JACOB DARWIN HAMBLIN

VISIONS OF INTERNATIONAL SCIENTIFIC COOPERATION: THE CASE OF OCEANIC SCIENCE, 1920–1955

ABSTRACT. This work explores the attitudes of American scientists towards international scientific activity, with particular respect to the oceanic sciences, during the three decades after the First World War. In the mid-1950s, the Eisenhower Administration favoured the thesis that increased international collaboration would strengthen the Free World, ease Cold War tensions, and promote the growth of science. This essay analyses elements in that thesis, namely, scientific chauvinism, humanitarianism, and scientific interdependence. The narrative traces these themes through key episodes in the history of international cooperation in oceanic science, revealing how this experience shaped strategies and expectations for cooperative scientific research.

INTRODUCTION

While on a Fulbright fellowship in Japan in 1953, marine geologist Robert S. Dietz observed that, 'the time has come when a "showing of the flag" can be more effectively done in many parts of the world by a vessel engaged in scientific pursuits than by a man o'war'.[1] His comment referred to the belief that, despite political tensions with post-war Japan, Americans might improve relations between the two nations through cooperative scientific research. But Dietz did not specify precisely how, or in what respect, the United States and Japan might be brought closer together through oceanic science. Although the resonances between scientific inquiry and diplomacy were commonplace from the eighteenth century, and received substantial recognition and investment in the years following the First World War, and again after 1945, the nature of the relationship varied significantly among the scientific disciplines.[2] In the United States, international scientific cooperation has always had an important

[1] Archives of Scripps Institution of Oceanography (La Jolla, CA), Subject Files (afterwards, SIO Subject Files), AC 6, Box 7, folder 31, Robert S. Dietz to Director and Staff, Scripps Institution of Oceanography, 25 May 1953.

[2] The role of atomic energy in foreign relations, and in American politics generally, has received considerable attention, notably in Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947–1952: A History of the United States Atomic Energy Commission* (University Park: Pennsylvania State University Press, 1969), and in Richard G. Hewlett and Jack M. Holl, *Atoms for Peace and War, 1953–1961: Eisenhower and the Atomic*

Minerva **38:** 393–423, 2000.

role in foreign policy; but as late as the early 1950s, few disciplines had concrete programmes of international cooperation. Consequently, despite widespread belief in the power of science to succeed where politics failed, the role of science in international relations remains elusive.[3]

Under Dwight Eisenhower, American policy vis-à-vis scientific cooperation was guided by an internationalist philosophy prevalent more among scientists than among bureaucrats in Washington.[4] The scientists' outlook, which saw international cooperation closely related to national security,

Energy Commission (Berkeley: University of California Press, 1989). An analysis of President Harry Truman's foreign policy goals, including the role of the atomic bomb, can be found in Melvyn P. Leffler, *A Preponderance of Power: National Security, the Truman Administration, and the Cold War* (Stanford: Stanford University Press, 1992).

3 Some recent work has focused on the role of scientists in the international arena during the early post-war years, as discussed in Ronald E. Doel, 'Scientists as Policymakers, Advisors, and Intelligence Agents: Linking Contemporary Diplomatic History with the History of Contemporary Science', in Thomas Söderqvist, (ed.), *The Historiography of Contemporary Science and Technology* (Amsterdam: Harwood Academic Publishers, 1997), 215–244. Representative works, published during the 1960s, covering science more broadly defined than atomic physics, include Eugene Skolnikoff, *Science, Technology, and American Foreign Policy* (Cambridge: MIT Press, 1967); Robert Gilpin and Christopher Wright (eds.), *Scientists and National Policy-making* (New York: Columbia University Press, 1964); Caryl P. Haskins, 'Technology, Science and American Foreign Policy', *Foreign Affairs*, 40 (January 1962), 224–243; George B. Kistiakowsky, 'Science and Foreign Affairs', *Department of State Bulletin*, 42 (22 February 1960), 276–283; and Wallace R. Brode, 'National and International Science', *Department of State Bulletin*, 42 (9 May 1960), 735–739.

4 In this essay, internationalism connotes activities such as data sharing and cooperative research, not world government. See, for example, Lloyd V. Berkner, 'Is Secrecy Effective?' *Bulletin of the Atomic Scientists*, 11 (February 1955), 62–63, 68, and Harald Ulrik Sverdrup, 'New International Aspects of Oceanography', *Proceedings of the American Philosophical Society*, 91 (February 1947), 75–78, both of which emphasize internationalism as a means to promote the growth of science. This does not contradict the experience of many scientists who were most sympathetic to the national needs of the United States necessitated by the Cold War, as described in Daniel J. Kevles, 'Cold War and Hot Physics: Science, Security, and the American State, 1945–1956', *Historical Studies in the Physical and Biological Sciences*, 20 (1990), 239–264. Certainly internationalism was not an automatic feature of scientists' thinking during the twentieth century. See discussion in Elisabeth Crawford, Terry Shinn, Sverker Sörlin (eds.), *Denationalizing Science: The Contexts of International Scientific Practice* (Dordrecht: Kluwer, 1993). The persistence of internationalism nevertheless cannot be disputed as an aspect of some scientists' view of their social responsibility to society as a whole, which occasionally ran counter to the currents of public, government, and military opinion during the early Cold War. This theme has been addressed in many works, most recently in Joseph Manzione, ' "Amusing and Amazing and Practical and Military": The Legacy of Scientific Internationalism in American Foreign Policy, 1945–1963', *Diplomatic History*, 24 (Winter 2000), 21–55, and in Jessica Wang, *American Science in an Age of Anxiety: Scientists, Anticommunism, and the Cold War* (Chapel Hill: University of North Carolina Press, 1999). An older but valuable

was endorsed by the National Science Foundation in a 1955 report entitled, 'Preliminary Report on the Role of the Federal Government in International Science'. This called for minimum secrecy and maximum collaboration with scientists from all nations, including the Soviet Union, as the best means of sustaining American strength in the Cold War. Although the White House made no effort to accept the policy officially, the NSF proceeded with its tacit approval – a policy purgatory – while it planned and implemented the International Geophysical Year (IGY) of 1957–1958. During the IGY, the Soviets launched Sputnik, directly challenging both America's scientific leadership and its attitude toward cooperation.[5] Afterward, policymakers made a greater effort to articulate a role for scientific cooperation in foreign policy more in line with Cold War necessities.[6]

---

study can be found in Alice Kimball Smith, *A Peril and a Hope: The Scientists Movement in America, 1945–1947* (Chicago: University of Chicago Press, 1965).

5 The IGY was the first time that such a large amount of high quality research data would become unclassified, and thus available to the Soviet Union. American leaders, particularly in the Navy and the Central Intelligence Agency, were concerned that the Soviet Union might exploit this good faith, 'cheating' by withholding their own data. The launch of Sputnik in October 1957 only exacerbated these concerns. This does not contradict recent work that shows how the United States utilized the IGY to collect a great deal of military information, or that the launch of Sputnik was perceived by some American leaders as an opportunity to fly spy satellites over unfriendly countries. See for example Rip Bulkeley, *The Sputnik Crisis and Early United States Space Policy: A Critique of the Historiography of Space* (Bloomington: Indiana University Press, 1991), and Ronald E. Doel, 'The Earth Sciences and Geophysics', in John Krige and Dominique Pestre (eds.), *Science in the Twentieth Century* (Amsterdam: Harwood Academic Publishers, 1997), 391–416. Accounts of the funding, execution, and legacy of the IGY include J. Merton England, *A Patron for Pure Science: The National Science Foundation's Formative Years, 1945–1957* (Washington, DC: National Science Foundation, 1982); Walter Sullivan, *Assault on the Unknown: The International Geophysical Year* (New York: McGraw-Hill, 1961); Harold Bullis, *The Political Legacy of the International Geophysical Year* (Washington, DC: Government Printing Office, 1973); and the IGY Collection at the Archives of the National Academy of Sciences.

6 For an analysis of the conflicting obligations of an internationally-minded scientist in the years after the launch of Sputnik, see Ronald E. Doel, 'Evaluating Soviet Lunar Science in Cold War America', *Osiris*, 7 (1992), 238–264. The growth of science funding and the escalation of Cold War tensions after the launch of Sputnik have received much attention. See Roger L. Geiger, 'What Happened After Sputnik? Shaping University Research in the United States', *Minerva*, 35 (4), (1997), 349–367; Robert A. Divine, *The Sputnik Challenge* (New York: Doubleday, 1993). For analyses of the role of scientists in the military and government during the post-Sputnik years, see Finn Aaserud, 'Sputnik and the "Princeton Three": The National Security Laboratory That Was Not To Be', *Historical Studies in the Physical and Biological Sciences*, 25 (1995), 185–240; Richard V. Damms, 'James Killian, the Technological Capabilities Panel, and the Emergence of President Eisenhower's "Scientific-Technological Elite"', *Diplomatic History*, 24 (Winter 2000), 57–78; and Zuoyue Wang, 'American Science and the Cold War: The Rise of the US

The experiences of the American oceanic scientific community from the 1920s through the early 1950s well illustrate American approaches to international cooperation prior to Sputnik's launch. Given the long-standing needs of science to coordinate the collection and interpretation of environmental data, studies of the ocean traditionally invited international cooperation; at the same time, they were heavily dependent upon military funding.[7] In the years before the Second World War, many American scientists participated in international projects, while after the war the American government tried to integrate science into foreign policy through the Point Four plan for international development. These were accompanied by efforts among university scientists who sought to cooperate with colleagues in Asia, particularly Japan.

