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Controlling Knowledge, Controlling People: Travel Restrictions of U.S. Scientists and National Security*

In the early Cold War, the production, dissemination, and control over scientific-technological knowledge became a central concern of the fledgling national security state. Soviet scientific and technological achievements posed a severe threat to American military power and global political hegemony. Maintaining the United States' competitive edge required both a major injection of federal resources to stimulate the national Research and Development (R & D) system, and a clamp down on the international circulation of knowledge, including the travel of scientists in both directions across the U.S. border. The U.S. security agencies began to monitor the international travel of scientists in order to control the knowledge they carried in their heads and in their hands. Passport denials and restrictions became one of the main instruments of control and surveillance.

Jessica Wang and others have described important aspects of Cold War travel restrictions. Scholars have argued that because such impediments were based on political criteria and seen through the lens of McCarthyism, they constituted "the worst excesses of Cold War political repression." These studies focus on the struggle of individual scientists against the "discrimination and harassment" of red-baiters and a national security state that overreached its authority.[1] Admittedly analyzing the restrictions from the scientists' point of view does throw some light on the government's disregard for civil rights and the values of scientific freedom. However, this emphasis on the scientist as victim misses at least four crucial dimensions.

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1. See Jessica Wang, *American Science in an Age of Anxiety: Scientists, Anticommunism, and the Cold War* (Chapel Hill, NC, 2000), 254, 274, 281, 283; Jessica Wang, "Science, Security, and the Cold War: The Case of E.U. Condon," *Isis* 83, no. 2 (June 1992): 238–69; Lawrence Badash, "Science and McCarthyism," *Minerva* 38, no. 1 (March 2000): 53–80; Ellen Schrecker, *No Ivory Tower: McCarthyism and the Universities* (Oxford, 1986); Philip Deery, "'Running with the Hounds': Academic McCarthyism and New York University, 1952–53," *Cold War History* 10, no. 4 (2010): 469–92.

First, it does not adequately explain why the scientific community as such was targeted, beyond its broadly liberal-left political inclinations.[2] We must pay greater attention to the mindset of those who made decisions regarding travel restrictions within the U.S. government. Complementing the existing narratives of Wang and others, I claim that at the very heart of the scientists' passport denials was the government's aim to control the international flows of scientific-technological knowledge.[3] In a broader perspective, the denials reflected the profound re-orientation of U.S. policy towards the concept of national security, understood as a complex combination of military power, economic competitiveness, national welfare, and American global political leadership. The establishment of institutions like the Department of Defense, the Central Intelligence Agency (CIA), and the National Security Council was the benchmark of a wide-ranging process of building a bigger, more powerful, more militarized U.S. federal government that today is often conceptualized as the national security state. At the same time, national security reshaped the bureaucratic practices of firmly established institutions, for which the use of passports to regulate knowledge flows is one example.[4]

Moreover, the new framework led to a profound reassessment of the importance of scientists for the state. U.S. strategy closely linked the postwar project of establishing global political and military leadership with its claim for global scientific predominance. Scientific-technological knowledge became a tool for building and maintaining U.S. hegemony.[5] Against this backdrop, officials saw scientists as carriers and custodians of knowledge and skills for the production of power. The U.S. government turned them into a key national resource and treated them as "manpower" that could be harnessed and exploited through governmental control. Indeed, "control," especially of cross-border movements,

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2. For a similar point, see Ronald E. Doel, Dieter Hoffmann, and Nikolai Krementsov, "National States and International Science: A Comparative History of International Science Congresses in Hitler's Germany, Stalin's Russia, and Cold War United States," *Osiris* 20, no. 1 (2005): 49–76.

3. Jeffrey Kahn's *Mrs. Shipley's Ghost: The Right to Travel and the Terrorist Watch List* (Ann Arbor, MI, 2013), has not made this connection; Wang's *American Science in the Age of Anxiety* has not fleshed it out, and there is no study that systematically analyzes the role knowledge control played in passport policy. Badash even claims that "fundamentally, it was politics, rather than fear of misplaced professional skills, that gave rise to the suspicions of scientists": "Science and McCarthyism," 61. For case studies (such as that of Bernard Peters and David Bohm) that touch on the problem of knowledge control, see Shawn Khristian Mullet, "Little Man: Four Junior Physicists and the Red Scare Experience" (PhD diss., Harvard University, 2008), 154–64.

4. Michael J. Hogan convincingly conceives this process as "state making": *A Cross of Iron: Harry S. Truman and the Origins of the National Security State, 1945–1954* (Cambridge, MA, 1998). Douglas T. Stuart, *Creating the National Security State: A History of the Law that Transformed America* (Princeton, NJ, 2008). For a critical reflection of the concepts of national security and of the national security state, see Emily S. Rosenberg, "The Cold War and the Discourse of National Security," *Diplomatic History* 17, no. 2 (April 1993): 277–84.

5. John Krige, *American Hegemony and the Postwar Reconstruction of Science in Europe* (Cambridge, MA, 2006), 1–14.

was the central concept of the new U.S. understanding of science and technology. The state's control ambitions targeted the mobility of people, the communication of information, and the circulation of "things," which are here understood to mean artifacts that embody technical knowledge. I will show how densely intertwined the control of people, information, and things were, emphasizing that this triad was at the heart of the concept of national security that unfolded in the 1940s and 1950s. Undoubtedly, we should see travel documents as integral to a system of interlocking and overlapping regimes of control, especially classification, security clearances, and export controls.

Second, in this context, we have to understand passports and visas—the governmental control tool *par excellence* to keep tabs on its citizens—as key instruments to policing national borders to keep track of individuals carrying scientific and technical knowledge and skills with them. The existing scholarly literature has not sufficiently reflected on this connection between the "documentary regime" of border security and knowledge control.[6] This article focuses on passports. Elsewhere, I analyze the use of visas to control and restrict the mobility of foreign scientists to and within the United States.[7] Passport and visa policy were complementary. Both reacted to the challenges posed by Soviet espionage (not only in the nuclear field) and open source intelligence that targeted unclassified scientific-technological information. To protect American knowledge, U.S. export control considerations increasingly shaped the administration of visas. In 1948, for example, the Interdepartmental Committee on Industrial Security (a division of the State-Army-Navy-Air Force Coordinating Committee) discussed the export control over "unclassified technology," the regulation of "technological publications," and "visits of scientists" in the same context. The committee asked: "Should any passport or visa rules be amended in order to restrict the movements of alien and American scientists during the present 'peace-time'? . . . What standards should be used in determining those scientists who can move freely and those who cannot?"[8] Indeed, U.S. export control regulations extended beyond the circulation of goods to cover "technical data," broadly defined as information in the form of documents but also intangibles like the know-how that traveling scientists carried (i.e. exported) in their heads and hands. In practice, a decision to issue or deny a visa to a scientist was tied to data export regulations that complemented the classification system

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6. Craig Robertson, "A Documentary Regime of Verification: The Emergence of the U.S. Passport and the Archival Problematization of Identity," *Cultural Studies* 23, no. 3 (2009): 329–54.

