committees and decide on the allocation of research funding. As a result, the SCJ was dubbed the 'national diet of scholars' (*gakusha no kokkai*). Initially, it played a pivotal role in establishing Japan's scientific infrastructure and in maintaining the living conditions of researchers. Many of Japan's leading research institutes, such as the Institute of Nuclear Study (INS) and the National Laboratory of High Energy Physics (KEK), were established based on the SCJ's recommendations.[3]

However, the process leading to the establishment of the SCJ was not straightforward. It was neither the product of a deliberate policy design of US occupation nor the brainchild of Japan's left-wing intellectuals, let alone Japanese technocrats. Rather, it was the result of an unforeseen alteration of the original idea through negotiations among various actors both in Japan and in the United States, who only partially shared values, visions and interests. This paper studies the transnational aspect of the SCJ's creation by examining the 1947 mission from the US National Academy of Sciences (NAS), the so-called (First) Scientific Advisory Group (SAG). It was a transnational scientific advisory body, as US scientists advised the Japanese on their country's science policy. Scientific advising itself is an extremely complex undertaking involving difficult questions about who the most qualified advisers are. The situation in this case was even more complicated due

[2] Denise Phillips, *Acolytes of Nature: Defining Natural Science in Germany, 1770–1850*, Chicago: The University of Chicago Press, 2012; Jack Morrell and Arnold Thackray, *Gentlemen of Science: Early Years of the British Association for the Advancement of Science*, Oxford: Clarendon Press, 1981; Sally G. Kohlstedt, Michael M. Sokal and Bruce Lewenstein, *The Establishment of Science in America: 150 Years of the American Association for the Advancement of Science*, New Brunswick: Rutgers University Press, 1999.

[3] There is no good comprehensive history of SCJ. For its official history, see 日本学術会議 25 年史普及版編集委員会 (Nihon Gakujutsu Kaigi 25-nenshi Fukyūban Henshūiinkai) (ed.), 日本学術会議 25 年史(普及版) (Twenty-Five-Year History of the Science Council of Japan, trade edn), Tokyo: 学術資料頒布会 (Gakujutsushiryō Hampukai), 1977. On the establishment of the Institute for Nuclear Study, see 板倉聖宣 (Kiyonobu Itakura), 科学と社会: 創造を生む社会・思想・組織 (Science and Society: Creative Society, Thought, and Organization), Tokyo: 季節社 (Kisetsusha), 1971, pp. 174–83; 広重徹 (Tetu Hirosige), 戦後日本の科学運動 (Scientists' Movements in Postwar Japan), Tokyo: 中央公論社 (Chūōkōronsha), 1960, pp. 97–8; Kenji Ito, 'An early scientist–citizen dialogue in Japan: nuclear physics and local opposition to the Institute for Nuclear Study, 1954', unpublished manuscript presented at the UST-SOKENDAI Workshop, 12 August 2019. For the establishment of the KEK see, for example, Lillian Hoddeson, 'Establishing KEK in Japan and Fermilab in the US: internationalism, nationalism and high energy accelerators', *Social Studies of Science* (1983) 13(1), pp. 1–48; 平田光司 (Kohji Hirata) and 高岩義信 (Yoshinobu Takaiwa), '日本の高エネルギー研究者集団の形成における科研費総合研究宮本班の役割' (A comprehensive research group based on the Grants-in-Aid for Scientific Research (Kaken-Hi) and the formation of high energy physics community in Japan), 科学史研究 (*Kagakushi kenkyū*) (2017) 56, pp. 17–31. In this paper, I write Japanese personal names in the traditional order (family name first, given name second), except when they appear as authors in references, where I write with the given name first and the family name last. I use the person's preferred romanization whenever known.

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to the diplomatic process and uncertainty caused by the transnational exchange of information and personnel.

The goal of this paper is not merely to understand this process but to derive theoretical insights about the process of transnational formation of knowledge infrastructure through the analysis of this case. Since practices and institutions of knowledge production commonly referred to as 'science' have allegedly 'Western' origins, their seeming proliferation involves both negotiations and power dynamics constituting both science and diplomacy in specific locales.[4] Transnational negotiations over scientific matters necessitate a different understanding of diplomacy that involves experts other than diplomats. At the same time, science diplomacy shapes the practices and infrastructure of science, and it is this co-production of science and diplomacy that helps us revisit the conceptions of both.[5] Examining how diplomacy shapes science in a specific location is more than just a case study of science on the periphery; it constitutes a method for studying how science becomes a seemingly global or even 'universal' body of knowledge.

The creation of the SCJ was an instance where scientific research infrastructure and science diplomacy co-produced each other. It involved transnational and domestic negotiations between scientists, science administrators and other relevant (mostly non-state) actors in Japan and the United States. They were negotiating the form of Japan's national scientific advising infrastructure, rather than familiar topics in science diplomacy such as nuclear power, international security, environmental and climate issues, or metrological matters. While the SAG, the focus of this paper, constituted only a small part of the process leading to the foundation of the SCJ, it epitomizes some especially transnational aspects of this complex process.

In *American Hegemony and the Postwar Reconstruction of Science in Europe*, John Krige employs the concept of 'co-production' in a manner that is both distinct from and highly relevant to the present study. Krige posits that American hegemony, or the informal 'empire' of the United States, was co-produced by the United States and European countries, with basic science serving as a 'pressure point' for the reconstruction of science in Europe.[6] This paper suggests that it is useful to view Japan within a similar framework, as the country underwent a transition from a Japanese imperial regime to a new regional geopolitical order under US leadership during the post-war period. Science policy in Japan was not simply imposed by the General Headquarters of the Supreme Commander of the Allied Powers (GHQ/SCAP), whether motivated by New Dealers or anti-communists. Nor was it a continuation of the pre-war Japanese imperial regime, as some scholars suggest. Both Japanese scientists and GHQ officials exercised agency in policy making, albeit within the constraints imposed by the Cold War context. Negotiations therefore played a central role in this process, as Japanese scientists sought to adapt to the new international political order dominated by one of the two Cold War superpowers, a new breed of 'empire' in the capitalist camp. This adaptation entailed extensive negotiations with GHQ officials and American scientists and can be understood as fundamentally diplomatic in nature.