In tracing this history through the mid-1950s and beyond, several representative themes emerge. First, many Americans believed that the most productive international cooperation, in terms of scientific knowledge, could take place only where America held uncontested scientific leadership. The obvious by-products of this attitude were chauvinism, particularly toward scientists in developing countries; and naivety, particularly toward potential competitors for leadership such as the Soviet Union. However, the vision of cooperation went beyond science. Science was not only a common language that united people in a common cause, but also a tool to curb hunger and promote development. Third, the most efficient way to achieve these ends was by inter-dependent cooperation – to prevent wasteful duplication of effort and to facilitate productive contacts. American scientists expected to receive as well as to give. More important, however, this philosophy of interdependence reflected a commitment to strengthening the scientific communities of partner nations, the vast

President's Science Advisory Committee' (Unpublished doctoral dissertation, University of California, Santa Barbara, 1994). For a discussion of attitudes toward international cooperation during these years, see the classic memoirs of the first three chairmen of the President's Science Advisory Committee, created after the launch of Sputnik, namely James R. Killian, *Sputnik, Scientists and Eisenhower: A Memoir* (Cambridge: MIT Press, 1971); George B. Kistiakowsky, *A Scientist in the White House* (Cambridge: Harvard University Press, 1976); and Jerome B. Wiesner, *Where Science and Politics Meet* (New York: McGraw-Hill, 1965).

[7] Many of the most prominent oceanic scientists of the twentieth century were deeply involved in both military work and international cooperation. See H. W. Menard, *The Ocean of Truth: A Personal History of Global Tectonics* (Princeton: Princeton University Press, 1986); William Wertenbaker, *The Floor of the Sea: Maurice Ewing and the Search to Understand the Earth* (Boston: Little, Brown, 1974); Elizabeth Noble Shor, *Scripps Institution of Oceanography: Probing the Oceans, 1936 to 1976* (San Diego: Tofua Press, 1978); Susan Schlee, *On Almost Any Wind: The Saga of the Oceanographic Research Vessel Atlantis* (Ithaca: Cornell University Press, 1978).

majority of them non-communist. All three themes – leadership, humanitarianism, and interdependence – constituted the science policy tacitly approved by the Eisenhower administration prior to the launch of Sputnik: one that simultaneously pursued free world interests, easing of tensions, and the promotion of scientific development.

LEADERSHIP, CHAUVINISM, AND THE INTERNATIONAL SCIENTIFIC TRADITION

For many Americans, the 1920s and early 1930s were halcyon years for international cooperation. Perhaps the sense of a scientific 'paradise lost' was a predisposition more characteristic of those who entered science before the Second World War, than of those whose lives were later clouded by the Cold War. This earlier generation looked back upon an idealized egalitarian international scientific community, committed to unfettered research, which was violated by the war.[8] The post-war cynic saw science taking a turn for the worse, seduced by military patronage and deprived of its democratic, international image. But this 'paradise' was an illusion, for American scientists had already revealed a commitment to fashioning the international scientific community in a decidedly American mould.

Oceanographers and other earth scientists knew that scientific research was closely related to economic progress. Thanks to the demand for railroads, mines, and petroleum, American geologists enjoyed the patronage of industry and government long before the advent of 'Big Science'. President Theodore Roosevelt made sure that the state surveyor of Colorado, a key mineral state, was 'an A-1 man, competent professionally and above suspicion personally', unlike others holding positions in a government otherwise rife with nepotism.[9] During and after the First World War, American (and European) geologists advised general staffs, and at Versailles were called in to re-map Europe.[10]

By the 1930s, philanthropic organizations such as the Rockefeller Foundation took pride in encouraging research that could have lasting

[8] Warner R. Schilling, 'Scientists, Foreign Policy, and Politics', in Robert Gilpin and Christopher Wright (eds.), *Scientists and National Policy-Making* (New York: Columbia University Press, 1964), 160–161.

[9] The Colorado College, Tutt Library (Colorado Springs, Colorado), Theodore Roosevelt Collection, folder 6, Theodore Roosevelt to Philip B. Stewart, 16 June 1905.

[10] See Roy MacLeod, '"*Kriegsgeologen* and Practical Men": Military Geology and Modern Memory, 1914–1918', *British Journal for the History of Science*, 28 (1995), 427–450; Arthur D. Little, 'Natural Resources in their Relation to Military Supplies', *Annual Report of the Board of Regents of the Smithsonian Institution, 1919* (Washington, DC: GPO, 1921), 211–238.

economic and social benefits for developing countries. Occasionally such efforts met with resistance, particularly when Americans were insensitive to local traditions.[11] Many organizations (notably the Rockefeller Foundation) nevertheless proceeded on the assumption that the development of science, and of democratic societies, would parallel the history of the United States. By equating science with progress, they believed that making communities 'more American' was a natural, logical and necessary step towards their improvement.[12]

This linear model reflected an underlying chauvinism among many American scientists. For example, Venezuelan survey projects of the 1930s and 1940s were negotiated between local governments and Princeton geologist Harry Hess, who had mapped geologically important areas in the Caribbean. Venezuelan scientists could make no independent intellectual contribution to these surveys. A Caracas newspaper summed up the situation thus:

> Dr. Hess said there is plenty of exploratory work to keep new students busy; he is always interested in the exchange of international scholars, and he would like to see more Venezuelan boys mapping their own country – while pursuing their studies at Princeton, of course.[13]

Certainly, Hess's sincerity was not in doubt; he was committed both to the development of science in Venezuela and to the vitality of the international scientific community; but the path toward these goals would be American by design. All project scientists, including the Venezuelans, were under his control. This did not mean that Hess took cooperation lightly, or intended to be exploitative. On the contrary, he saw cooperation as a kind of quality control.

As Lewis Pyenson has argued in respect to the 'civilising mission' of French colonial science, so in Venezuela, American science served to

---

[11] Merle Curti and Kendall Birr, *Prelude to Point Four: American Technical Missions Overseas, 1838–1938* (Madison: University of Wisconsin Press, 1954), 216. See also Lily E. Kay, 'Rethinking Institutions: Philanthropy as an Historiographic Problem of Knowledge and Power', *Minerva*, 35 (3), (1997), 283–293. For a general work on the impact of Rockefeller Foundation funding upon scientific communities, see Gerald Jonas, *The Circuit Riders: Rockefeller Money and the Rise of Modern Science* (New York: W. W. Norton & Co., 1989).

[12] Marcos Cueto, 'Visions of Science and Development: The Rockefeller Foundation's Latin American Surveys of the 1920s', in Marcos Cueto (ed.), *Missionaries of Science: The Rockefeller Foundation and Latin America* (Bloomington: Indiana University Press, 1994), 14.

[13] Princeton University, Firestone Library (Princeton, NJ), Papers of Harry Hammond Hess (afterwards, Hess Papers), Box 6, H. L. C., 'Mapping the Valley of Caracas', in *The Caracas Journal* (5 September 1949).

radiate theoretical norms set by metropolitans.[14] Certainly many American scientists, including Hess, were at least as interested in fashioning Latin American science in the image of science in the United States, as they were in the outcome of their research. When war broke out in Europe in 1939, Hess lamented that the Venezuelan government was unable to maintain its support for surveying projects. He implored geologists at the Universidad Central to keep abreast of latest developments, at the very least by subscribing to the *Proceedings of the American Geophysical Union* at a cost of $3, lest they fall behind after so much progress. He was deeply troubled by the extent to which the war halted scientific development in Latin America, slowing the inclusion of its scientists in the international community.[15] His suggestions underlined the view that significant scientific activity in Latin America could only be possible when guided and led by others, especially Americans.[16]

Leaders of American science also looked to international cooperation as a means of enhancing American control of resources. In 1929, for example, the United States Navy invited the Dutch geodesist Felix Andries Vening Meinesz to conduct experiments aboard an American submarine. The Navy believed that Vening Meinesz's work on isostatic compensation might aid in the discovery and exploitation of fuel resources, which the Navy needed to avoid dependence upon imports.[17] The resulting 'S-21 expedition' revealed the complexities of gravity anomalies beneath the sea floor and gave Vening Meinesz's work a wide audience. Naomi Oreskes has called Vening Meinesz's expedition the origin of marine geophysics in

---

14 Lewis Pyenson, *Civilizing Mission: Exact Sciences and French Overseas Expansion, 1830–1940* (Baltimore: Johns Hopkins University Press, 1993), 336.

15 Hess Papers, Box 6, Harry Hess to Victor M. Lopez [Ministerio de Fomenta, Estados Unidos de Venezuela], 18 November 1941.