7. Mario Daniels, "Restricting the Transnational Movement of 'Knowledgeable Bodies': The Interplay of U.S. Visa Restrictions and Export Controls in the Cold War," forthcoming in a volume edited by John Krige. For the prominent role visas played in debates about international scientific exchange in the 1940s and 1950s, see the special edition of the *Bulletin of the Atomic Scientists* 8, no. 7 (1952).

8. Interdepartmental Committee on Industrial Security, Basic Problems of Industrial Security, October 14, 1948, box 8, Entry UD 59, RG 40, United States National Archives, College Park, Maryland (hereafter USNA).

(established since World War II through executive orders and legislation like the Atomic Energy Act) and reached far beyond the nuclear field, covering large swaths of unclassified high technologies.

Third, espionage fears were not just Cold War folklore. Following scholar Katherine Sibley, I claim that the 1940s witnessed the birth of a new "espionage paradigm" that shaped the definition and practices of national security. At the center of this new paradigm was the U.S. government's growing concern about Soviet industrial and scientific intelligence.[9] Building on Sibley's analysis and addressing another blind spot in the literature on Cold War passport policy, I argue that espionage discourse was closely linked to concerns of border security. In this context, espionage represents the most dangerous and most extreme challenge to the national security state's pursuit of control and power: it signifies the unknown, unbridled, and unchecked transmission of knowledge across the U.S. national border to the enemy. Hence the regulation of travel through passports and visas became densely intertwined with Cold War espionage discourse.

Fourth, this is not just a story about the Cold War. There is a need for a broader historical framework. Since most scholarly studies on travel restrictions have focused almost exclusively on the postwar period, they have failed to pay attention to the long-term developments that informed the national security state's practices. While the McCarran Acts (the Internal Security Act of 1950 and the Immigration and Nationality Act of 1952) no doubt had a profound impact on the mobility of people crossing U.S borders, such travel restrictions did not develop overnight. They began to be a problem for scientists years before the Internal Security Act became law. In fact, we have to go back as far as World War I to get a fuller picture of Cold War travel controls.

Although the exact number of American scientists who ran into problems with the State Department's Passport Office remains undetermined, by sifting through newspapers, congressional files, and the existing scholarly literature, I have thus far been able to identify seventeen physicists, chemists, astronomers, and aeronautical engineers whose passports were either withdrawn, denied, delayed (sometimes for years), or limited to single and clearly defined trips, thus making it difficult to attend conferences or get jobs abroad.[10] The earliest case dates from 1946, the latest from 1958. According to the Federation of American Scientists (FAS), which in 1951 reacted to the increased travel

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9. Katherine S. Sibley, "Soviet Military-Industrial Espionage in the United States and the Emergence of an Espionage Paradigm in US-Soviet Relations, 1941–45," *American Communist History* 2, no. 1 (2003): 21–61.

10. My sample includes David Bohm, Bart J. Bok, Edward Condon, Edward M. Corson, Weldon Bruce Dayton, Martin Kamen, Salvador Luria, Frank Malina, Linus Pauling, Bernard Peters, Frank Oppenheimer, Harlow Shapley, Ralph Spitzer, Leo Szilard, Harold Urey, Oswald Veblen, and the unidentified scientists "B" and "E" discussed in Testimony of Geoffrey F. Chew, in *Security and Constitutional Rights: Hearings before the Senate Subcommittee on Constitutional Rights of the Committee on the Judiciary*, November 1955 (Washington, DC, 1956), 95, 97.

restrictions by founding a "Passport Committee," there were about twenty known cases by June 1955.[11]

At any rate, it is safe to assume that there were many more cases about which we do not (yet) know. Jessica Wang has even postulated that, "It is likely that almost every scientist with a progressive left political record had difficulty obtaining a passport in the 1950s."[12] In an age when any doubt about a scientist's loyalty could cost him his job, most of those affected by Passport Office policies probably kept mum.[13] Others possibly decided not to apply for a passport at all, as they wanted to avoid the bureaucratic scrutiny, and simply opted not to travel.[14]

The relatively small numbers of U.S. scientists involved seems to indicate that passport denials were a marginal problem. To be sure, the postwar years witnessed a boom of international travel from the United States. In 1947, 435,000 U.S. residents traveled overseas, whereas in 1955 this number had already increased to 1.075 million.[15] Accordingly, in the 1950s the Passport Office handled about 500,000 passport applications per annum, and they denied only a tiny fraction of these applications. Between September 1952 and July 1956, for example, there were 275 "tentative" denials. Final refusals were even more uncommon. Between January 1954 and July 1956, the Passport Office denied a mere 83 passports outright—in most cases (54) because the applicant had failed to make an official statement that he or she did not have any political affiliations to Communism.[16]

But if passport denials were really such a rare event, it is all the more remarkable that scientists were so disproportionately affected by them. According to the Wright Commission's authoritative, high-profile report on government security, they were the only professional group that was singled out for a particular security screening by the Passport Office's Bureau of Security and Consular Affairs. The standard procedure was to check the data of all passport applicants against the extensive files of the Passport Office and, if necessary, against the files of the FBI and other governmental agencies. But "additional checks" were made "on applicants who are chemists and physicists."[17]

When set against the backdrop of the loyalty investigations, House Un-American Activities Committee (HUAC) hearings, and attacks by McCarthy and his supporters, it is not surprising that a passport applicant's political

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11. Chew Testimony, *Security and Constitutional Rights*, 87, 96, 100. Chew was chairman of the Passport Committee of the FAS.

12. Wang, *American Science in an Age of Anxiety*, 277.

13. Chew Testimony, *Security and Constitutional Rights*, 87.

14. Wang, *American Science in an Age of Anxiety*, 277.

15. Department of Commerce, *United States Participation in International Travel: 1958 Supplement to Survey of International Travel with Revised Data through 1957* (Washington, DC, 1958), 6, tab. 4. "Overseas travel" excluded Canada and Mexico.