This perspective may enrich our understanding of science and diplomacy. I have previously discussed why simple diffusionist views of science are flawed and that 'science'

[4] Kenji Ito, 'Modelling the apparent spread of science: some insights from the history of science in Japan', in David Ludwig, Inkeri Koskinen, Zinhle Mncube, Luana Poliseli and Luis Reyes-Galindo (eds.), *Global Epistemologies and Philosophies of Science*, Abingdon: Routledge, 2021, pp. 265–73.

[5] For the notion of the co-production of science and diplomacy see Kenji Ito and Maria Rentetzi, 'The co-production of nuclear science and diplomacy: towards a transnational understanding of nuclear things', *History and Technology* (2021) 37(1), pp. 4–20.

[6] John Krige, *American Hegemony and the Postwar Reconstruction of Science in Europe*, Cambridge, MA: MIT Press, 2006.

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still maintains the appearance of diffusion.[7] The emergent aspect of the diplomatic process of science discussed in this paper further suggests that the apparent diffusion itself can be a transformative process, undermining the very idea of simple diffusion. Although novelty is a vague concept, in a diplomatic context, if an exchange produces a result unforeseen by observers, or the result is more than a mere middle-ground compromise between opponents, we can safely describe it as a production of novelty. This can occur particularly when negotiations are constrained by technical expertise, material conditions and other contingent factors. The original plan can alter for unexpected reasons, like the unpredictable movement of a particle in Brownian motion, which could be theoretically considered deterministic if all the movements of water molecules were known, but, in reality, is unforeseeable due to a lack of complete information.

This suggests a global or transnational interaction of scientific practices and institutions that has the potential to generate novel outcomes. This network is anything but a unified system that mechanically produces predetermined results. Instead, I propose the concept of a 'techno-diplomatic assemblage'. The theory of assemblage (*agencement*), originally proposed by Gilles Deleuze and Félix Guattari and reformulated by Manuel DeLanda, seems to provide a useful framework here.[8] Assemblage theory has already been adopted in the fields of cultural geography and international relations to examine the material dimensions of diplomacy.[9] Some aspects of an assemblage are relevant here, although this case does not involve materiality.[10] Jason Dittmer, for example, characterizes an assemblage as an open and heterogeneous system composed of diverse elements, the whole of which cannot be reduced to its constituent elements. According to him, an assemblage produces novelty in contingent ways.[11] Similarly, I use the term 'techno-diplomatic assemblage' to refer to a system (or a non-system, if you will) comprising diverse techno-diplomatic actors, human or non-human, that act independently without a shared purpose or plan for the whole. None of the actors hold sway over the entire system or can predict its future outcome. 'Assemblage thinking' offers an alternative to 'state-centrism' and it is particularly applicable in science diplomacy, where non-state actors play significant roles.[12] It is techno-diplomatic because the actors involved and the interactions among them are related to science and technology diplomacy, and the inconsistency, indeterminacy and difficulty of their interactions are caused by their techno-diplomatic nature.

I posit that the circumstances surrounding the SAG and the resultant SCJ constitute a techno-diplomatic assemblage. This study demonstrates that the process leading to the establishment of the SCJ involved intricate negotiations among diverse actors with different goals and values. It was a diplomatic process in which some prominent Japanese scientists and US science administrators unexpectedly served as science diplomats and

[7] Ito, op. cit. (4).

[8] Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (tr. Brian Massumi), London: Athlone, 1988; Manuel DeLanda, *A New Philosophy of Society*, London: Continuum, 2006; DeLanda, *Intensive Science and Virtual Philosophy*, London: Bloomsbury Academic, 2013.

[9] Michele Acuto and Simon Curtis, eds., *Reassembling International Theory: Assemblage Thinking and International Relations*, London: Palgrave Macmillan, 2014; Jason Dittmer, *Diplomatic Material: Affect, Assemblage, and Foreign Policy*, Durham, NC: Duke University Press, 2017.

[10] On material aspects of science diplomacy closely related to the case in this paper see Kenji Ito, 'The scientific object and material diplomacy: the shipment of radioisotopes from the United States to Japan in 1950', *Centaurus* (2021) 63(2), pp. 296–319.

[11] Dittmer, op. cit. (9). See also Simone Derix, 'Assembling things right: the material dimensions of West German diplomacy (1950s to 1970s)', in Harriet Rudolph and Gregor M. Metzig (eds.), *Material Culture in Modern Diplomacy from the 15th to the 20th Century*, Oldenbourg: De Gruyter, 2016, pp. 128–48.

[12] As for 'assemblage thinking' in international relations see Acuto and Curtis, op. cit. (9).

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engaged in mutual negotiation. The outcome of this negotiation was the formation of a novel and singular organization. This process was an integral part of US–Japanese relations, and it shaped Japanese science to a great extent. This paper examines the early phase of this occurrence.

The idea of viewing science policy in occupied Japan as a case study in science diplomacy is not novel. Indeed, some of the paradigmatic historical studies on science diplomacy, such as those by John Beatty and Susan Lindee, explore research on the effects of radiation on human bodies during and after the period of Allied Occupation.[13] The establishment of the SCJ is also a relatively well-documented episode in the history of science in Japan during the Allied Occupation, although there are still several limitations to current knowledge on the subject. People involved in the process, including Bowen C. Dees, historian of science Inanuma Mizuho, and science journalist Kaneseki Yoshinori, left behind contemporary records and later memoirs.[14]

More systematic historical studies on the SCJ started with Hirosige Tetu's work in the 1960s.[15] After Hirosige's untimely death, Nakayama Shigeru expanded upon his research.[16] While Hirosige and Nakayama give the most comprehensive historical accounts of the establishment of the SCJ, they are still inadequate. Hirosige's emphasis on the continuity between the pre- and post-Second World War regimes is highly problematic. According to him, even the vision of left-wing scholars informed by Russian-style socialism was fundamentally technocratic and can be seen as a continuation of the pre-war mobilization of science and technology. Based on this assumption, he also regards the SCJ more as an enduring part of Japan's technocratic regime from the pre-war era.[17]

Certainly, pre-war and wartime developments, especially those stimulated by Japan's empire building and mobilization (which had significant ties to the Soviet Union), have had a lasting impact on science and technology in Japan, as Hirosige himself demonstrates

[13] John Beatty, 'Scientific collaboration, internationalism, and diplomacy: the case of the atomic bomb casualty commission', *Journal of the History of Biology* (1993) 26(2), pp. 205–31; M. Susan Lindee, *Suffering Made Real: American Science and the Survivors at Hiroshima*, Chicago: The University of Chicago Press, 1994; Lindee, 'The repatriation of atomic bomb victim body parts to Japan: natural objects and diplomacy', *Osiris* (1998) 13, pp. 376–409.