16 This chauvinism was not unique to Americans. Indeed Hess might be an example of what Lewis Pyenson has identified as *Kulturträger*, 'bearers of civilization' who were attempting to transport knowledge, and the methods of scientific inquiry, across cultural and national borders. As critics of Pyenson suggest, these scientists did not necessarily possess universal knowledge or methods, even if they were representatives of exact sciences such as geophysics (as Hess certainly was). Nevertheless, Hess and others in this essay were inclined to act as though scientific production depended greatly upon shared standards, and that American scientists should take a leadership role in setting them. See Lewis Pyenson, *Cultural Imperialism and Exact Sciences: German Expansion Overseas, 1900–1930* (New York: Peter Lang, 1985); and Paolo Palladino and Michael Worboys, 'Science and Imperialism', *Isis*, 84 (1993), 91–102.

17 Naomi Oreskes, 'Weighing the Earth from a Submarine: The Gravity Measuring Cruise of the U.S.S. S-21', in Gregory A. Good (ed.), *The Earth, the Heavens, and the Carnegie Institution of Washington* (Washington, DC: American Geophysical Union, 1994), 63–64.

America.[18] Because of its military patronage – which would grow enormously over the next decades – the expedition was also an early step in militarizing the discipline of oceanography.

Scientists welcomed the unprecedented research opportunities offered by the military during the Second World War. Science could be used to make the nation strong.[19] Harry Hess, who was keen to wed scientific development to American strength, boasted:

> This is probably the only ship in the US Navy where one can find such phrases as the following [in] the captain's night order book: 'Steer course 273° true until you hit the 2000 fathom curve then change to 298° and call me when we cross the 500 fathom curve'.[20]

Hess took pride in making the Navy a more science-oriented organization. He was one of many who saw how American scientific leadership could benefit science in other countries, while also improving the capacity of the American military.

For some oceanographers, an equally attractive pursuit was the collegial atmosphere afforded by the first four Pacific Science Congresses in the 1920s. Here there was less of the master-journeyman relationship familiar in other contexts. The first Congress passed dozens of resolutions calling upon governments to support surveys both at sea and on land. Scientists emphasized the value of the Congress for bringing experts together to coordinate research and collectively to appeal to home governments. Only by working together, they reasoned, could they tackle the most important scientific problems of the Pacific.[21] At the second Congress in Melbourne and Sydney, Australian scientists organized a committee on the physical and chemical oceanography of the Pacific, consisting of representatives of each country at the Congress.[22] This was the first experiment in creating

[18] *Ibid*., 66.

[19] Others were more ambivalent about their role in making the nation stronger. Physicist Maurice Ewing, later director of the Lamont Geological Observatory, did not care where the money came from for his work. He noted that in the 1930s if someone had offered him to put his equipment 'on the moon instead of the bottom of the ocean I'd have agreed, I was so desperate to do research'. William Wertenbaker, *The Floor of the Sea: Maurice Ewing and the Search to Understand the Earth* (Boston: Little, Brown, 1974), 23.

[20] Hess Papers, Box 25, Harry Hess to Department of Geology, Princeton University, 24 October 1944.

[21] Philip F. Rehbock, 'Organizing Pacific Science: Local and International Origins of the Pacific Science Association', in Roy MacLeod and Philip F. Rehbock (eds.), 'Nature in its Greatest Extent': *Western Science in the Pacific* (Honolulu: University of Hawaii Press, 1988), 208–212.

[22] For the Australian Congress, see Roy MacLeod and Philip F. Rehbock, 'Developing a Sense of the Pacific: The 1923 Pan-Pacific Science Congress in Australia', *Pacific Science*, 54 (3), (2000), 209–226.

a standing committee that would continue beyond the congress and report the work of the group at the next meeting. At the third congress, in Tokyo, standing committees were written into the constitution of the new Pacific Science Association. These committees (three of the first four were related to oceanography) encouraged scientists to work together to advance the status of their field.[23] Such developments, promoting the coordination and planning of work in specific disciplines on an international basis, took cooperation, not management, by American scientists.

Still, Americans dominated these Congresses, and they generally were disappointed with their international colleagues. T. Waylan Vaughan, Director of Scripps Institution of Oceanography, chaired the first standing committee on oceanography and set the standard for the papers presented. Only the Japanese and the Canadians compared well, while most others failed to impress in thoughtfulness or rigour. Zoologist Carl Hubbs scorned the Dutch working 'day' that lasted from nine until one. He wrote to his wife after the 1929 meeting in Java that 'the Dutch certainly fall down on details of administration, the natives are exasperatingly stupid and lazy, and neither have any real sense of time'. He felt that only the Americans made a strong showing, and that some papers, notably those of the Russians, were so bad that they should be struck from the Congress's printed volume.[24] But Americans viewed the Congresses positively: they were a step in the 'right direction', towards meeting American standards.

Some American scientists also believed that Pacific Science congresses served the interests of world peace. The Pacific Science Association (PSA) attempted to cross the threshold of political divisions between Europeans and Asians.[25] In the words of Yale geologist Herbert E. Gregory, the 1923 Congress in Melbourne and Sydney demonstrated that 'friendship and science held equal place'. In 1926, The President of the National Research Council of Japan, Prince Joji Sakurai, noted that the most remarkable thing about the Congress in Tokyo was the 'genuine warmth of feeling which pervades it'. Several scientists echoed these sentiments and hoped that scientific meetings would foster not only science, but also understanding.[26]

---

23 The committees were on Oceanography of the Pacific, on Coral Reefs of the Region, and on Volcanic Rocks of the Central Islands (the fourth was on Pacific Anthropology). A. P. Elkin, *Pacific Science Association: Its History and Role in International Cooperation* (Honolulu: Bishop Museum Press, 1961), 28.

24 Archives of Scripps Institution of Oceanography (La Jolla, CA), Papers of Carl Leavitt Hubbs (afterwards, Hubbs Papers), Box 18, folder 64, Carl Hubbs to Laura Hubbs, 30 May 1929.

25 Essays exploring the unique historical role of science in the Pacific Ocean (not limited to the twentieth century) can be found in MacLeod and Rehbock (eds.), *op cit*. note 21.

26 Elkin, *op. cit*. note 23, 32.

In this respect, many scientists – not just the Americans – consciously took up politics, to embrace internationalism as a useful function of their association with one another.

Because most of the 'Asians' in the PSA were colonial Europeans, whose scientific communities were long established, the sense of an international scientific community in the Pacific Ocean region may come as no surprise.[27] An important exception was Japan, whose tradition of biological research had already entered a period of maturing.[28] American zoologist Carl Hubbs was impressed by the quality of the Japanese papers delivered at the 1929 Java Congress. Moreover, scientists from Japan prioritized the Congresses, often sending more delegates than the Americans did. When Hubbs visited Japan just after the Java Congress, he was charmed by the enthusiasm of the scientists he met, and by their desire to establish reciprocal arrangements for sharing literature and specimens.[29] As much as – if not more than – any other Pacific Ocean community, the Japanese held out great promise as partners in scientific cooperation.

However, international scientific cooperation in the Pacific in the 1930s failed to meet the hopes of the 1920s. Many intellectuals tried to forge closer relations between the interests of science and the needs of society, concluding that the 'internal' (science) and the 'external'(society) could not easily be separated.[30] But such insights, when pitted against the economic and political strains of the 1930s, failed to provide effective tools by which internationally-minded scientists could shape the world around them. The Great Depression had a devastating effect on international cooperation. Scientific conferences were an expensive luxury for scientists with falling salaries and limited research grants. In the Pacific, Japan's militarism in Asia put severe strains on the spirit of cooperation. Participation in the Pacific Science Congresses declined dramatically; the only ones held during the 1930s were in Canada and the United States, and scientists from North America made up the vast majority of participants. The realization of their helplessness in the face of international

[27] Although Indonesians of non-European descent held some research positions, Dutch-born scientists or children born of Dutch parents were at the top of the scientific hierarchy. See Lewis Pyenson, 'Assimilation and Innovation in Indonesian Science', *Osiris*, 13 (1998), 34–47.

[28] Biological and medical sciences were particularly strong in Japan. See James R. Bartholomew, *The Formation of Science in Japan: Building a Research Tradition* (New Haven: Yale University Press, 1989).

[29] Hubbs Papers, Box 18, folder 64, Carl Hubbs to Laura Hubbs, 29 June 1929.

[30] Michael Aaron Dennis, 'Historiography of Science: An American Perspective', in John Krige and Dominique Pestre (eds.), *Science in the Twentieth Century* (Amsterdam: Harwood Academic Publishers, 1997), 5–6.

strains actually prompted the Association to include the social sciences, to promote the application of brainpower to practical human relations.[31] Such efforts at scientific cooperation in the Pacific continued even when others failed.

HARRY TRUMAN'S HUMANITARIAN SCIENCE POLICY

By the end of the Second World War, the development of the atomic bomb – not to mention radar, penicillin, and the proximity fuse – moulded the image of science into a pillar of strength for the United States and its allies.[32] Yet there remained – in the form of the United Nations – a residue of the inter-war vision that science could be directed to aid world peace. The United Nations cultivated a role of political impartiality and of humanitarian intent. One of its agencies, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), extended the humanitarian mandate to science itself. Both UNESCO and the International Council of Scientific Unions (ICSU) comprised representatives of national academies and of specialized disciplinary organizations (such as the International Union of Geodesy and Geophysics). Under UNESCO sponsorship, such international scientific bodies acquired a humanitarian mandate, abandoning an exclusive commitment to 'pure' science, and addressing problems of importance to the human condition.[33] Rather than wrestle with the Pacific Science Association's twin objectives (science and peace), UNESCO tied the aims of science explicitly to serving mankind. Its most useful function, in the immediate post-war era, was to help countries, devastated by the war, recover through international scientific and technical cooperation. Here, the oceanic sciences would play an important role, not least because fisheries provided a significant source of the world's food.