16. *Report of the Commission on Government Security Pursuant to Public Law 304, 84th Congress, As Amended* (Washington, DC, 1957), 462–63 (hereafter *Government Security Report 1957*).

17. *Government Security Report 1957*, 467.

leanings became a central factor in deciding whether to issue travel documents. At least eleven of the identified seventeen scientists with passport problems could be seen as more or less pronounced leftists and were therefore deemed a potential threat by the Passport Office, which was among the most active government agencies when it came to translating anti-communist fervor into administrative practice. Granted an unusually strong and independent position within the State Department, the Passport Office was led by staunch conservatives, first and foremost being the Office's head Ruth Shipley, whose mission was to fight the dangers posed by "subversives." To better identify these enemies, its employees made use of an immense collection of files containing information on about twelve million citizens. By these means the Passport Office became a central node in the closely linked network of agencies constituting the national security state.[18]

Complementing rabid anti-communism, intense espionage fears also caused scientists' passport problems. At least eight of these seventeen cases have a direct connection to espionage suspicions, speaking to the intimate link between travel and the communication of sensitive scientific-technological knowledge.[19] However, this link has a much more complex history than a simple reference to McCarthyism suggests. To appreciate this, an understanding of the longer trends in the history of U.S. travel documents in the twentieth century is necessary.

THE PASSPORT AND NATIONAL SECURITY

Up until the 1930s, American citizens were not required to carry a passport when traveling outside of the country, or at least not during peacetime. Historically, the U.S. passport was usually used in wartime, and when wars ended, any and all such travel restrictions were dropped.[20] Passports, however, continued to exist, serving primarily as proof of the bearer's nationality and as quasi-diplomatic letters of introduction. Home countries used them to protect their citizens abroad and to facilitate support from the national embassies and consulates in times of need.[21]

The United States' liberal documentary practice was by no means unusual. Driven by the ideals of economic liberalism—which fostered the free circulation of goods, people, and information—countries across Europe adopted a similarly relaxed policy towards passport control in the last third of the nineteenth century. As a result, at the turn of the century, international travel went almost

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18. Stanley Kutler, *The American Inquisition: Justice and Injustice in the Cold War* (New York, 1982), 89–117; Kahn, *Mrs. Shipley's Ghost*, 97–124.

19. These are the cases of Bohm, Corson, Kamen, Luria, Malina, F. Oppenheimer, Peters, and Weldon.

20. *Government Security Report 1957*, 446.

21. Paul Lansing, "Freedom to Travel: Is the Issuance of a Passport an Individual Right or a Government Prerogative?" *Denver Journal of International Law and Policy* 11, no. 1 (Fall 1981): 15–35.

completely unchecked for Europeans and Americans if they were not immigrants. This was soon to change with the onset of World War I, as the Great Powers all introduced passport regimes that were widely regarded as temporary wartime measures. The main goal of these regimes was to control conscription and any potential "alien enemies," though in effect all citizens and residents now became subject to "documentary surveillance." The United States followed this general trend with an Executive Order in December 1915 that reintroduced the obligation of every person leaving the country to have a passport.[22]

After 1918, these "temporary" passport controls became permanent, translating into peacetime a changed concept of national security and the "infrastructural power" that the countries involved had acquired through war mobilization.[23] The United States, however, decided to drop large parts of its passport control system in 1920–1921. During the interwar period, U.S. citizens needed passports only because the governments of their European destinations demanded travel documents. Many Americans, who were not used to these new restrictions, complained bitterly about the "passport nuisance."[24] Clearly, overseas travel had changed profoundly since 1914: "Every frontier that one used to slip over without knowing it almost … now bristles with high military formalities. Everywhere in your path are sheds and offices crammed with bureaucrats who scribble on your passport for a consideration."[25]

In the internationally tense years leading up to World War II, the U.S. government would once again enforce travel restrictions. The Neutrality Act of 1937 forbade American citizens from traveling "on ships of belligerent states" and on any ship if its destination was an area the president had declared to be a combat zone. Furthermore, security checks for passport applications were reintroduced. The Passport Office screened applicants "in cooperation with the various intelligence officers of other Government agencies to determine whether the public safety would permit the granting" of a passport.[26] In November 1941 President Roosevelt proclaimed that every U.S. citizen "or person who owes allegiance" to the United States should not leave the country without a passport.[27]

After the end of World War II, the United States sustained the new passport regime. Facing the unfolding Cold War, President Truman decided to uphold the system by declaring a national emergency. This state of affairs continued

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22. John Torpey, "The Great War and the Birth of the Modern Passport System," in *Documenting Individual Identity: The Development of State Practices in the Modern World*, ed. Jane Caplan and John Torpey (Princeton, NJ, 2001), 257.

23. Torpey, "Great War," 269; Craig Robertson, *The Passport in America: The History of a Document* (Oxford, 2010), 217.

24. Robertson, *Passport in America*, 208, 215–16.

25. "Passport Adventures: A Traveler's Essay," *The Living Age* 305, no. 3964, June 26, 1920, 788.

26. Graham H. Stuart, "Safeguarding the State Through Passport Control," *The Department of State Bulletin* 12, no. 311 (June 10, 1945): 1066–70.

27. *Government Security Report 1957*, 447.

until 1952 when the Immigration and Nationality Act (also known as McCarran-Walter Act) replaced wartime regulations. It was the first peacetime legislation that made it a criminal offense for citizens as well as foreigners "to enter or leave the U.S. without a valid passport. Hence, the denial of a passport became and continues to be synonymous with the right to travel abroad."[28] For the State Department the issuance of a passport was not a citizen's right but a privilege.[29] It would continue to contest the existence of a "right to travel" throughout the 1950s, finally losing the fight after a series of federal and Supreme Court decisions that limited the State Department's discretion in issuing and denying passports.[30]

In addition to wars, espionage fears also shaped the U.S. passport system. While Congress debated the enactment of travel restrictions in the interest of "public safety" in the period leading up to the War Time Passport Act of May 1918, an alliance was forming between the State, Labor, Justice, and Treasury Departments and the Military Intelligence Services, which claimed that documentary border control was necessary in order to fight espionage.[31] Speaking for the State Department, Wilbur J. Carr, Director of the Consular Service, testified before the House Committee on Foreign Affairs in February 1918, that "since the beginning of the war" it had been "one of the very perplexing questions . . . how best to control travel into and out of the United States for the purpose of preventing persons who are spies or enemy agents from coming into the United States and doing damage, and also persons from going out and carrying with them, perhaps, data or information or in some other way seeking to injure the United States."[32] The conviction that restrictions on the mobility of people were first and foremost a measure to prevent the communication of information detrimental to national security pervaded the entire hearing. John Lord O'Brian, Special Assistant to the Attorney General for War Work, drove this point home even more forcefully: "It is the most crying need we have to-day in enforcing the law in relation to the transmission of information. Censoring cables and censoring wireless apparatus is merely one side of the question. If we are going to leave the borders of the country open to everybody to come and go at will, it is perfectly apparent that a man or an alien man or woman, a French woman, for example, may come and go . . . practically at will." To this example of a French-born female spy working for the Germans, O'Brian added, "There is practically no way we could stop that woman to-day,

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28. Lansing, "Freedom to Travel," 17–18; Raymond C. James, "The Right to Travel Abroad," *Fordham Law Review* 42, no. 4 (1974): 838–39.