[14] 稲沼瑞穂 (Mizuho Inanuma), '学術体制はどこまで刷新されるか?' (To what extent will the scientific organization be renewed?), 自然 (*Shizen*) (1948) 3(3), pp. 16–9; 金関義則 (Yoshinori Kaneseki), '学術体制の刷新' (Renewal of the scientific organization), 自然 (*Shizen*) (1947) 2(11), pp. 28–35; 金関義則 (Yoshinori Kaneseki), '日本学術会議 (1): 学術体制刷新委員会の結論' (The Science Council of Japan (1): the conclusion of the Scientific Organization Renewal Committee), 自然 (*Shizen*) (1948) 3(6), pp. 14–7; 金関義則 (Yoshinori Kaneseki), '日本学術会議 (2): 学術体制刷新委員会の責任' (The Science Council of Japan (2): the responsibility of the Renewal Committee for Reorganization of Science), 自然 (*Shizen*) (1948) 3(7), pp. 14–9; 金関義則 (Yoshinori Kaneseki), '日本学術会議法案の成立' (The enactment of the Science Council of Japan bill), 自然 (*Shizen*) (1948) 3(10), p. 15; Bowen C. Dees, *The Allied Occupation and Japan's Economic Miracle: Building the Foundations of Japanese Science and Technology 1945–1952*, Richmond: Japan Library, 1997; 田宮博 (Hiroshi Tamiya), '日本学術会議創立 10 周年を迎えて' (On the occasion of the 10-year anniversary of the Science Council of Japan), 学術月報 (*Gakujutsu geppō*) (1950) 12(5), pp. 119–20; 松浦一 (Hajime Matsuura), '日本学術会議 10 年の歩み: 第 27 回総会によせて' (Ten-year history of the Science Council of Japan: For the 27th general assembly), 自然 (*Shizen*) (1959) 14(1), pp. 70–3.

[15] 広重 (Hirosige), op. cit. (3); 広重徹 (Tetu Hirosige), '学術体制刷新' (Reform of the scientific organization), in 日本科学史学会 (Nihon Kagakushi Gakkai) (ed.), 日本科学技術史大系 (Collected Histories of Science and Technology in Japan), vol. 5, Tokyo: 第一法規 (Daiichi Hōki), 1964, pp. 125–65; 広重徹 (Tetu Hirosige), 科学の社会史: 近代日本の科学体制 (Social History of Science: The Scientific Regime of Modern Japan), Tokyo: 中央公論社 (Chūōkōronsha), 1973, pp. 252–76.

[16] Shigeru Nakayama, 'The American occupation and the Science Council of Japan', in Nakayama, *Collected Papers of Shigeru Nakayama: The Orientation of Science and Technology: A Japanese View*, Kent: Global Oriental, 2009, pp. 222–37; Nakayama, 'The reorganization of research structure', in Nakayama (ed.), *A Social History of Science and Technology in Contemporary Japan*, Melbourne: Transpacific Press, 2001, pp. 193–205.

[17] 広重 (Hirosige), 科学の社会史 (Social History of Science), op. cit. (15).

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and other scholars have subsequently confirmed.[18] However, Hirosige fails to fully appreciate the significant shift in the political context of post-Second World War Japan, particularly on transnational and global scales. Both during the Occupation and thereafter, Japanese scientists navigated the new international and domestic political order of the Cold War era, marked by intense ideological conflict between socialism and capitalism. In the East Asian geopolitical context, Japan served as a bastion of capitalist (if not democratic) ideals against communism, while, domestically, ongoing ideological tensions between the left and the right persisted in politics and academia. In this context, the United States had a vested national interest in supporting the Japanese economy, industry and science and preventing the proliferation of leftist political influence.[19] This system was co-produced and co-maintained with its allies and adversaries, in the sense suggested by Krige above. The Allied demilitarization policy and US military protection established a unique Cold War environment in Japan, where research resources were concentrated in non-military areas and science and technology flourished.[20]

Making extensive use of records left by the GHQ/SCAP, Nakayama diverges from Hirosige in his attention to the transnational aspect of this topic.[21] While he also views the SCJ as fundamentally a technocratic organization, he investigates the important role played by the staff of relevant branches of the GHQ – particularly Harry C. Kelly, the scientific adviser and later deputy chief of the Scientific and Technical Division of the Economic and Scientific Section (ESS/ST). Nakayama's research also sheds light on domestic Cold War academic politics in Japan, where left-wing intellectuals attempted to to exert influence in academia and the GHQ.[22]

However, Nakayama's work is limited by several factors. In addition to insufficient documentation, his account primarily relied on GHQ documents and official reports. While his work very perceptively discusses scientific missions during the Occupation, including the SAG, he appears to have uncritically accepted the official narratives published in the report of the NAS mission:

> The First and Second Science Missions were conceived by Dr. Harry C. Kelly. His aim was to build a brand new organization for scientific research. When he returned to the US for a summer vacation in 1946, he visited the National Academy of Sciences and requested they send a science advisory mission. He wanted their imprimatur on the reorganization that he was planning for Japanese science and technology.[23]

This paper will demonstrate the inaccuracy of Nakayama's characterization of the First SAG from the NAS, and how this deficiency not only constitutes a factual error but also

[18] Hiromi Mizuno, *Science for the Empire: Scientific Nationalism in Modern Japan*, Stanford, CA: Stanford University Press, 2009; Aaron Stephen Moore, *Constructing East Asia: Technology, Ideology, and Empire in Japan's Wartime Era, 1931–1945*, Stanford, CA: Stanford University Press, 2013; Takashi Nishiyama, *Engineering War and Peace in Modern Japan, 1868–1964*, Baltimore: Johns Hopkins University Press, 2014; Hiromi Mizuno, Aaron S. Moore and John DiMoia (eds.), *Engineering Asia: Technology, Colonial Development, and the Cold War Order*, London: Bloomsbury Press/SOAS Studies in Modern and Contemporary Japan, 2018.

[19] For a case in science see Ito, op. cit. (10).

[20] Richard J. Samuels, *'Rich Nation, Strong Army': National Security and the Technological Transformation of Japan*, Ithaca, NY: Cornell University Press, 1994.

[21] Nakayama, 'The American occupation', op. cit. (16); Nakayama, 'The reorganization of research structure', op. cit. (16).