---

[31] Elkin, *op. cit*. note 23, 43.

[32] Much of the funding for science was accomplished by military sponsors, particularly the Office of Naval Research; this was true even after the establishment of the civilian National Science Foundation in 1950. See Harvey Sapolsky, *Science and the Navy: A History of the Office of Naval Research* (Princeton: Princeton University Press, 1990); Nathan Reingold, 'Vannevar Bush's New Deal for Research: or The Triumph of the Old Order', *Historical Studies in the Physical and Biological Sciences*, 17 (1987), 299–344; Jessica Wang, 'Liberals, the Progressive Left, and the Political Economy of Postwar American Science: The National Science Foundation Debate Revisited', *Historical Studies in the Physical and Biological Sciences*, 26 (1995), 139–166.

[33] See Frank Greenaway, *Science International: A History of the International Council of Scientific Unions* (Cambridge: Cambridge University Press, 1996).

President Harry Truman made support for the United Nations a key element of his foreign policy. But Truman saw at least two uses for the United Nations. True, it was a forum for seeing the world through crises and for coordinating international aid. But it also was valuable as a political tool, because it took public responsibility off American shoulders. In the years before and during the Korean War, the State Department hoped to achieve the 'containment' of communism, while waving the banner of internationalism. Through the United Nations, the United States organized multilateral action that stemmed from unilateral policies, without confronting the Soviet Union directly.[34] Truman's strategy was to build up the political strength and economic stability of the non-communist world. This he did through direct monetary aid, as in the case of the Marshall Plan. Under what became known as the Truman Doctrine, the United States was committed to aiding countries that were perceived as threatened by communist takeovers.[35]

Truman's use of the United Nations to contain communism also guided his efforts to forge a government-sponsored connection between science and international relations. By doing so he wed two (seemingly) opposing visions of scientific cooperation, one based upon the world-wide humanitarian project, and the other based upon bolstering the economic strength only of the 'free world'. In the fourth point of his inaugural address in 1949, President Truman affirmed his Administration's desire to incorporate science into this policy:

> We must embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas . . .
>
> The United States is pre-eminent among nations in the development of industrial and scientific techniques. The material resources which we can afford to use for the assistance of other peoples are limited. But our imponderable resources in technical knowledge are constantly growing and are inexhaustible . . .
>
> We invite other countries to pool their technological resources in this undertaking. Their contributions will be warmly welcomed. This should be a cooperative enterprise in which all nations work together through the United Nations and its specialized agencies whenever practicable. It must be a worldwide effort for the achievement of peace, plenty, and freedom.[36]

34 For this view, see Bruce Cumings, *The Origins of the Korean War: Volume II: The Roaring of the Cataract, 1947–1950* (Princeton: Princeton University Press, 1990), 66.

35 For a discussion of Truman's policies for containing communism in the context of the Cold War as a whole, see John Lewis Gaddis, *Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy* (New York: Oxford University Press, 1982).

36 Quoted in W. W. Rostow, *Eisenhower, Kennedy, and Foreign Aid* (Austin: University of Texas Press, 1985), 78–79.

The success of the Marshall Plan in Europe had proved that the United States could help to build and stabilize countries. But there would be no Marshall Plan for what became known as the Third World. In the 1930s, the United States learned that money alone could not prevent enemy advances into such strategic areas as Latin America.[37] In any case, Secretary of State Dean Acheson believed that only highly developed societies could make efficient use of capital. He believed that 'capital loans in advance of technical and managerial competence are not only a waste but a disadvantage' to the borrowing country. First, the United States – under the auspices of the United Nations – must make the poor productive.[38] This is where scientific development would be key.

These 'Point Four' programmes were flawed from the beginning. Their goal was to develop the scientific and technical foundations of developing countries.[39] But American critics dubbed them 'give-away' programmes, which had only scant relevance to American national security. And recipient countries often chafed at American government-sponsored philanthropy. Even more important was their lack of reciprocity. The American programmes failed to include developing countries as equal members of an interdependent international scientific community.

In a 1950 report, the State Department recommended the establishment of science liaison offices in key embassies throughout the world, to keep American scientists abreast of new discoveries in other countries. These officers would make contacts in foreign scientific communities, and collect and disseminate research. The report affirmed that 'scientific developments are increasingly recognized to be essential to economic welfare; and from economic welfare stems the political security and stability of any nation'.[40] Yet, the liaison system and Point Four were not connected. The logic itself was sound: a country needed to acquire knowledge to aid its development; yet to be a real participant in the international scientific community, a country also needed to export knowledge. Not only did American policy weaken the possibility of bringing scientists from the developing world into the international scientific community; it also made Point Four seem like wasteful philanthropy.

---

37 Javier Gonzalo Alcalde, *The Idea of Third World Development* (Lanham: University Press of America, 1987), 120.

38 Dean Acheson, *Present at the Creation: My Years in the State Department* (New York: W. W. Norton & Co., 1969), 265–266.

39 For a discussion of the changing purpose of science aid in developing countries, see Eugene B. Skolnikoff, *The Elusive Transformation: Science, Technology, and the Evolution of International Politics* (Princeton: Princeton University Press, 1993).

40 Walter H. Waggoner, 'State Department Urges U.S. Office of World Science', *New York Times* (5 June 1950), 1.

Of course, the progress of science was not the ‘end’ for which the ‘means’ of the Point Four programmes were designed. Nor was reinforcing the policies of the United Nations, nor aiding the structural stability of developing countries. Such intermediate ends served only the ultimate end: the containment of communism. Within the International Development Advisory Board (IDAB), some of Truman’s staff felt that the impetus for Point Four, namely the struggle against communism, generally was being ignored and that the foreign policy arguments were ‘vague and considered secondary to a substantially “do-good” objective’. In late 1950, a committee chaired by Nelson A. Rockefeller began to formulate a strategy that would frame all aid for foreign development in terms of the East-West struggle. IDAB members recognized in early 1951 that ‘there lies here an opportunity of using the [Rockefeller] Report (assuming that it lives up to its promise) as a kind of “Magna Carta” around which to rally Congressional and public opinion into a new, non-partisan unity regarding a strong foreign policy’. The committee wished to affirm the need for foreign aid to bolster both military and economic strength in the free world. These were largely defensive measures. But there was also an offensive dimension. An IDAB member noted:

> . . . the Committee began to discuss the idea of broadening the statement of policy objective to include a third essentially offensive point . . . to increase the productivity of the members of the free world bloc (especially the ‘underdeveloped’ areas on the outside periphery of the iron curtain) so vigorously in the Western atmosphere of political freedom, that Soviet areas on the inside periphery of the ‘curtain’ will eventually break the hold of Soviet imperialism.[41]

The purpose of including this ‘offensive point’ was to strengthen the anti-communist aspects of Point Four aid programmes, which paid lip service to the goals of the United Nations but were fundamentally concerned with economically consolidating the ‘Free World’.

Naturally, the United Nations did not share this single-minded objective. Americans expressed frustration at UNESCO for its sluggishness in promoting an aggressive scientific programme. One observer of UNESCO operations in South Asia complained that the UNESCO Science Cooperation Office in New Delhi served simply as a clearing house for scientific information, having no active role in promoting scientific activity. Scientists in Thailand complained that they ‘were being surveyed to death’, caught up in extended studies. UNESCO was slow to promote

[41] National Archives and Records Administration (Washington, DC), Technical Cooperation Administration, Office of the Administrator, RG 469 (afterwards, NARA RG 469), Records of the International Development Advisory Board, Box 5, folder ‘Government: The White House IDAB’, Richard N. Johnson to W. A. Harriman, 16 February 1951.

tangible results.[42] In May 1951, the State Department urged American diplomats at the UN to pressure UNESCO to concentrate more substantially in assisting the underdeveloped nations of the free world, in order to accelerate their educational and scientific development. The State Department felt that the organization's effectiveness had been dissipated by its wish to emphasize the non-political character of UNESCO.[43]

When it actually could implement its aid programmes, UNESCO spread itself thinly, trying to provide a fair representation to a wide range of nations. UNESCO naturally had far-ranging difficulties in administering hundreds of projects. Metropolitan 'experts' had difficulties persuading local people to change traditional practices. The expert's duty was, in one author's words, 'to work himself out of his task', by creating knowledge and skill equivalent to his own, so that eventually his services were not needed.[44] But this was more easily said than done.

Despite complaints about the ineffectiveness of the United Nations, the American effort paralleled that of UNESCO. In Latin America, the practice of setting up a local knowledge base was systematized; and the Americans set up a *servicio* for each development scheme within a country. The State Department sent an expert to manage each *servicio*; the expert would attempt to design research programmes, set high standards, and eventually to leave the *servicio* to the new local experts trained by him.[45] Several of these experts were fisheries specialists who organized, planned, and conducted research programmes designed to expand and modernize commercial fisheries. After this instruction, the new local experts were expected to add their own sophisticated research – say, biological or physical oceanography – to their fisheries investigations.[46] The overall conception of Point Four was that it was a temporary measure to stimulate local activity.