29. For a discussion of the constitutional dimension of the freedom of movement, see Kahn, *Mrs. Shipley's Ghost*, 57–80, 205–31.

30. James, "Right to Travel Abroad," 838–43; Legislative Reference Service of the Library of Congress, *Passports and the Right to Travel: A Study of Administrative Control of the Citizens* (Washington, DC, 1958).

31. War Time Passport Act of May 1918, 40 Stat. 559, chap. 81.

32. *Control of Travel From and Into the United States. Hearings Before the House Committee on Foreign Affairs*, February 1918 (Washington, DC, 1918), 3 (hereafter *Control of Travel Hearings*).

unless we could absolutely produce written proof that she was a spy, even though we had every reason to believe it."[33]

"Spy mania" seemed to have simultaneously gripped all of the countries that participated in World War I.[34] In the United States it was a symptom of a deep-seated anxiety about the enormous number of German immigrants in the country and the existence of a vast German spy network on U.S. soil.[35] The legal instrument of naturalization severed any clear-cut relation between espionage and citizenship, as O'Brian pointed out: "The number of enemy aliens who have been convicted is negligible as compared with the activities of naturalized and native-born citizens. Under the espionage act, out of nearly 200 convictions . . . there were only 3 of those men who were un-naturalized Germans. That does not mean that the un-naturalized Germans are not dangerous at all, but it does mean this, that our own citizens are the people who are causing us the most trouble."[36] Thus an effective counterespionage demanded a control regime that could cover the entire population and every individual that crossed the national border. Accordingly, the interdepartmental group suggested the introduction of passports and visas and demanded a screening of every person, "whether he be a citizen or a friendly alien or an enemy." The group required "a full investigation . . . of that [travelling] man's whole life, and of all suspicions that may have hovered about him" in order to "either restrict his movements or grant him permission to go."[37]

The connections between espionage and the U.S. passport regime can also be seen in the Espionage Act of 1917. This act served as the cornerstone of national security legislation enacted in the months leading up to the United States' entry into World War I. Once amended by the Sedition Act in 1918, it became not only a powerful weapon against the "dangerous" German minority but also against all kinds of dissenters. The heart of the Espionage Act, Title I, however, deals with espionage in the narrower sense of the disclosure of sensitive "information respecting the national defense . . . to the injury of the United States, or to the advantage of any foreign nation." Title XII also addresses

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33. Ibid., 10. For the gender aspects of the espionage discourse in World War I and in the Cold War, see Tammy M. Proctor, *Female Intelligence: Women in Espionage in the First World War* (New York, 2003); Kathryn S. Olmsted, *The Red Spy Queen: A Biography of Elizabeth Bentley* (Chapel Hill, NC, 2002).

34. See Gundula Bavendamm, *Spionage und Verrat. Konspirative Kriegserzählungen und französische Innenpolitik 1914–1917* (Essen, Ger., 2004); Florian Altenhöner, "'Spionitis': reale Korrelate, Imagination und Deutungsmuster der Angst vor Spionen 1900–1914," in *Kollektive Identitäten und kulturelle Innovationen. Ethnologische, soziologische und historische Studien*, ed. Werner Rammert, Gunther Knauthe, and Florian Altenhöner (Leipzig, Ger., 2001), 77–91; William C. Fuller, *The Foe Within: Fantasies of Treason and the End of Imperial Russia* (Ithaca, NY, 2006).

35. See John Price Jones, *The German Spy in America: The Secret Plotting of German Spies in the United States and the Inside Story of the Sinking of the Lusitania*, with a foreword by Theodore Roosevelt and an introduction by Roger B. Wood (London, 1917).

36. *Control of Travel Hearings*, 29.

37. *Control of Travel Hearings*, 6.

information control by prohibiting the transportation of any mail "in violation of any of the provisions of this act," especially mail "containing any matter advocating or urging treason, insurrection, or forcible resistance to any law of the United States."[38]

Upon closer examination it becomes clear that only one of the thirteen sections of the Espionage Act addresses espionage proper. The remaining sections deal with other challenges the war posed to U.S. security. Two aspects stand out. First, Title IX stipulates passport regulations that clearly were a wartime measure analogous to the increased border control regimes in Europe. It was also a reaction to claims that the German spy network in the United States had systematically used fraudulently-acquired and forged American passports.[39]

Second, the Espionage Act not only dealt with the communication of *information* to foreign powers and the cross-border mobility of *people*, but also with *things* going in and out the United States. The law introduced national security export controls for goods. These controls pertained not only to weapons (Title VI), in accordance with the international law for neutral states in wartime. They also declared it to "be unlawful to export from or ship from or take out of the United States to any country named" by proclamation of the president "any article" defined by the president. Additionally, Titles II, III, and V address the control of ship traffic to and from the United States. The Espionage Act should therefore be understood as border security legislation to fend off dangers to national security. It envisioned these dangers as uncontrolled movements of people, information, and things. This triad of national security control was mirrored by the Trading with the Enemy Act of 1917, one of the Espionage Act's siblings.[40]

World War I had clearly changed "the attitude of the United States to its national borders . . . . Boundaries were now officially thought of as borders, understood as places to secure the nation against perceived threats."[41] But as we have already seen, this change in attitude did not preclude the dismantling of larger parts of the wartime passport system. Yet it is important to emphasize the longer historical lines of the Cold War national security state that can also be seen in its similarities with anti-Communist policies in the wake of World War I. The first Red Scare also used travel documents to make the life of political radicals more difficult. The visa system was used to shut out anarchists and Bolsheviks, and even though the wartime travel restrictions for U.S. citizens were repealed, it was the State Department's—probably informal—policy from

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38. "An Act to Punish Acts of Interference with the Foreign Relations, the Neutrality, and the Foreign Commerce of the United States, to Punish Espionage, and Better to Enforce the Criminal Laws of the United States, and for other Purposes," *The American Journal of International Law*, 11, no. 4, Supplement: Official Documents (October 1917): 178–98.