[22] Regarding Kelly see Hideo Yoshioka and Joanne Kauffman, *Science Has No National Borders: Harry C. Kelly and the Reconstruction of Science in Postwar Japan*, Cambridge, MA: MIT Press, 1994.

[23] Shigeru Nakayama, 'The role of advisory missions', in Nakayama, *A Social History of Science and Technology in Contemporary Japan*, op. cit. (16), pp. 179–92, 181. Morris F. Low follows Nakayama in describing this mission. See Morris F. Low, *Science and the Building of a New Japan*, New York: Palgrave MacMillan, 2005.

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has significant methodological and conceptual implications. It will argue that this mission was not a product of Kelly's conception, but rather a fortuitous result of various occurrences beginning with the initial proposal by Paul Henshaw. Furthermore, Kelly did not request the NAS to send the mission, let alone to create a 'brand new organization for scientific research'. Nakayama uncritically follows the official accounts published in the report of the NAS mission. In diplomacy, official narratives are often streamlined to serve certain political purposes. Based on such accounts and by connecting the dots of known historical facts, Nakayama constructs a teleological narrative in which the historical outcome is interpreted as the goal of historical actors.

Instead, this paper will argue that a teleological interpretation of the NAS mission's history, based on the ideas and intentions of the actors involved, is untenable in studies of science and diplomacy. The NAS mission was an emergent phenomenon resulting from a variety of incidents, and understanding this process requires recognizing it as a product of a techno-diplomatic assemblage that was irreducible to the goals and intentions of its individual components. This irreducibility was a result of the techno-diplomatic nature of the assemblage, although the process and its outcome may have seemed to be the result of a concerted design and intention.

Harry C. Kelly and the GHQ's science policy in Japan

During the Occupation, the Japanese government lost its diplomatic rights. However, paradoxically, almost every aspect of Japanese politics during the Occupation was diplomatic in nature. For the Japanese government to implement its policies, it needed approval from the GHQ, whose officers were predominantly American. It is not surprising that during the Occupation and beyond, politicians with strong diplomatic backgrounds, such as Ashida Hitoshi and Yoshida Shigeru, ascended to top political positions. While the official channel of communication between the GHQ and the Japanese government was the Central Liaison Office (CLO), informal interactions between these two entities took place at every level.[24]

This was also the case with science policy. Although the ESS/ST was exceptional in having an Australian, John W. O'Brien, as the chief, science policy during the occupation was primarily based on negotiations between the GHQ and Japanese science administrators and scientists. In this situation, those who had strong personal connections to the GHQ, such as Nishina Yoshio, or even those who were simply fluent in English, such as Sagane Ryōkichi, tended to have more political authority in the scientific community.[25]

Science policy necessitated some degree of scientific acumen, though science was not always the forte of the occupying US Army generals and officers. To further complicate the matter, the US government and the Far Eastern Commission, which was supposedly the highest decision-making body of the Allied Powers regarding the Allied Occupation of Japan, were not always *au courant* on the fluid situation in Japan, nor were they consistent with each other. In this highly confusing state, matters relating to science policy in Japan were decided in a chaotic and haphazard way.[26]

This posed a significant problem as demilitarization was one of the basic principles of the Allied Occupation of Japan, and it was not clear which scientific research was related to military technology, particularly when said research was highly sophisticated. From the outset, around October 1945, GHQ officials requested the US War Department to send

[24] Eiji Takemae, *Inside GHQ*, New York: Continuum, 2002.

[25] Yoshioka and Kauffman, op. cit. (22). On Sagane see, for example, Low, op. cit. (23).

[26] On this point see, for example, Walter E. Grunden, 'Physicists and "fellow travelers": nuclear fear, the Red Scare, and science policy in Occupied Japan', *Journal of American–East Asian Relations* (2018) 25(4), pp. 337–77.

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science experts to aid in supervising Japanese scientific endeavours. Specifically, the GHQ was concerned with overseeing the demilitarization of nuclear physics. They issued a directive prohibiting nuclear and aeroplane-related research. Yet it was not clear how to implement such a prohibition, especially when the GHQ did not have adequate expertise in nuclear science.[27]

Harry C. Kelly and Gerald Fox arrived in Japan in January 1946. Both were trained in physics, having earned PhDs at the Massachusetts Institute of Technology (MIT), and had worked at the Radiation Laboratory during the war. As Kelly himself would later write, their initial mandate was to oversee Japanese scientific activities in order to prevent Japanese researchers from breaching any prohibitions.[28] According to Kelly, they were chosen partially because they had not been involved in the Manhattan Project, and therefore there was less of a likelihood of their divulging sensitive nuclear information to Japanese physicists. Soon, however, they – particularly Kelly – became more interested in, or even enthusiastic about, reorganizing Japan's research infrastructure so that the country could solve its economic problems through scientific research. In his letter to Karl T. Compton dated 5 July 1946, Kelly writes that their work was much more than mere surveillance; they were to promote science and technology in Japan to facilitate economic recovery.[29] This was not just Kelly's personal objective. In May 1946, O'Brien authorized the task of studying the desirable form of Japan's research system.[30]

Even before this, Kelly had begun organizing a group of Japanese scientists whom he considered trustworthy. Kelly met Nishina Yoshio as early as 29 January 1946, less than a month after his arrival in Japan. Kelly and Fox had a dinner meeting with Takamine Toshio and Nishina.[31] Kelly continued to expand his network, and he and Nishina, as well as other young Japanese scientists and engineers, such as Tamiya Hiroshi, Kaya Seiji, Sagane and Kaneshige Kankurō, developed a deep mutual trust.[32] Unlike the European case examined by Krige, both the GHQ science administrator, Kelly, and his closest Japanese ally, Nishina Yoshio, considered it their primary objective to foster applied science that would contribute to solving Japan's immediate problems, such as food shortages and economic instability, even at the expense of basic scientific research if necessary. As an experimental physicist, Nishina was keenly aware that the ability of Japanese scientists to compete with those in other countries would rely on the recovery of Japanese industry. He was hopeful that scientific research could provide unexpected solutions to Japan's problems, just as the atomic bombs had arisen unexpectedly from atomic physics.[33]

This group of scientists founded the Japanese Association for Science Liaison (SL) in late June 1946. The central figures of this organization were relatively young scientists, such as Tamiya, Kaya and Sagane. Nishina, along with the president of the NRC,

[27] Dees, op. cit. (14); Yoshioka and Kauffman, op. cit. (22).