---

[42] NARA RG 469, Records of the International Development Advisory Board, Box 14, folder 'UNESCO', Charles A. Thomson and Walter Walkinshaw, 'Observations on UNESCO Operations in South Asia', 12 May 1950.

[43] NARA RG 469, Records of the International Development Advisory Board, Box 14, folder 'UNESCO', Department of State confidential memorandum (unsigned) to 'Certain Diplomatic Officers', 16 May 1951.

[44] Fred Tickner, *Technical Cooperation* (New York: Praeger, 1966), 24–25.

[45] The budget for the expert's activities and training programme would be shared between the Institute for Inter-American affairs and the government of the receiving country. *Ibid*., 94–95.

[46] NARA RG 469, Institute for Inter-American Affairs, Administrative Office, Country Files (Central Files), 1942–1953, Box 112, folder 'Annual Report: U.S. Fisheries Mission, Lima, Peru, 1952', Charles B. Wade to Chief, Fishery Mission to Peru, 5 January 1953.

Once implemented, the Point Four aid programmes met criticism from several quarters. Perhaps the best known critique was William J. Lederer and Eugene Burdick's 1959 exposé, *The Ugly American*, which spared no feelings in revealing the principles of American foreign aid as flawed, arrogant, and incompetent.[47] Many of these criticisms were valid. The Point Four programmes certainly failed to make oceanic scientific research an effective instrument of foreign policy. Today, some argue that the Point Four programmes were simply tacked onto America's foreign policy as an afterthought. The State Department was not enthusiastic about implementing them. Walter Isaacson and Evan Thomas have observed that Secretary of State Dean Acheson regarded Point Four as political rhetoric, and not as a mandate to be carried out.[48] Acheson himself later wrote that expectations were too high. The budget placed limitations on Point Four's effectiveness, and 'although the program continued to do a creditable job, it remained the Cinderella of the foreign aid family'.[49] Indeed, perhaps the only value of Truman's Point Four was to wed American foreign policy firmly to the objectives stated in the United Nations Charter, a purpose the President may have hoped to achieve without an effective implementation strategy.[50]

Although American scientists hoped to encourage oceanographic research during their short visits under Point Four, they were quickly disillusioned. The experience of Charles B. Wade, a fisheries specialist, in Peru is instructive. Upon arriving, Wade saw immediately that it would be impossible to carry out his duties. First, funding was not stable, making the long-term establishment of a Peruvian oceanographic community unlikely. Because the director of Peru's fish and game service resigned before Wade arrived, there was no one to provide funds for a marine biological laboratory or a research vessel. Second, the facilities were not conducive to ambitious research projects. The biological section of the fish and game service consisted of three persons, one of whom was on leave in the US doing graduate work, and was wholly contained in a single room in the technological laboratory in Callao. Wade complained that 'the girls' –

[47] See William J. Lederer and Eugene Burdick, *The Ugly American* (New York: W. W. Norton & Co., 1959).

[48] Walter Isaacson and Evan Thomas, *The Wise Men: Six Friends and the World They Made: Acheson, Bohlen, Harriman, Kennan, Lovett, McCloy* (New York: Simon & Schuster, 1986), 732.

[49] Acheson, *op. cit*. note 38, 266. Others maintain that Point Four programmes, despite their ineffectiveness, were still significant because they were 'instrumental in the rise of multilateral development assistance and the emergence of the United Nations as a champion of world development'. See Alcalde, *op. cit*. note 37, 207.

[50] Lloyd D. Black, *The Strategy of Foreign Aid* (Princeton: D. Van Nostrand, 1968), 14.

the two remaining biologists were women – simply worked on whatever research programme came to their heads. To make changes was difficult, a problem compounded by the fact that, incredibly, Wade spoke no Spanish.[51]

Wade's experience revealed a misconception on the part of Point Four planners, namely that the scientific communities of developing countries could, with a little help, begin to conduct mature scientific work independent of American help and supervision. The frustrated American adviser had to start at a far more fundamental level than he expected, training the Peruvian biologists in applying quantitative analysis, using methods no more advanced than mean, median, mode, and probable error. He had to convince them that fisheries research required gathering large amounts of raw data to be reduced mathematically. He had to persuade them that the need for accurate data and adequate samples required actual physical work, and that results needed to be reasonably accurate, so that others might make use of them. By the end of the commercial fishing season, he felt that he had made some progress.[52] Nevertheless, the next year another adviser arriving on the scene was equally appalled:

> . . . I found that the staff did not have sufficient grasp of the principles [and] were inclined to treat inspection as a routine procedure, simply a matter of 'smelling fish'.[53]

The advisers met non-scientific outlooks they had not anticipated, making their task of developing a viable scientific community impossible.

A similar failure to implement a strategy of cooperation was repeated in other Latin American countries where it was difficult to convince local officials of what science actually entailed. Uruguay had a unique organization, the *Servicio Oceanográfico y de Pesca*, which was less a scientific body than a government monopoly of the fishing industry. Not only did its control of prices make the Uruguayan fishing industry economically stagnant, but its scientific work was also a misnomer. One of the American adviser's first recommendations was to change its name, as there was no oceanographic work being pursued.[54] In Colombia, the same adviser found

---

51 Charles B. Wade to Chief, Fishery Mission to Peru, 5 January 1953, *op. cit.* note 46.

52 *Ibid.*

53 NARA RG 469, Institute for Inter-American Affairs, Administrative Office, Country Files (Central Files), 1942–1953, Box 112, folder 'Annual Report: U.S. Fisheries Mission, Lima, Peru, 1952', N. D. Jarvis, 'Annual Report', n.d. [covers period 17 October 1952 to 31 December 1952].

54 NARA RG 469, Institute for Inter-American Affairs, Administrative Office, Country Files (Central Files), 1942–1953, Box 125, folder 'Survey of Oceanographic and Fishery Service-Uruguay', Robert O. Smith, Fisheries Technologist, 'Report on Activities of S.O.Y.P.', 27 February 1952.

that local practices – in this case, fishing by dynamite – were depleting the fish population. Yet there was no way to study the problem because no one, including the fisheries inspectors, had the appropriate training. In addition, there was no government agency, such as a fish and game service, which might logically support a programme of fisheries development. The adviser complained:

> Any Point IV technician assigned to Colombia would be entirely on his own without the possibility of training anyone to continue a project. Except in rare instances, this lack of national technician to carry on and develop a program practically nullifies the work of the Point IV technician.[55]

This comment went to the heart of the problem. The objective of aid was to develop a strong scientific and economic infrastructure that could eventually promote research by local scientists of quality comparable to that of scientists in the United States. That these programmes persistently failed suggested that only a pattern of sustained contact – either through continuing aid or by permanent exchange of staff – could produce results.

These shortcomings illustrated the fundamental weakness of American government-sponsored cooperation, particularly in the ocean sciences. The Point Four programmes did little to help scientific communities get on their feet, and failed to make Americans scientists feel that further cooperation would yield mutually beneficial results. On the other hand, informal contacts with a few foreign scientists – those who somehow had gained the Americans' confidence – did emerge, strengthening scientific ties with, for example, Japan. But in Latin America, such contacts were formed with military organizations, rather than with civilian scientists trained through the programmes of the American government. For example, when the Scripps Institution of Oceanography conducted its Shellback expedition to the eastern South Pacific in 1952, it wished to make use of any oceanographic data already gathered on the area. The Peruvian scientific community could not be trusted to have good data; however, there was one man in the Peruvian Navy who had been trained at Scripps, so the Americans made use of his services. Indeed, often in developing countries, military institutions claimed the best scientists, particularly in oceanographic research, which required considerable training and internationally standardized levels of precision. In the case of the Shellback expedition, cooperative arrangements were carried out with the Peruvian Navy in an

55 NARA RG 469, Institute for Inter-American Affairs, Administrative Office, Country Files (Central Files), 1942–1953, Box 35, folder 'Technical Aid in Fisheries for Colombia, Special Report, Robert O. Smith', Robert O. Smith, Fisheries Specialist, 'Information Relative to a Program of Technical Aid in Fisheries for Columbia', 9 June 1953.

unofficial capacity.[56] Similarly, American scientists from Northwestern University conducted aerial geographic surveys in Bolivia, a great help in determining economic resources, with the help of the Bolivian Air Force.[57] These arrangements provided an early clue that reciprocity was only possible when organized by scientists, not by official arms of government. The chief reason was that effective cooperation was based upon trust in science, which ultimately could only be established by scientists. From the scientists' point of view, if the Point Four programmes did not demonstrate the total inefficacy of state-sponsored scientific aid, they at least showed that it was easier to cooperate with people chosen by American scientists, even if they wore military uniforms.