39. Jones, *German Spy in America*, 70–78.

40. "Trading with the Enemy Act, October 6, 1917," in *Trading with the Enemy* (New York, 1917), 40–41 (Sec. 3a-c).

41. Robertson, *Passport in America*, 209.

1920 on to deny passports to "known Bolsheviks," until this policy was reversed by Secretary of State Henry L. Stimson in 1931.[42]

The passport legislation of the Cold War was similarly steeped in fear of Communist espionage. The Internal Security Act of 1950 (also known as the McCarran Act) was meant as a weapon in the fight against the "world Communist movement ... whose purpose it is, by treachery, deceit, espionage, sabotage, terrorism, and any other means deemed necessary" to erect a totalitarian dictatorship in the United States and to achieve world revolution.[43] In the same vein, the report of the Commission on Government Security of 1957 stated, "The passport is an important instrument in support of the recognized technique of communication by personal contact ... It had been a device for the movement of Soviet spies into and out of the United States and other free nations of the world." The report added in bold letters, "A passport security program is necessary to deter travel abroad by subversives bent on missions detrimental to the United States and to narrow as much as possible the sphere of Soviet international activity in the field of espionage and propaganda."[44]

In this spirit, the Internal Security Act prohibited the renewal or issuing of a passport to members of "Communist organizations."[45] When the Commission on Government Security Report tried to define more concrete standards, it suggested denying a passport to everyone who was "organized and utilized by any foreign government ... for the purpose of (a) espionage or (b) sabotage, or (c) obtaining information relating to the defense of the United States or the protection of national security."[46] Here was the Cold War "espionage paradigm" in full bloom, and it affected scientists more than any other professional group.

HOW, WHY, AND WHEN MOVING BRAINS BECAME DANGEROUS

Notwithstanding the prominent role of espionage fears in the formulation and practice of U.S. passport policy, there was no direct connection prior to the 1940s between espionage and specific anxieties about the transmission of scientific-technological knowledge to the detriment of national security. On the contrary, in the interwar period the U.S. government hardly ever interfered with the mobility of knowledgeable people or with the international transfer of technology in general. All this would change only during World War II and more dramatically with the rise of the Cold War national security state.

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42. Ibid., 203; Roderic L. O'Connor, "Need for Legislation Authorizing Denial of Passports to Communist Supporters," *The Department of State Bulletin* 29, no. 104 (December 1958); 880–85; John W. Haynes Jr., "Address before Chicago Council of Foreign Relations, May 24, 1959, in *Passport Security, Part 2: Hearings before the House Committee on Un-American Activities* (Washington, DC, 1959), 880; *Government Security Report 1957*, 471.

43. 64 Stat. 987, chap. 1024, sec. 2 (1). Another name of this act was the Subversive Activities Control Act of 1950.

44. *Government Security Report 1957*, 470.

45. 64 Stat. 987, chap. 1024, sec. 6.

46. *Government Security Report 1957*, 476.

In May 1946 the prominent nuclear physicist Edward Condon, who during the war had worked for the Manhattan Project as well as in radar development, published a programmatic paper in the *Bulletin of the Atomic Scientists* calling for the resumption of international scientific cooperation. His vision was modeled on the interwar period. "From 1919 to 1934," he wrote, "there was a fifteen year period in which science was unhampered by national boundaries, in which many great advances were made, and in which cooperation of all kinds flourished so well that this was not a subject for special comment. This was a period in which American science for the first time began to mature."[47] For Condon, these years were a Golden Age in which scientists made significant progress and shared the belief that science was truly and inherently an international, even universal, endeavor. According to Condon, this era ended with Hitler's rise to power and Nazi Germany's oppression and expulsion of Jewish scientists. The war severed the ties of international cooperation, and national military research thus became the main occupation not only of U.S. scientists, but also of scientists abroad. A new "doctrine of secrecy" ushered in restrictions to the free exchange of ideas. Condon pleaded for a return to peacetime conditions and insisted that unrestricted travel was one important step towards this goal.[48] His statements embodied the ethos of "scientific internationalism," a set of ideas that combined professional principles, moral concepts, and a utopian impetus that harkened back to the ideals of the early modern "Republic of Letters." In the 1920s and 1930s, "scientific internationalism" had become the dominant ideology among American scientists, especially the community of nuclear physicists.[49]

The U.S. government had done very little to interfere with the international exchange of scientific knowledge. It did not place any restrictions on international meetings within the United States and, up until the late 1930s, encouraged scientists to attend conferences in the Soviet Union.[50] Thus, there was an uproar when Albert Einstein, applying for a U.S. visa in 1932, was asked about his alleged relations to communist organizations. Even though the allegations were proven false and the visa was issued within twenty-four hours, the government's actions were met with considerable public critique. The State

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47. Edward Condon, "Science and International Co-operation," *Bulletin of the Atomic Scientists* 1, no. 11 (1946): 8–11. Quote on 8.

48. Ibid., 9.

49. Joseph Manzione, "'Amusing and Amazing and Practical and Military': The Legacy of Scientific Internationalism in American Foreign Policy, 1945–1963," *Diplomatic History* 24, no. 1 (January 2000): 21–55; Geert J. Somsen, "A History of Universalism: Conceptions of the Internationality of Science from the Enlightenment to the Cold War," *Minerva* 46, no. 3 (September 2008): 361–79; Patrick David Slaney, "Eugene Rabinowitch, the Bulletin of the Atomic Scientists, and the Nature of Scientific Internationalism in the Early Cold War," *Historical Studies in the Natural Sciences* 42, no. 2 (April 2012): 114–42; Paul Forman, "Scientific Internationalism and the Weimar Physicists: The Ideology and its Manipulation in Germany after World War I," *Isis* 64. No. 2 (June 1973): 150–80.