[28] Harry C. Kelly, 'United States–Japan scientific cooperation', in Arthur H. Livermore (ed.), *Science in Japan*, Washington, DC: American Association for the Advancement of Science, 1965, pp. 461–69, on p. 461.

[29] Harry C. Kelly to Karl T. Compton, 5 July 1946, folder '13 Kellet – Kelly', Box 127, AC4, MIT, Office of the President, Records of Karl Taylor Compton and James Rhyne Killian, MIT Archives.

[30] Dees, op. cit. (14).

[31] Harry C. Kelly to Irene Kelly, 29 January 1946, Kelly Papers, North Caroline State University Archives. See also Samuel K. Coleman, 'Riken from 1945 to 1948: the reorganization of Japan's physical and chemical research institute under the American occupation', *Technology and Culture* (1990) 31(2), pp. 228–50, 239.

[32] Harry Charles Kelly, transcript of a tape-recorded interview by Charles Weiner, 27 October 1975, American Institute of Physics, Center for History of Physics, p. 46.

[33] Nishina's view on this aspect of scientific reform was expressed on various occasions. For example, 仁科芳雄 (Yoshio Nishina), '日本再建と科学' (Reconstruction of Japan and science), 自然 (*Shizen*) (1946) 1(1), pp. 17–20.

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Kameyama Naoto, joined as advisers. Kelly envisioned that these relatively young scientists would assume the roles of the national academic organizations from the pre-Second World War system, such as the Japan Imperial Academy. Kelly was disgusted by the indifference to the urgent needs of Japanese society among the older generation of Japanese scientists. These older scientists, such as Nagaoka Hantarō, emphasized their scientific achievements over the potential to contribute to Japan's pressing concerns, and it seemed to Kelly as though they were trying to maintain the power and influence that they had exerted through the old regime of scientific research organization.[34] Whatever Nagaoka's intention was, given his lifelong commitment to making Japan a scientifically productive country, it was natural that his primary concern continued to be maintaining the academic standards of science in Japan. Such a stance had been acceptable in Japan's old regime, in which the scientific elite shared the same values and background (education at Tokyo Imperial University) as Japan's political, industrial and, to a lesser extent, military elites. However, this was not as much the case in the post-war era, when the old elite were under attack from the GHQ and/or leftist ideologues with popular support.

Kelly and Fox, however, were uncertain about their own aptitude for the task of redesigning and rebuilding the national research infrastructure, given their lack of administrative experience. Kelly, for example, was thirty-seven years old upon his arrival in Japan. Though he had some research experience in private companies and the Radiation Laboratory, he had never been an administrator. They naturally concluded that they should have a senior scientist with more experience in administration to oversee their activities. Douglas MacArthur agreed but insisted that such a science administrator needed to be highly qualified to prevent the GHQ from disregarding any of the person's recommendations.[35]

Kelly's aforementioned letter to Compton on 5 July 1946 should be understood in this context. He was seeking advice from senior science administrators. Karl T. Compton was not only the president of MIT, Kelly's alma mater, but was also part of the initial intelligence mission to investigate science in Japan after its surrender.[36] Therefore Kelly apparently expected that Compton would share his enthusiasm for reorganizing the research system in Japan to help the Japanese solve their economic and industrial problems through the application of science and technology. Kelly insisted on the responsibility of American scientists to take the lead in teaching the people of the defeated country about their obligations to other countries, by which he meant creating a peaceful nation with a self-reliant economy that could contribute to the development of science and technology. He explained the establishment of the SL and asked Compton about the possibilities of obtaining assistance from the US National Research Council.[37]

When Kelly returned to the United States in the summer of 1946, it was not for a vacation, as Nakayama writes in the Japanese version of his article. Nor was it to ask the NAS to send a mission to Japan. It was an official trip (temporary duty (TDY) travel) to meet Compton and other top science advisers in the United States and recruit a senior scientific adviser or two to be stationed in Japan.[38]

Frank B. Jewett and the Scientific Advisory Group

The primary contact person in the United States for Kelly turned out to be Frank B. Jewett, the president of the National Academy of Sciences, rather than Compton.

[34] Nakayama, 'The American occupation', op. cit. (16); Nakayama, 'The reorganization of research structure', op. cit. (16).

[35] Kelly, op. cit. (32), pp. 38–9.

[36] R.W. Home and Morris F. Low, 'Postwar scientific intelligence missions to Japan', *Isis* (1993) 84(3), pp. 527–37.

[37] Kelly to Compton, op. cit. (29).

[38] Kelly to Compton, op. cit. (29).

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Aware that Compton might be unavailable due to his trip to the Bikini Atolls to oversee Operation Crossroads, Kelly sent a letter to Ross G. Harrison, the chair of the US National Research Council. Compton was indeed in the Pacific in the summer of 1946 when Kelly's letter reached Cambridge, but Compton's assistant forwarded the letter to Jewett.[39]

Jewett was an electrical engineer and the founding director of the Bell Laboratory; he had been trained in physics and his main line of research concerned vacuum tubes. He also had relatively strong ties to Japan. In the wake of the Kanto earthquake in 1923, he was awarded the Fourth Order of the Rising Sun for his support. In 1929, he attended the World Engineering Conference in Tokyo and met Japanese engineers and business leaders.[40]

It is not clear whether these past interactions made Jewett sympathetic to the situation in Japan, but either way, he started devoting considerable time and energy to assisting Kelly and helping Japanese scientists. He shared the message with Detlev W. Bronk, who took over as chair of the NRC in 1946 and expressed his view that the NAS and NRC should do their best to help the Japanese.[41] Jewett also conveyed his willingness to Kelly to meet and discuss the matter.[42] The two men met on 31 July in New York. On the same day, Jewett wrote to Bronk about his conviction that the NAS and NRC could make significant contributions to help MacArthur and the Japanese, and he proposed that he, Kelly, Bronk and Harrison meet at the Woods Hole Marine Biological Station.[43] Apparently, their meeting took place on 15 August, and Jewett accepted the task of recruiting suitable candidates as scientific advisers.[44] Kelly returned to Japan on 12 September and, after consulting with the GHQ, informed Jewett of the terms. The GHQ requested a search for two advisers: one in science, the other in engineering. Both would need to stay in Japan for at least six months. Kelly indicated an annual salary of ten thousand US dollars but expressed his willingness to negotiate for more. He also suggested the possibility of inviting Jewett himself to Japan for a couple of months.[45]