Despite its many shortcomings, Point Four did leave a legacy for international science. Its attempts to wed two contradictory aims of cooperation, namely Cold War politics and worldwide humanitarianism, went awry – the State Department had bitten off more than it could chew in defining its experts' missions and in raising scientists' expectations. Yet the lesson was not that Americans should stop trying to shape the scientific communities of developing countries, but rather that the primary actors in cooperation should be scientists, not governments. Just as before the Second World War, American leadership was seen not only as a badge of superiority but also as a sign of trust – to ensure the quality of the science itself. Scientists did not thrive in isolation; the development of science in the service of the world meant increased intellectual cooperation. For that cooperation to be effective, the community needed to become interdependent, but with shared standards defined by the most advanced community. American scientists perceived that Point Four had been conceived, just as its critics dubbed it, as a give-away programme. There was no reciprocity, a weakness that would have to be remedied by any alternative strategy of scientific cooperation.

Interdependence and Japan's Oceanographic Community

The election of Dwight Eisenhower to the presidency in 1952 changed the nature of American foreign aid. Broadly speaking, scientific training was thereafter overshadowed by direct military assistance. As a result, science

56 Wade to Chief, Fishery Mission to Peru, 5 January 1953, *op. cit*. note 46.

57 NARA RG 469, Institute for Inter-American Affairs, Administrative Office, Country Files (Central Files), 1942–1953, Box 4, folder 'Bolivia-Geographic Survey (Northwestern Univ.)', Frank Lauer Keller to Colonel Claudio Lopez, 1 December 1952.

as a formal instrument of foreign policy virtually disappeared.[58] This reversal of fortune had a paradoxical effect upon scientific cooperation. Despite cutbacks in funding, international cooperation actually expanded during the Eisenhower Administration, to include such unprecedented projects (in terms of size and scope) as the International Geophysical Year of 1957–1958. The reason was that scientific cooperation had already begun to take off, even as the Point Four programmes were being implemented by the State Department. This cooperation was characterized by more meaningful relations among major scientific institutions, military patrons, and leading scientists. It flourished thanks to American leadership, with a hint of humanitarianism, tempered by a strong dose of non-communist solidarity, and a renewed emphasis upon scientific interdependence.

Much oceanographic research in the United States between 1953 and 1955 stemmed from the need to apply science to economic benefit. The first large-scale post-war expedition in the Pacific Ocean (known as Mid-Pac) was conducted by Scripps in 1950. Although the purpose of this expedition was both scientific and military, it promised to help explain the sharp decline in the tuna catch, known as the 'Tuna Catastrophe'. An even more ambitious expedition was planned for 1953 across the Pacific (known as Trans-Pac) which explored marine biological resources. Although the scientists also conducted bathymetric mapping and other hydrographic studies, the main objective of these expeditions was to discover how oceanic fauna break down in the region. Scripps biologists hoped also to develop cooperative relationships with foreign scientists in the Pacific Ocean region, much as their predecessors had done during the 1920s. They solicited the help of the National Research Council to do so.[59] Meanwhile the director of the Manila Oceanographic Institute in the Philippines invited Americans to visit his scientific community, and to attend the 1953 Pacific Science Congress, the first such meeting held in a developing country in the post-war era. The director in Manila hoped that the Congress, particularly if a great number of Americans attended, would raise the profile of his institution.

The National Research Council seized the opportunity to use the 1953 Pacific Science Congress to promote American leadership. UNESCO was

58 Rostow, *op. cit*. note 36, 91–92.

59 The two biologists most interested in making international contacts were Carl L. Hubbs and Claude ZoBell. SIO Subject Files, AC 6, Box 7, folder 29, Carl L. Hubbs to Claude ZoBell, 22 Oct 1952; also Claude E. ZoBell to Harold J. Coolidge, 18 November 1952.

to finance a symposium on physical and biological oceanography, which would later become a principal feature of the Congress. The NRC urged Scripps to 'transport to the meeting as large a group of U.S. oceanographers and biologists as could be justified by the program of work which would be undertaken on your proposed expedition'. In addition, it voiced a commitment to oceanographic institutes in foreign countries. NRC representative Harold J. Coolidge felt that the finest institute in Southeast Asia, operated in Nhatrang by French scientists since 1922, was in danger of being abandoned by both French and Vietnamese governments. Coolidge urged Scripps to visit the institute as a show of support. The visit, he claimed, would be 'a great inspiration to those who are struggling to prevent the Institute from being turned into barracks for a nearby school, which would lead to the termination of its effective use for scientific research of any kind'.[60]

Here and elsewhere, the NRC hoped to use scientist-to-scientist contacts to show support for an existing community. In addition, the NRC saw Japan as a potential partner. Coolidge felt that the Americans should assist Japanese colleagues by familiarizing them with new equipment and techniques. Such a show of support 'would be making an important contribution to international good will and would help us to obtain further cooperation from Japanese scientists in joint researches in the field of oceanography'.[61] His point emphasized not only good relations, but also scientific reciprocity. Marine geologist Robert S. Dietz, on a Fulbright fellowship in Japan, saw that, because of Japan's dependence on marine food, and a 'marine "fixation" without parallel anywhere in the world', cooperation with Japan could reap important cultural and scientific benefits.[62]

These motivations were tempered by pressing military requirements. In early 1953, the US Navy's Office of Naval Research (ONR) intervened in the planning of the expedition. One of its liaison officers wrote that the northernmost Pacific 'has been sadly neglected', despite the need to collect data of vital interest to the Navy in the area. He advised scaling down the proposed expedition, concentrating more vigorously on a smaller area to reap scientific results of utility to the Navy. As for the Manila conference, the Navy offered to have a few scientists flown from Japan to Manila. It felt

---

60 SIO Subject Files, AC 6, Box 7, folder 29, Harold J. Coolidge to Claude E. ZoBell, 12 January 1953.

61 *Ibid*.

62 SIO Subject Files, AC 6, Box 7, folder 29, Robert S. Dietz to Director and Staff, Scripps Institution of Oceanography, n.d.

that more time in Japan was desirable, so that American scientists could build contacts with Japanese oceanographers, and get their most recent scientific information.[63] Nhatrang faded from the picture entirely. In short order, the American showing in Manila was reduced, the visit to Nhatrang cancelled, and the region of study changed to fit military requirements. As the ONR liaison officer wrote, the eventual track to be followed by the ship conformed not to a plan set forth by the scientists, but rather:

> . . . a coverage of the North and Northwest Pacific Ocean areas which is least known hydrographically and oceanographically to the U.S. Navy. It is the opinion of this Office that subject cruise is of extreme importance to the U.S. Navy and should be supported in every detail. It is of particular value to those activities concerned with undersea warfare.[64]

The Trans-Pac cooperative expedition had changed to a military mission. Some biological studies were indeed carried out, but not on the scale planned.[65]

Despite the Navy's control of the expedition, the idea of cooperating with Japanese scientists remained intact. The Japanese were, for the most part, receptive to the idea. Robert S. Dietz took it upon himself to work up enthusiasm for American oceanographers:

> I have shown the [1950] Mid-Pacific Expedition film in many parts of Japan. At least a couple thousand people have seen it. This is not too much to our credit for there are 'taxan' (Jap. for *beaucoup*) people over here and almost anything draws a crowd. But anyway I'm sure that the Expedition will find that Scripps is a 'household word' at least among the scientific fraternity when they arrive.[66]

Among those to see the film was Hirohito. The Imperial Household invited Dietz to visit its marine zoological laboratory, and to have an audience with the emperor. Dietz was delighted to find that Hirohito was well acquainted with oceanography, having published several marine biological works.[67]

---

63 SIO Subject Files, AC 6, Box 7, folder 29, C.N.G. Hendrix (ONR Liaison Officer), to Claude ZoBell, 25 February 1953.

64 SIO Subject Files, AC 6, Box 7, folder 30, C.N.R. Hendrix (ONR Liaison Officer) to Director, Office of Naval Research Branch Office, Pasadena, 24 April 1953.

65 The results might be summarized by a presumably tongue-in-cheek Trans-Pac report on the *pycnogonid*, a marine organism. Having caught one such organism in much shorter time than another expedition had (each expedition had caught only one), the scientist concluded that the number of *pycnogonids* per month had risen from 0.07 to 0.20 in a very short period. At that rate of increase, he estimated, 'the *pycnogonids* may support a major fishery sometime in the next millenium'. SIO Subject Files, AC 6, Box 7, folder 36, Joel W. Hedgpeth, 'The Pycnogonid'. n.d.

66 SIO Subject Files, AC 6, Box 7, folder 30, Robert S. Dietz to Director and Staff, 25 May 1953.

67 *Ibid*. Dietz had not been familiar with the emperor's scientific works.

Indications of cultural respect for science bespoke advantages for cooperation not limited to Japanese government support. Americans also stood to learn much from the exchange of ideas with Japan.

The Japanese reception of Scripps's ship, the *Spencer F. Baird*, contrasted sharply with the experience of American scientists in Latin America on programmes sponsored under Point Four. Kanji Suda, Chief of the Japanese Hydrographic Office, prepared a reception committee in Tokyo consisting of scientists from the Science Council of Japan, the Oceanographic Society, the Fishery Society, and the Geological Society. Also included were the mayor of Tokyo and representatives of the Asahi Press. Similar receptions were planned for the *Baird*'s other ports of call at Hakodate and Kobe. The message sent to Scripps from the *Baird* on 29 September 1953, showed that Suda had made good on his promise:

> Stayed in Hakodate longer than anticipated, while waiting for Typhoon Tess to pass. During official stay every minute was planned with tours of research institutes, discussions with scientists, banquets, and receptions. Thousands of people visited the ship. If the Tokyo reception is proportionally greater none of us will survive the ordeal.[68]

The level of enthusiasm was unprecedented.