50. Doel et al., "National States and International Science," 66.

Department, claiming that it had been merely following standard procedure and was not targeting Einstein personally, nevertheless received angry letters that labeled Einstein's treatment as "'humiliating' and 'absurd,' and express[ed] concern that it had made the United States a 'laughing stock' around the world."[51]

The U.S. government's lack of concern during the interwar period is also illustrated by the free movement of engineers and skilled workers between the United States and the Soviet Union. When the Soviet Union embarked on its large-scale industrialization program in the 1920s and 1930s, it systematically pursued an international technology transfer program and hired great numbers of foreign specialists. The Soviets were interested in a broad range of technologies related to machine engineering, metallurgy, chemistry, electrical engineering, and mining, as well as automobile and airplane technology. Because of technical aid contracts, thousands of engineers flocked in from abroad. At its peak in 1932, shortly before the recruitment program petered out, there were up to 9,000 foreign engineers and 10,000 foreign workers in the Soviet Union, and "between one fifth and one third of the foreign specialists were Americans."[52]

Probably the most remarkable of the 382 technical aid contracts established between the Soviet Union with American firms between 1920 and 1945 was the agreement with the Ford Motor Company in 1929.[53] This agreement granted the "Soviet side the right to use all licenses, patents and blueprints associated with the production, use, and distribution of the Ford Model A and the Model AA light truck, including all technical improvements that Ford conducted with the projected 9-year span of the treaty."[54] In fact Ford agreed to the transfer of an entire production facility and even helped with the translation and interpretation of knowledge in writing. Ford promised to send "experienced and competent personnel" to the Soviet Union, while welcoming Soviet engineers and skilled workers to Detroit so they could learn "the methods and practice of manufacture and assembly in the Company's plant."[55] In July 1929, the first technical commission arrived at the River Rouge Plant. It would stay for several months in order to learn both through conversation and observation how to copy "the specifications of tens of thousands of machine-tools, production operations, and blueprints in use at River Rouge." Many more visitors came: three

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51. Robertson, *Passport in America*, 234.

52. Kendall E. Bailes, "The American Connection: Ideology and the Transfer of American Technology to the Soviet Union, 1917–1941," *Comparative Studies in Society and History* 23, no. 3 (July 1981): 421–48; Timoth W. Luke, "Technology and Soviet Foreign Trade: On the Political Economy of an Underdeveloped Superpower," *International Studies Quarterly* 29, no. 3 (September 1985): 327–53.

53. Bailes, "American Connection," 433.

54. Stefan Link, "Transnational Fordism: Ford Motor Company, Nazi Germany, and the Soviet Union in the Interwar Years" (PhD diss., Harvard University, 2012), 162.

55. Ibid., quoting from the Agreement between Ford and the Supreme Soviet of the National Economy (Vesenkha), May 31, 1929.

hundred alone in the few months leading up to October 1930. The flow of people from West to East was considerably smaller, however. Only "one of Ford's leading engineers ... was in Russia for an extended stay." But for the operation of the new Soviet "River Rouge" in Nizhnii Novgorod, the Soviets secured the knowledge and support of several hundred skilled workers and engineers from the United States, Germany, and other European countries.[56]

From a Cold War perspective, the technology transfer through the mobility of thousands of skilled scientists, engineers, and technical personnel between East and West is remarkable. The U.S. government did nearly nothing to regulate or even stop these intense exchanges, "so long as businessmen proceeded at their own risk."[57] All Soviet engineers, who in the Soviet Union were screened for political reliability, received a U.S. visa. In 1950 that would have been simply inconceivable.

Against this backdrop, how do we account for the profound change in the U.S. government's perspective on the mobility of knowledgeable people? Of course, car engineers are not the same as atomic scientists. But I argue that the kind of technology that could potentially be transferred through the movement of people is, though highly relevant, not the decisive factor when it comes to explaining the sharp contrast between the interwar indifference to the flow of knowledge, on the one hand, and travel restrictions for scientists during the Cold War on the other. Rather, World War II was the watershed that put technology, especially "high technology," and its transfer permanently on the political map, thereby changing the U.S. government's understanding of the significance and potential threat posed by mobile people carrying scientific-technological knowledge in their heads and hands.

In World War II, large parts of the U.S. scientific community were mobilized for winning the war. Even though the Manhattan Project is the paradigm of a new alliance of science, engineering, and government, it was only one element of a wider recruitment effort. The U.S. military and the Office of Scientific Research and Development (OSRD) supported a vast array of non-nuclear research and development.[58] All these activities would change the weight and role of the U.S. government in national science. Before the war, the federal government's engagement in the funding of scientific research followed

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56. Ibid., 171, 189.
57. Bailes, "American Connection," 428.
58. Alex Roland, "Science, Technology, and War," in *The Cambridge History of Science*, Vol. 5: *The Modern Physical and Mathematical Science*, ed. Mary Jo Nye (Cambridge, 2003), 559–78; Irvin Steward, *Organizing Scientific Research for War: The Administrative History of the Office of Scientific Research and Development* (Boston, MA, 1948), 84–127; Colin F. Jackson, "Office of Scientific Research and Development, (OSRD)," in *The Military-Industrial Complex and American Society*, ed. Sterling Michael Pavelec (Santa Barbara, CA, 2010), 229–34; G. Pascal Zachary, *Endless Frontier: Vannevar Bush, Engineer of the American Century* (New York, 1997); David M. Hart, *Forged Consensus: Science, Technology, and Economic Policy in the United States, 1921–1953* (Princeton, NJ, 1998), 122–29.

the ideals of "small government."[59] About sixty-eight percent of the expenditures spent in the United States on R&D in 1940 stemmed from the coffers of private industry, whereas the federal government contributed only nineteen percent.[60] Although thirty-four percent was earmarked for military research, these expenditures were small in absolute terms.[61] World War II reversed these figures. Even without taking the Manhattan Project into consideration, the federal government accounted for eighty-three percent of the total wartime R&D expenditures.[62]

As the war came to its end, policymakers around President Roosevelt deemed the government-led mobilization of science for winning a total war an unequivocal success story and fundamentally redefined the relationship between the state and the scientific community. For the Roosevelt administration and the wartime science establishment, which coalesced around figureheads like Vannevar Bush, the OSRD became the model for government-funded/organized science in postwar planning. The planners targeted a wide spectrum—from industry to medicine—but assumed in practice a distinct military focus. Bush's famous July 1945 report, *Science: The Endless Frontier*, emphasized the military side of knowledge production: "In this war it has become clear beyond all doubt that scientific research is absolutely essential to national security."[63] "[O]ur defense against aggression demands new knowledge so that we can develop new and improved weapons," Bush insisted.[64] Accordingly, U.S. science was from then on to be in a state of permanent preparedness, and the U.S. government continued to play the central role in American science and development after 1945. In 1953 the federal government was the source of fifty-four percent of the country's R&D expenditures. The military's share of the federal research funds in 1953 was ninety percent. In other words, half of all U.S. R&D money originated from the Pentagon.[65]

This reassessment of the significance of scientific-technological knowledge for national security had a profound effect on how the U.S. government perceived scientists, engineers, and their cross-border mobility. Nowhere is this more visible than in the U.S. exploitation of German scientists and expertise.