In August 1946, Jewett began to vigorously reach out to scientists and engineers whom he considered qualified for the scientific advisory positions. However, the plan to recruit two senior scientists would prove to be overly ambitious. Many scientists and engineers wanted to return to their families and their normal work at universities after the end of wartime mobilization. They might not have felt a sense of obligation to serve in another country with which they had been fighting until recently. However, some scientists were sympathetic to the situation in Japan. Ernest Lawrence, who had strong connections to Japanese nuclear physicists such as Nishina and Sagane, expressed interest but had too many responsibilities in the United States and at his laboratory.[46] Roger Adams, who had previously served as a scientific adviser in Germany, was one of the top candidates on Jewett's list but had already spent too much time in Europe and wanted to return to his research and teaching at his university.[47]

[39] Harry C. Kelly to Ross G. Harrison, 5 July 1946, folder 'Organization 1946 NAS: Nominations of Scientists for Duty in Germany & Japan', National Academy of Sciences, Washington, DC (subsequently NAS1946). For Operation Crossroads see Jonathan Weisgall, *Operation Crossroads: The Atomic Tests at Bikini Atoll*, Annapolis: Naval Institute Press, 1994.

[40] Oliver E. Buckley, 'Frank Baldwin Jewett, 1879–1949', *Biographical Memoir of the National Academy of Sciences*, at www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/jewett-frank.pdf (accessed 12 November 2021), pp. 239–64, 256.

[41] Frank B. Jewett to Detlev W. Bronk, 25 July 1946, NAS1946.

[42] Frank B. Jewett to R.M. Kimball, 25 July 25, 1946, NAS1946.

[43] Frank B. Jewett to Detlev W. Bronk, 31 July 1946, NAS1946.

[44] Frank B. Jewett to an illegible addressee, 14 August 1946, NAS1946.

[45] Harry C. Kelly to Frank B. Jewett, 11 September 1946, NAS1946; Harry C. Kelly to Frank B. Jewett, 26 September 1946, NAS1946.

[46] Kelly, op. cit. (32), p. 75.

[47] Roger Adams to Frank B. Jewett, 2 September 1946, NAS1946.

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Many declined, but John G. Kirkwood, a chemist at Cornell University, agreed to go to Japan. After a protracted delay, W. F. Marquat of the GHQ approved Kirkwood's appointment.[48] However, the officer in charge of recruitment handled this matter in a highly bureaucratic manner, causing offense to Kirkwood with a telegram instructing him to acquire an application form at a post office if he was interested. As a result of this treatment, Kirkwood ultimately declined the offer.[49]

Jewett spent half a year attempting to find a suitable candidate, but to no avail. Then, in January 1947, Paul Henshaw, who had participated in the investigations of the atomic bomb damage (and would later become a member of the ESS), proposed sending a group of prominent scientists for a one-month visit rather than having two senior advisers stay in Japan for several months.[50] This marked a significant shift in the course of the events. Having lost hope of finding a suitable candidate for a long-term appointment, Jewett began exploring the feasibility of Henshaw's proposal. He contacted the Rockefeller Foundation regarding funding and Secretary of War Robert P. Patterson for approval.[51] Confirming the possibility of altering the plan, Jewett wrote to Kelly on 25 March with a new proposal aligning with Henshaw's idea.[52] As a result the plan to recruit two senior advisers was changed to a short-term visit of several scientists.

There were several obstacles to overcome in order to bring this proposal to fruition, the first of which was to justify it to the GHQ. In the process of justification, the plan underwent another alteration. Kelly discussed the plan with the GHQ, and upon confirming its acceptability, replied to Jewett on 16 April. Kelly explained that the GHQ generally did not approve short-term visits, and in order to make the proposal more palpable to the GHQ, it would be necessary to provide a very clear objective for the visit. Kelly stated that the purpose of the visit would be to provide advice on the reorganization of Japan's national scientific bodies. He asked Jewett to select the appropriate individuals, suggesting that the members should be capable of advising on the reorganization of science in Japan, such as Jewett, Bronk, Lawrence and Adams.[53] Following these exchanges, on 28 April, the GHQ sent a telegram to the War Department formally requesting that the NAS dispatch such a mission to Japan.[54] As a result, the official report of the SAG states that the NAS sent the delegation to Japan at the request of the War Department.[55]

Hence the initial concept was not the SAG, but rather the deployment of one or two senior scientific advisers in Japan for a minimum of six months. Contradicting Nakayama, the idea of the SAG did not originate from Kelly but from Henshaw. It was proposed by Jewett, the president of the NAS, to Kelly, not the other way around as Nakayama believed. Formally, the SAG was dispatched at the request of the War Department, though this was a mere formality. Moreover, the SAG's original purpose was to advise not on the

[48] W.F. Marquat to Frank B. Jewett, 4 November 1946, NAS1946.

[49] Frank B. Jewett to Roger Adams, 23 December 1946, NAS1946.

[50] Paul Henshaw to Frank Jewett, 21 January 1947, folder 'Organization 1947 NAS: Nomination of Scientists for Duty in Germany and Japan, 1947, Jan.', National Academy of Sciences Archives, Washington, DC (subsequently NAS1947a). On Henshaw see Dees, op. cit. (14). On Henshaw and the creation of the Atomic Bomb Casualty Commission see Lindee, *Suffering Made Real*, op. cit. (13).

[51] Frank B. Jewett to Paul S. Henshaw, 5 March 1947, NAS1947a; Frank B. Jewett to Warren Weaver, 20 March 1947, NAS1947a.

[52] Frank B. Jewett to Harry C. Kelly, 25 March 1947, folder 'Organization 1947 NAS: Nomination of Scientists for Duty in Germany and Japan, 1947, Jan.', National Academy of Sciences Archives, Washington, DC.

[53] GHQ Tokyo to War Department, telegram, 28 April 1947, NAS1947a.

[54] GHQ Tokyo to War Department, op. cit. (53).

[55] 'Reorganization of Science and Technology in Japan: Report of the Scientific Advisory Group of the National Academy of Sciences, United States of America', Tokyo, Japan, 28 August 1947, folder 'Organization 1947 NAS: Sc Adv Group on Sc in Japan: First Reorganization of Sc & Tech in Japan Report', National Academy of Sciences Archives, Washington, DC, pp. vi–vii.

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establishment of the SCJ but, more generally, on the reorganization of science in Japan. The official purpose was later changed to advising on the reorganization of Japan's national scientific bodies, which none of the parties originally planned or intended. This alteration occurred in a post hoc manner to justify the short-term visit, which the GHQ bureaucracy did not approve without a clear objective.