An important feature of this Trans-Pac expedition was that it sent a clear message to the Japanese that they would not be able to look to the United States as a scientific crutch for their own development. The director of the Nagasaki Marine Observatory asked Warren Wooster, the American expedition leader, if his ship might visit Nagasaki and conduct some work in the East China Sea. Wooster declined, claiming that knowledge of the area 'will come chiefly from the intensive systematic investigations which you and your colleagues are carrying out so successfully'.[69] This reliance upon Japanese work was a product of the prevailing attitude, namely that cooperation should be reciprocal, and that foreign communities should pursue work on their own that would be of value to all. Economic growth would follow. The Japanese respected this attitude, and as a token of willingness, presented their American colleagues with two reversing thermometers for use on their expedition.[70]

Suda hoped that the port receptions would bolster enthusiasm for investigating the problems of the Pacific and 'may be effective for the development of oceanography in Japan'. To back up these sentiments,

68 SIO Subject Files, AC 6, Box 7, folder 35, Roger Revelle to All Hands, 30 September 1953.

69 SIO Subject Files, AC 6, Box 7, folder 33, Warren S. Wooster to Kazuhiko Terada, 2 July 1953.

70 SIO Subject Files, AC 6, Box 7, folder 32, T. R. Folsom to Captain Hale, 26 June 1953.

the Japanese Hydrographic Office planned to send its own ship to make observations along a parallel course to the *Baird*. Suda wrote to Scripps Director Roger Revelle, 'I hope that this will become a epoch [sic] of the cooperative studies of N.P.O. [North Pacific Ocean] by both country [sic] . . . We have never [had] such [a] good chance to see the first order of observation of the world'.[71] The Japanese revealed a willingness not only to continue research of their own, but also to reciprocate any assistance by cooperating in international projects.

The success of 'Trans-Pac' motivated scientists to move Japan toward closer integration into the international scientific community. In December 1953, Revelle wrote to Japanese geologists at Tokyo University, suggesting that Japanese and American scientists publish their findings together. Revelle believed that one article, on Bayonnaise rocks, should be submitted to a Japanese journal. Another, on the Jimmu Seamount, should be submitted to a Western journal such as *Science*, *Deep Sea Research*, or the *Bulletin of the Geological Society of America*. In addition, they might send a note to *Nature*. This article would contain petrographic and topographic descriptions that would include discussion of structural trends, analysed jointly by American and Japanese scientists.[72] Writing to Suda, Revelle affirmed that Japan could be 'justly proud of the careful and comprehensive research being carried out by her marine scientists', and that continued progress would depend on the free exchange of data and workers exemplified by the Trans-Pac expedition.[73] Publication in Western journals would not only gain the Japanese increased respect in the international scientific community, it would encourage the growth and prestige of science in Japan, making other scientists look to Japan for original research.

Illustrating the power of international cooperation to encourage science, the increased activity on the part of Japan stimulated still more scientific enterprises. In April 1954, Roger Revelle announced that, because the following year would see at least nine oceanographic vessels of various countries operating in the North Pacific, scientists should look forward to 'a long-dreamed-for, but heretofore unrealizable, result – a truly synoptic

71 SIO Subject Files, AC 6, Box 7, folder 35, Kanji Suda to Roger Revelle, 18 September 1953.

72 SIO Subject Files, AC 6, Box 7, folder 36, Roger Revelle to Ryohei Morimoto, 29 December 1953. The work described was eventually published in Hisashi Kuno, Robert L. Fisher, and Noriyuki Nasu, 'Rock Fragments and Pebbles Dredged near Jimmu Seamount, Northwestern Pacific', *Deep-Sea Research*, 8 (1956), 126–133.

73 SIO Subject Files, AC 6, Box 7, folder 36, Roger Revelle to Kanji Suda, 19 January 1954.

hydrographic study of the entire North Pacific'.[74] In such a synoptic survey, all data is taken at the same (or near the same) time, so that a 'scientific snapshot' is taken of a large area. 'Nor-Pac', as the project was called, began from informal discussions between Scripps oceanographer Joseph Reid and the head of Canada's Pacific Oceanographic Group (POG), John P. Tully. They realized that a joint survey between Scripps and POG would produce more significant results than the programmes planned separately by each group.[75]

The purpose of the project would be to obtain data in such physical and biological oceanographic detail, as to better understand the problem of Pacific fisheries.[76] At the Fifth Pacific Tuna Conference in November 1954, scientists affirmed the need for more knowledge of oceanic circulation and of oceanic processes in general. On 'Nor-Pac', the vessels would obtain meteorological data and take measurements of plankton net hauls, temperature, salinity, oxygen, and phosphate, all at standardized depths.[77] Because American scientists planned to coordinate their activities with Canadians, the inclusion of the Japanese, who had recently shown an unprecedented enthusiasm for cooperation, seemed the logical step.

With Japanese cooperation, Nor-Pac became the largest project of its kind ever undertaken. The area of the Pacific explored was about 50 per cent larger than the North American continent. The area's importance was underscored by the fact that it provided almost half of the world's commercial food fish haul. Before Nor-Pac, information about the region had come from solitary oceanographic cruises that took months, producing data on oceanic conditions that changed substantially between the first and last measurement stations. Instead, Nor-Pac offered a rapid, intensive survey in a much shorter interval of time.[78]

The Japanese sent about fifteen ships from various Japanese agencies, plus about ten smaller ships operating close to the Japanese home islands. The only assistance the Japanese requested was that they might

[74] SIO Subject Files, AC 6, Box 7, folder 43, Roger Revelle to various [American, Canadian, and Japanese scientists], 8 April 1954.

[75] SIO Subject Files, AC 6, Box 7, folder 44, Joseph Reid's responses to questionnaire by Mike Connelly (United Press Staff Correspondent), n.d.

[76] SIO Subject Files, AC 6, Box 7, folder 43, Roger Revelle letter to various [Japanese scientists], 15 November 1954.

[77] SIO Subject Files, AC 6, Box 7, folder 43, Roger Revelle to various [American and Canadian scientists], 15 November 1954.

[78] SIO Subject Files, AC 6, Box 7, folder 46, 'To Discuss Results of Largest Ocean Survey', Press Release, Oceanographic Publications, 29 January 1956.

borrow equipment if theirs failed.[79] That summer, Revelle travelled to Japan both to firm up the details of Nor-Pac and also to discuss cooperation with Japan on an even more ambitious project, the International Geophysical Year. He urged the Japanese to send representatives to the meeting of the Oceanographic Sub-Committee of the IGY in Brussels in September 1955.[80] In a very short time, Japan had gone from being an economically unstable country with a struggling scientific community, to a fully-fledged participant in one of the most ambitious projects in the history of oceanography.

After the expedition, American and Japanese scientists planned for future cooperation. Specifically, they had three aims, all of which emphasized interdependence. First, they needed to meet in order to identify which areas and subjects were worth pursuing, to ensure close interaction and avoid duplication. Second, they had to discuss publication. This came eventually in the form of an atlas of the North Pacific Ocean that displayed the distribution of ocean properties, invaluable for future research 'as well as being in itself the first quasi-synoptic atlas of any large area of the ocean'.[81] This was quite a task, as participants had to agree on standard nomenclature. Third, scientists needed to discuss future cooperative endeavours. In the wake of Nor-Pac, a similar expedition was planned for the equatorial Pacific Ocean region, from Central America to the Philippines. Equa-Pac would involve participation by the United States, Japan, and France.[82] Much of this impulse was absorbed into the International Geophysical Year of 1957–1958, which aimed to extend synoptic data collection over the entire earth.

These efforts in creating ties to a strengthened oceanographic community in Japan included elements of chauvinism, for the Americans did attempt to cast a foreign scientific community in their own image. For example, for the meeting in Honolulu in February 1956, Revelle found funds for a number of Japanese scientists. He wanted to include more of the younger Japanese scientists, who might not have been brought along by the senior Japanese scientists, had numbers been limited. Yet the younger Japanese scientists had played a conspicuously greater role in Nor-Pac than

79 The Japanese scientists accepted the American proposal at a January 1954 meeting, and designed a national programme of about fifteen ships. SIO Subject Files, AC 6, Box 7, folder 43, Koji Hidaka to Joseph Reid, 31 January 1955. The ten additional ships are noted in another letter in the same folder, Kanji Suda to Joseph Reid, 31 January 1955.