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59. David Mowery and Nathan Rosenberg, *Technology and the Pursuit of Economic Growth* (Cambridge, 1989), 59–97; Richard R. Nelson and Gavin Wright, "The Rise and Fall of American Technological Leadership: The Postwar Era in Historical Perspective," *Journal of Economic Literature* 30, no. 4 (December 1992): 1931–64.

60. John R. Steelman, *Science and Public Policy. A Report to the President, Volume 1: A Program for the Nation* (Washington, DC, 1947), 10.

61. Mowery and Rosenberg, *Technology and the Pursuit of Economic Growth*, 93; Alex Roland, *The Military-Industrial Complex* (Washington, DC, 2001), 4; Hart, *Forged Consensus*, 117.

62. Steelman, *Science and Public Policy*, 10.

63. Vannevar Bush, *Science, The Endless Frontier: A Report to the President on a Program for Postwar Scientific Research* (1945; repr., Washington, DC, 1960), 17.

64. Ibid., 5.

65. Mowery and Rosenberg, *Technology and the Pursuit of Economic Growth*, 129; Hart, *Forged Consensus*, 173.

While the public perception of this program is dominated by rocket scientists like Wernher von Braun, this image obscures the true dimensions and ambitions of the transfers that took place. In August 1944, as the first U.S. teams had already begun to search in Europe for German experts and knowledge, Vannevar Bush wrote to Secretary of War Henry L. Stimson: "I agree that it is important, both from a military standpoint while the war lasts and from an economic and preparedness standpoint after the war, for this country to obtain full information on German progress in industrial technology during the last five or six years." He asserted that, "If promptly brought back to American industry from Germany, the knowledge of this technological progress would not only aid the war against Japan but would be an important factor in aiding American industry to maintain its place in world trade after the war."[66]

Between the second half of 1944 and June 1947, the U.S. government, in cooperation and competition with the British government, sent 3,000 teams—consisting of 11,000 engineers, scientists, and industry representatives—to Germany to get a hold of everything that they could lay their hands on: printed information (blueprints, patents, working papers, formulas, including trade secrets); things (machines, samples of industrial materials, etc., for reverse engineering); and people. Team members extensively interviewed German engineers and scientists to learn what they knew, and if they seemed especially valuable and were willing to leave the country, the U.S. government shipped them to research laboratories of the military as well as private companies. This part of the technology transfer program, the famed Operation Paperclip, rested on the mobility of knowledgeable people to the United States.[67]

Great Britain, France, and the Soviet Union pursued similar programs, competing with the United States in their quest for German knowledge. Hence one of the primary objectives of the U.S. government's program was to deny scientists, engineers, and their knowledge to other countries. It seemed wise to make sure that they were securely tucked away behind the national border. Operation Paperclip brought more than 1,000 scientists and engineers with their families to the United States, and the wartime allies recruited similar numbers.[68]

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66. Vannevar Bush to Henry L. Stimson, August 28, 1944, box 35, Entry A1 1494D, RG 59, USNA.

67. John Gimbel, *Science, Technology, and Reparations: Exploitation and Plunder in Postwar Germany* (Stanford, CA, 1990); Werner Abelshauser, "Immaterial Reparations and the Reintegration of West Germany into the World Market," in *Technology Transfer out of Germany after 1945*, ed. Matthias Judt and Burghard Ciesla (Amsterdam, 1996), 107–18; Bruce E. Seely, "Historical Patterns in the Scholarship on Technology Transfers," *Comparative Technology Transfer and Society* 1, no. 1 (April 2003): 10.

68. Michael Douglas O'Reagan, "French Scientific Exploitation and Technology Transfer from Germany in the Diplomatic Context of the Early Cold War," *International History Review* 37, no. 2 (2015): 366–85; Abelshauser, "Reparations"; Michael J. Neufeld, "The Nazi Aerospace Exodus: Towards a Global, Transnational History," *History and Technology* 28, no. 1 (March 2012): 49–67.

These various exploitation programs added up to an unprecedented migration of a highly skilled workforce.

Deepening the worries about the international migration of scientists and engineers was the high mobility of aerospace specialists to countries other than the "big four." In the first two decades of the postwar period, there were 6,000 to 7,000 German aviation and rocket specialists on the international job market. Argentina, for instance, hired (in violation of allied travel restrictions) about seventy German aerospace experts, forty-five of whom worked with limited success on the country's ambitious fighter jet program, as early as 1947.[69]

Even if German scientists agreed to cooperate with the allies, the allies still saw them as a potential danger. The British, for example, were worried that German scientists would learn too much in the UK and return to Germany with their newfound knowledge.[70] The Soviets shared such worries: when they decided in the early 1950s to send German rocket specialists back to the German Democratic Republic (GDR), they were aware that these scientists would carry with them a lot of classified knowledge. Thus, they heeded the advice of the Soviet Ministry of State Security, MGB, to delay "the departure . . . for a year and a half after" the specialists "had stopped working on sensitive work so as to ensure that their knowledge would be obsolete by the time that they returned."[71] Some returnees wanted to continue their travel on to the United States before the erection of the Berlin Wall. They ran into difficulties because the U.S. national security agencies saw them, once again, as "security risks," meaning potential spies.[72]

The Manhattan Project, the OSRD, the Bush Report, and Operation Paperclip all mark crucial steps towards a scientific-technological knowledge economy operating under the auspices of the burgeoning national security state. Within this new framework, the role of scientists and engineers had undergone a profound change: the U.S. government now saw these men and women as a central resource of national security, and defined them as "manpower."[73] Originally a military term coined in Great Britain during World War I to describe the section of the total national population that could be mobilized on behalf of the war effort, "manpower" became a shorthand for the structural challenges facing the United States in maintaining technological superiority and

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69. Neufeld, "The Nazi Aerospace Exodus," 55; Jonathan D. Hagood, "Why does Technology Transfer Fail? Two Technology Transfer Projects from Peronist Argentina," *Comparative Technology Transfer and Society* 4, no. 1 (April 2006): 73–98.

70. John Gimbel, "Project Paperclip: German Scientists, American Policy, and the Cold War," *Diplomatic History* 14, no. 3 (July 1990): 359.

71. Asif Siddiqi, "Germans in Russia: Cold War, Technology Transfer, and National Identity," *Osiris* 24, no. 1 (2009): 141.