The First Scientific Advisory Group and the Renewal Committee for Science Organization

Jewett requested Adams to lead the mission, and they chose William D. Coolidge of General Electric's Schenectady Laboratory, Royal W. Sorensen of the California Institute of Technology, William V. Houston of the Rice Institute, Merrill K. Bennet of Stanford University and William J. Robbins of the New York Botanical Garden to accompany them. The group arrived in Tokyo on 19 July 1947. According to the planned itinerary, they were to visit Nagoya, Kyoto, Osaka, Hiroshima, Fukuoka and Seoul, Korea (although the visit to Seoul did not occur).[56]

During their stay, the members of the SAG interacted with Kelly and other personnel at the GHQ as well as the members of the SL and others who were central to the reorganization of the scientific advisory bodies that led to the creation of the SCJ. The SAG attended the first general assembly of the Renewal Committee for Science Organization, the principal organ to decide the design of Japan's new national scientific organization. Although the official report of the First SAG was not published until the Renewal Committee had reached its own conclusion, to avoid excessive influence, the proposed organizational ideas in the report were remarkably similar to those proposed by Japanese scientists, especially the proposal from the SL. These proposals outlined a basic structure for Japan's new national advisory system with two main branches: a deliberative body comprising representatives of researchers in all fields and regions in Japan and an administrative organ that would implement recommendations from the deliberative body in executable policies.[57] It is uncertain which party imitated the other, but it is likely that through the face-to-face interactions during the SAG's stay in Japan, the SL and the SAG stimulated each other to develop similar ideas or even co-produced them.

The Renewal Committee took six months to reach a consensus, with the main contention being the extent of power granted to this new organization. While natural scientists and engineers desired an organization with a significant political influence on science policy and budget allocation, social-sciences and humanities scholars preferred a politically weaker organization in order to safeguard their freedom in research activities from potential interference by the new organization or its connection to the government.[58]

Natural scientists were particularly active in the process, which was unsurprising given that the individuals involved in the process leading to the Renewal Committee, such as Nishina, Sagane, Tamiya and Kaya, were primarily active in the fields of natural sciences, and Kelly, who had personal connections with them, expected the new research system to focus primarily on science and its applications. Furthermore, natural scientists, even those who had no personal connections with the GHQ, stood to benefit the most from such a

[56] 'Reorganization of Science and Technology in Japan', op. cit. (55), pp. vi–vii; 'National Academy of Sciences Advisory Group Itinerary', 25 July 1947, folder 'Scientific Advisory Group (Japan), 1945–1947', William J. Robbins Papers, Series I, American Philosophical Society Library, Philadelphia. Regarding the cancellation of their planned visit to Korea see '美國科學者一行日本만단여歸國' (The US scientist group came back to the USA only after visiting Japan), 朝鮮日報 (*Chosun Ilbo*), 14 August 1947, p. 2. I thank Jaehwan Hyun for providing this information.

[57] 'Reorganization of Science and Technology in Japan', op. cit. (55), pp. vi–vii.

[58] 広重 (Hirosige), '学術体制刷新' (Reform of the scientific organization), op. cit. (15).

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national research organization, as they relied on public funding to conduct research when the Japanese industrial sector did not have sufficient funds to support basic research. According to Kaneseki Yoshinori, committee members from natural sciences had the highest attendance rate, while those from social sciences had the lowest, with an absence rate six times more than natural scientists.[59] Consequently, the proposal from the SL prevailed. Although there were several significant changes to the original proposal, the final plan for the new organizations, the SCJ and the Science and Technology Administration Committee, were much more in line with the proposals made by natural scientists and engineers than with those by humanities and social-science scholars.[60]

Thus the SAG in 1947 played a crucial role in establishing the SCJ. However, as we have seen, this occurrence was fortuitous. It came about simply due to the coincidence of this mission's timing with the establishment of the Renewal Committee, and the mission's official objective of advising on the reorganization of science in Japan served as a pretext for a short-term visit.

Despite Kelly's original intention to prioritize applied sciences, the resulting organization ultimately benefited basic sciences the most.[61] In particular, those basic sciences that aligned with the US Cold War hegemony flourished in Japan. For example, Japanese elementary particle physicists and high-energy physicists received significant support from American counterparts. As David Kaiser argues, after the Second World War, physicists gained newfound social prestige. No dinner party was considered a success without the presence of a physicist.[62] In this Cold War environment, Japanese physicists were often invited to the United States for research and had a chance to interact with physicists outside Japan.

Japanese scientists utilized their connections with the United States as a means of reclaiming their status within the international scientific community. They also sought to establish connections with other organizations, such as the International Council of Scientific Unions (ICSU) and the International Union of Pure and Applied Physics, as well as the newly formed United Nations Educational, Scientific, and Cultural Organization (UNESCO). In fact, one of the first actions taken by the SCJ was to send a representative, Nishina, to the ICSU General Assembly in Copenhagen in September 1949. He also informally attended the UNESCO General Assembly in Paris on his return trip.[63] It is worth noting that even some officials from the GHQ encouraged a few Japanese scientists to pursue non-US channels to the international scientific community. While the GHQ had some reservations about UNESCO activities in Japan, Kelly provided support for Nishina's trip to Europe by covering all expenses through the GHQ.[64]

[59] 金関 (Kaneseki), '日本学術会議 (2)' (Science Council of Japan (2)), op. cit. (14), 18.

[60] 金関 (Kaneseki), '日本学術会議法案の成立' (The enactment of the Science Council of Japan bill), op. cit. (14).

[61] 広重 (Hirosige), 科学の社会史 (Social History of Science), op. cit. (15), pp. 252–76.

[62] David Kaiser, 'The postwar suburbanization of American physics', *American Quarterly* (December 2004) 56, pp. 851–88, 852.

[63] 仁科芳雄 (Yoshio Nishina), '国際学術会議への旅' (Travel to the International Council of Scientific Unions meeting), 自然 (*Shizen*) (1950) 5(2), pp. 2–5; 仁科芳雄 (Yoshio Nishina), '原子力・ユネスコ・平和: 国際学術会議に出席して' (Atomic power, UNESCO, and peace: attending the International Council of Scientific Unions), 読売評論 (*Yomiuri hyōron*) (December 1949) 1(3), pp. 12–9.