80 SIO Subject Files, AC 6, Box 7, folder 44, Roger Revelle to Kanji Suda, 18 June 1955.

81 SIO Subject Files, AC 6, Box 7, folder 45, Roger Revelle [by Joseph Reid] to Koji Hidaka, 16 December 1955.

82 'To Discuss Results of Largest Ocean Survey', *op. cit*. note 78.

had more senior scientists. Moreover, according to Scripps scientist Joseph Reid:

> . . . Dr. Revelle feels that we must try to break some of the younger people free from the traditional path of classical oceanography to which the Japanese have adhered. They should be allowed to meet and talk to people in their own field from this country and in a sense be educated away from the traditional methods of Hidaka, not only for their own good but in the long run for the good of physical oceanography and our own best interests.[83]

The need to 'break' younger scientists from traditional Japanese oceanography was an understandable concern, but also revealed the Americans' confidence in their own methods. Another example arose during the Trans-Pac expedition, when Scripps took pains to ensure that one of the scientists on the *Baird* was Noriyuki Nasu, a native Japanese who was studying at Scripps. Not only would the expedition provide fieldwork for Nasu's degree, but he would be an ideal liaison between American scientists and their Japanese colleagues once the *Baird* arrived in Japan. But Scripps had no intention of keeping him. Trained in American methods and familiar with American practices, Nasu was an example of the kind of young scientist that Americans wished to send back to Japan to ensure not only Japanese involvement in the international scientific community, but also continued Japanese friendliness towards American methods and attitudes.

The success of these projects with Japan suggested that it was feasible to pursue interdependent cooperation even in ventures in which the United States was the superior power. On the one hand, participation by Japan was considerable – nine separate Japanese agencies took part.[84] On the other hand, scientific hand-holding virtually disappeared. After Trans-Pac, scientists did not need to show the American flag in Japanese ports, nor was there any need to include Japanese scientists on board American ships. The professional outcomes were also different. The Japanese did not need to publish scientific papers jointly with the Americans, because they did not truly work together. Instead, the Japanese were acting on their own with little direct assistance from American scientists. Japan's experience suggested that interdependence, even between the United States and a far weaker power, was a reasonable expectation if pursued properly.

The drive to integrate fully Japan's scientists as autonomous actors within the international scientific community corresponded with broader trends in Japan and with the outlook of the Eisenhower administration. In building a research community, Japan struck a balance between borrowing

83 SIO Subject Files, AC 6, Box 7, folder 45, Joseph Reid to Gordon G. Lill and Arthur Maxwell (Geophysics Branch, Office of Naval Research), 29 December 1955.

84 'To Discuss Results of Largest Ocean Survey', *op. cit*. note 78.

from the West and managing its own research base.[85] Politically, by the mid-1950s, Japan was moving towards autonomy. When Premier Ichiro Hatoyama took office in December 1954, he insisted that Japan must assert its independence more strongly, alluding to his predecessor's subservience to the United States.[86] During 1955, relations between Tokyo and Washington were strained. The United States had no intention of allowing Japan to move ahead towards political and military autonomy.[87] But the reverse was true for the development of scientific autonomy. The development of autonomous scientific research, from which American scientists could benefit, was attractive both for science and for an American national security that was increasingly dependent upon science and technology.

Overall, cooperative expeditions had more useful foreign policy outcomes than Truman's Point Four programmes, and played an important role in American-Japanese relations during and after the Korean War. In 1954, Eisenhower emphasized the centrality of Japan to the American position in North Asia. Rather than provide 'give-away' programmes, Eisenhower reasoned, it would be more effective to concentrate on Japan, whose industrial capacity made it 'absolutely mandatory to us, and to our safety, that the Japanese nation does not fall under the domination' of the Soviet Union.[88] At the same time, Eisenhower wished that Japan – and other Western nations – would shoulder more responsibility and relieve the United States of its caretaker role. The use of science as a tool of diplomacy complemented these aims. Japanese-American cooperation stimulated Japanese scientific activity both domestically and internationally, while strengthening the Japanese economy, consolidating its ties with the United States, and increasing the prospect for Americans to acquire information from Japanese specialists.

CONCLUSION

This essay has analysed some of the precedents available to American oceanic scientists in formulating a strategy for cooperation during the 1950s. The central tenet of their strategy, especially in light of the main weaknesses of the Point Four programmes, was interdependence: the United States helped other nations become productive participants in the

85 Bartholomew, *op. cit*. note 28, 264.

86 William J. Jordan, 'Hatoyama Plans No Drastic Steps', *New York Times* (12 December 1954).

87 'Japan Would Cut Reliance on U.S.', *New York Times* (27 August 1955), 1.

88 'Eisenhower Calls Free Japan Vital For U.S. Security', *New York Times* (23 June 1954), 1.

international scientific community, instead of just providing them with scientific or technical assistance. Reciprocity was required not as a nicety but as a basic component of cooperation. The political climate of the Eisenhower administration favoured this approach, as generally it took a dim view of aid; economically, the slogan was 'trade not aid'. Scientifically, that translated into 'interdependence over assistance'. Not only did interdependence require less effort and money on the part of the Americans, but also it promised that Americans themselves could benefit from cooperation as well, beyond the purely political character of aid programmes.

Two other visions of international scientific cooperation, scientific leadership and humanitarian intent, also offered themselves as influences on American scientists. They were equally important in setting the stage for cooperation in the 1950s. One was the desire to insist upon American standards and to manage cooperative arrangements strictly, ensuring the adoption of American practices. American leadership – at least for the Americans – made certain that the coordination of research data could actually mean something. In this view, if the data of foreign countries were not as good as data collected by Americans, then cooperation would be meaningless. Harry Hess micro-managed the survey projects in Venezuela prior to the Second World War; after all, he felt that Venezuela's topography could shed light onto the marine geology of the entire Caribbean. His chauvinism toward the Venezuelan scientists was a component of trust in the science itself. The same was true of post-war American oceanographers. They looked to Latin American military men – not civilians – for the best science, for they had been trained by American standards.

Given American history and expectations, oceanic cooperation with Japan was an ideal case for international scientific cooperation. Granted, Japan was a defeated nation and, by the early 1950s, had grown accustomed to taking some of its cues from the United States. The very existence of Japan's post-war scientific infrastructure was due largely to the efforts of American scientists and administrators during the years of occupation.[89] Yet by the mid-1950s, cooperation with Japan had become a success story for America's visions of scientific cooperation, whereas other programmes had not. In Japan, Americans hoped to revitalize the oceanographic community by exposing younger scientists to American methods, ensuring continued cooperation and confidence in the integrity of Japanese scientific work.

---

89 See Hideo Yoshikawa, *Science Has No National Borders: Harry C. Kelly and the Reconstruction of Science and Technology in Postwar Japan* (Cambridge: MIT Press, 1994).

The post-war vision for American science set high goals – scientific leadership in the international community, and interdependence as the guiding philosophy in scientific practice. Humanitarianism played an equally important part. The Pacific Science Association had hoped to make world peace part of its mission. Oceanographers after the Second World War routinely justified their research in terms of increasing potential food resources, even when their research was only made possible by military necessity. The political climate of the Truman administration, with its ready endorsement both of the United Nations and of its humanitarian aims, made the association of science and humanitarianism fairly easy, even if Truman's motives were so clearly those of a cold warrior. Although the Eisenhower administration wished to de-emphasize the role of the United States as a charity state, the language of humanitarianism did not disappear. Instead of speaking primarily of aid, however, that language stressed peace. Those who promoted the IGY often employed catch-phrases such as the 'common language of mankind', or the use of scientific cooperation to 'ease the tensions of the Cold War'.[90] The language of peace and common interest permeated the cooperative enterprises of the 1950s as much as it had during the Pacific Science congresses of the 1920s.

One might argue that speaking about the potential of cooperation, rather than specific aid programmes, meant that humanitarianism, as a chief motive for cooperative research, was moving into the realm of rhetoric. Arguably, the humanitarian argument was grafted onto policies that otherwise emphasized the pursuit of power. Indeed the policy-in-waiting of the pre-Sputnik Eisenhower administration – with its acceptance of interdependence, American leadership, and humanitarian intent – did just that, adopting *holus bolus* the conceptual strands of America's experience in scientific cooperation since the 1920s. This should prompt historians to ask how else the American government could have formulated and promoted a national policy that espoused scientific growth, easing of tensions, and free world strength all in the same package. Moreover, it is worth asking how the idealism of scientists – or worse, simply their rhetoric – was so easily manipulated by the political leadership in Washington during the 1950s, and throughout the Cold War.

90 For a brief discussion of this aspect of the IGY, see Harold Bullis, *The Political Legacy of the International Geophysical Year* (Washington, DC: Government Printing Office, 1973); also see George B. Kistiakowsky, 'Science and Foreign Affairs', *Department of State Bulletin*, 42 (22 February 1960), 276–283.

ACKNOWLEDGEMENTS

For productive conversations about the topics addressed in this essay, the author wishes to thank Lawrence Badash, Michael A. Osborne, Fredrik Logevall, Benjamin C. Zulueta, and Harry N. Scheiber. In addition, the author thanks the editor and anonymous referees of *Minerva* for making constructive comments.

ABOUT THE AUTHOR

Jacob Darwin Hamblin is completing a doctoral dissertation entitled, 'Oceanography and International Cooperation during the Early Cold War' at the University of California, Santa Barbara. He is the author of 'Science in Isolation: American Marine Geophysics Research, 1950–1968', in *Physics in Perspective* (in press).

Department of History
University of California
Santa Barbara, CA 93106
USA