[64] 'Check Sheet, Travel of Dr. Yoshio Nishina to Copenhagen', 29 August 1949, Folder IM60, 10-62A: Yoshio Nishina, Box 6544, GHQ/SCAP Records, RG 331, NARA (National Diet Library, GHQ/SCAP Records, 775018); 'Request for Funds to Send Representative to General Assembly of International Council of Scientific Unions', 3 September 1949, Folder IM60, 10-62A: Yoshio Nishina, Box 6544, GHQ/SCAP Records, RG 331, NARA (National Diet Library, GHQ/SCAP Records, 775018); 'Travel Authorization', 6 September 1949, Folder IM60, 10-62A: Yoshio Nishina, Box 6544, GHQ/SCAP Records, RG 331, NARA (National Diet Library, GHQ/SCAP Records, 775018).

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Conclusion: techno-diplomatic assemblage

As demonstrated in this paper, the process that led to the formation of the SCJ, particularly its transnational and diplomatic aspects, was haphazard and contingent. Kelly initially planned to station a few senior American advisers in Japan for a six-month period, but Henshaw suggested modifying this plan to involve a group of advisers for a shorter duration, which Jewett endorsed and presented to Kelly. The original plan was to recruit senior advisers for the GHQ to oversee science policy in general, but due to the timing of the visit, assisting in the creation of the SCJ provided an official pretext to justify the visit in the eyes of the GHQ and ultimately became the mission's primary role. This process was subject to unforeseen constraints and opposition, similar to the way in which a particle's movement is affected by the motion of invisible water molecules.

This transnational system that resulted in the emergence of the SCJ comprised diverse elements, including a scientific mission, American and Japanese scientists in various fields and generations, science administrators in Japan, and military personnel at the GHQ. There was no unifying principle, but there were partially shared values, common interests and mutual reliance. No single actor controlled the process, and no one's intention or goal was realized without significant alterations.

The SCJ was a novelty in the sense suggested in the introduction to this paper. It emerged through interactions among a heterogeneous group of actors but differed from what any of them had originally conceived. It was not even a middle-ground compromise. Despite the initial emphasis on applied sciences, the organization ultimately benefited basic sciences the most.[65] The creation of the SCJ might not have satisfied all relevant parties (possibly most of them were not satisfied), but they all agreed, or at least did not explicitly disagree.

This novelty was partially diplomatic and partially technical in nature. Kelly and Jewett initially sought a couple of senior advisers, but their plan had to be adapted to the conditions imposed by the GHQ's regulations and preferences. The invisibility and unforeseeability of constraints were also scientific/technical. For example, the difficulty of recruiting a scientific adviser was exacerbated not only by scarcity but also by a general lack of understanding of this scarcity, as in the case of Kirkwood. Disciplinary differences regarding the desired form of a scientific advisory body also engendered heterogeneity and impacted the outcome of the process with regard to the Renewal Committee.

Thus this analysis of the transnational process by which the SCJ emerged suggests the existence of a techno-diplomatic assemblage in science diplomacy. Upon closer examination, the inner workings of this entity consist of contingent events of heterogeneous components. However, once the process is complete and a result is produced, this entity begins to appear as if it were intentionally designed with the same purpose from the outset. As depicted in the SAG report, a narrative emerged that described the goal of the entire process as the creation of the SCJ, and historians such as Nakayama further solidified the seemingly unitary agency of this entity.

The perspective presented in this paper may be applicable to other cases in science and diplomacy. While the history of science cannot be reduced to the history of ideas, it is necessary to further acknowledge that the historical development of science and its institutions can deviate from, or even render irrelevant, the thoughts, ideas and intentions of historical actors. History does not unfold according to a predetermined design, intelligent or otherwise. The emerging field of science and diplomacy seeks to understand the transnational production of scientific knowledge, but it may require more than the perspectives of historical actors, mission statements of relevant groups, policy documents

[65] 広重 (Hirosige), 科学の社会史 (Social History of Science), op. cit. (15), pp. 252–76.

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prepared by government agencies, or statutes of international organizations. We must examine how chains of actions by relevant individual actors, conditioned by social, institutional and material factors, can unintentionally drive larger entities such as academic institutions, national governments and international organizations into motion and shaped environments for knowledge production.

The flip side of the contingent effects of heterogeneous groups of individual actors is the inadequacy of assuming the unity and agency of these larger entities that often play major roles in the narratives of science and diplomacy. Nakayama's portrayal of the SAG's role as advising on the creation of the SCJ may stem from his attribution of unitary agency to the group of reformers to create a new research infrastructure in Japan despite all the contentions and conflicts he describes. Scholars of international relations are attempting to move beyond state-centrism. Students of science diplomacy are less susceptible to state-centrism but should still be cautioned, as even units of analysis that are much smaller than a state might not be small enough. The apparent agency of these entities may be a result of the mundane practices of bringing together diverse elements, particularly individual scientists. The representation of these scientists (their country, their science, their organization or something else) has been a source of contention in the history of science diplomacy. State-centrism is obviously less adequate in the realm of science diplomacy than international relations, and assemblage theory may be even more relevant.

Therefore social phenomena involving science and diplomacy may be incomprehensible from either a bottom-up or a top-down perspective. And this is a good thing. The situation may be epitomized by comparing it with the Abilene paradox proposed by management scholar Jerry B. Harvey. As Harvey describes it, a family visiting Coleman, Texas agreed to drive to another town in the state, Abilene, and have lunch there. The trip was disastrous, since the food was terrible and the drive was tiresome. None of the family had actually wanted to go to Abilene. All had agreed to the plan for different reasons, driven by a unique family dynamic, but everyone was dissatisfied.[66] Even in a group as mundane as a family, collective decision making can lead to a result that cannot be reduced to a simple sum of their collective preferences. A much more diverse, transnational and transdisciplinary group negotiating complex technoscientific matters can naturally result in an outcome that none in the group anticipated.

Actual cases in science diplomacy may differ from the Abilene paradox in an important way. The paradox implies that an undesired outcome is always detrimental. This may be true in many cases, but not necessarily always. In scientific research, a single significant success among countless failures can justify the entire process. Whether the SCJ was a success or not is yet to be determined, but it was certainly an unusual organization, given its unique features and the important roles it played. This apparent creativity was not the product of a creative genius, but rather, at least partially, an outcome of a serendipitous process of techno-diplomatic assemblage.

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[66] Jerry B. Harvey, *The Abilene Paradox and Other Meditations on Management*, San Francisco: Jossey-Bass, 1996.

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