72. Neufeld, "The Nazi Aerospace Exodus," 55.

73. The manpower debate, not only in the United States but also in Britain, was heavily gendered and focused on men. Matthew Godwin, Jane Gregory, and Brian Balmer, "The Anatomy of the Brain Drain Debate, 1950–1970s: Witness Seminar," *Contemporary British History* 23, no. 1 (March 2009), 35–60.

the lead in the armaments race with the Soviet Union.[74] The "National Manpower Council," established at Columbia University in 1951 with funding from the Ford Foundation to find solutions to the perceived shortage of well-educated academics, put it thus: "The build-up of the military and economic strength of the United States and its allies and a posture of readiness against total war are seen as the foundation stones of long-term national security and peace. As long as the cold war exists, it will stimulate the demand for scientific and professional personnel. The technology of modern warfare requires large expenditures on research and development activities …. For such work, scientists and professionals from almost every field, in or out of uniform, are indispensable."[75] Making the link between military prowess and education even stronger, the President's Scientific Research Board argued in 1947 that, "In the war the laboratory became the first line of defense and the scientist the indispensable warrior."[76]

The U.S. government consequently became obsessed with numbers: counting scientists and engineers and comparing the results with developments in the Soviet Union became a genre in its own right, much like counting nuclear warheads and intercontinental ballistic missiles. At the same time, the political and public perception became one in which the United States was falling behind its main competitor. As the *New York Times* wrote in November 1954: "The free world is in danger of losing the important technological race for trained scientists, engineers and technicians… .While the democracies of the world, including the United States, are looking the other way, the Soviet Union and its satellites are training scientists and engineers [at] an almost feverish pace. The Soviet Union has set out … to … outstrip the free world in the preparation of scientists and engineers essential in the atomic age." Obviously, the enemy had understood that "in the modern world knowledge plus engineering equals power" and was now poised to threaten American "technological superiority."[77]

After the Manhattan Project, nobody doubted that scientists wielded real power, which, if not harnessed by the state, could be easily turned against it. The guardians of Cold War national security, such as the FBI, the Atomic Energy Commission (AEC), and the State Department's Passport Office, saw

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74. Keith Grieves, *Politics of Manpower, 1914–1918* (Manchester, 1988), 2.

75. National Manpower Council, *A Policy for Scientific and Professional Manpower: A Statement by the Council with Facts and Issues Prepared by the Research Staff* (New York, 1953), 245.

76. Steelman, *Science and Public Policy*, 3.

77. Benjamin Fein, "Russia is Overtaking U.S. in Training of Technicians," *New York Times*, November 7, 1954, 1, 80; Nicholas De Witt, *Soviet Professional Manpower: Its Education, Training, and Supply* (Washington, DC, 1955); National Science Foundation, *Scientific Personnel Resources: A Summary of Data on Supply, Utilization, and Training of Scientists and Engineers* (Washington, DC, 1955); Joint Committee on Atomic Energy, *Engineering and Scientific Manpower in the United States, Western Europe and Soviet Russia* (Washington, DC, 1956); "Parley Called on Shortage of Scientific Brainpower," *Washington Post*, May 10, 1953, M1; "Experts Warn U.S. of Soviet Science," *New York Times*, January 30, 1955, 13.

their worst fears confirmed when, as early as February 1946, the first big espionage case broke. It provided a powerful argument against sharing knowledge internationally. The Atomic Energy Act, passed in August 1946, contained the most radical secrecy regulations in American history.[78]

In such a chilly environment, scientific internationalism appeared highly suspicious, as did the leftist political leanings that were its frequent bedfellow. Indeed, scientific internationalism, in the opinion of its critics, was just another word for helping the Soviets. Set against this backdrop, convictions that would have been normal fare in the interwar period began to appear treasonous. Theoretical physicists, who were in the U.S. public widely understood to be the actual builders of "the bomb," were singled out as being "proto-spies." Moreover, the seemingly endless parade of HUAC hearings and espionage scandals, together with the millions of personnel screenings of the Federal Loyalty-Security Program in search of subversives and spies, helped turn Cold War fears into a politically potent "espionage paradigm." Thus, at the turn of the 1950s, when the case of the high ranking scientist-spy Klaus Fuchs and the news of the detonation of the first Soviet atomic bomb came to the fore, it was difficult not to think that the worst-case scenario had been true the whole time.[79]

These anxieties were not limited to the nuclear sector. The dominant position of the military in the national science system engendered a wide net of secrecy and security regulations that was cast over a considerable part of U.S. R&D. In fact, almost every technology that the national security community considered to be cutting-edge and saw as having a potential military application was controlled either by classification, or, by no means less important, export controls. They regulated not only goods but also the sharing of formally *unclassified* information related to certain "sensitive" or "strategic" dual-use technologies. This included multiple modes of transmission in written form and oral communication to non-U.S. citizens, even within the United States.[80] The proliferation of information controls in the 1940s and 1950s led prominent members of Congress and a vociferous faction of the scientific community to

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78. Alex Wellerstein, "Knowledge and the Bomb: Nuclear Secrecy in the United States, 1939–2008" (PhD diss., Harvard University, 2010), 167–92; Peter Galison, "Secrecy in Three Acts," *Social Research* 77, no. 3 (Fall 2010): 941–74; Peter Galison, "Removing Knowledge," *Critical Inquiry* 31, no. 1 (Autumn 2004): 229–43.

79. David Kaiser, "The Atomic Secret in Red Hands? American Suspicions of Theoretical Physicists during the Cold War," *Representations* 90, no. 1 (Spring 2005): 28–60; Lawrence Badash, "From Security Blanket to Security Risk: Scientists in the Decade after Hiroshima," *History and Technology* 19, no. 3 (September 2003): 241–56.

80. Department of Defense Memorandum, "Mandatory Export Control of Technical Data," January 17, 1951, box 8, Entry UD 59, RG 40, USNA; Export Regulations, Part 385: Exportations of Technical Data, *Federal Register* 19, no. 253 (1954): 9384–86; Frank E. Samuel, "Technical Data Export Regulations," *Harvard International Law Club Journal* 6, no. 2 (Spring 1965): 125–65; J. N. Behrman, "U.S. Government Controls Over Export of Technical Data," *Patent, Trademark, and Copyright Journal of Research and Education* 8 (Fall 1964): 303–15.

stress that impeding scientific communication and scientific progress under-mined national welfare and national security.[81]

Clearly, nuclear scientists were not the only dangerous carriers of knowledge, but they could certainly do the greatest damage. Therefore, the question of whether they should receive a passport was an especially tricky one. In 1950 the AEC began to place the names of all persons who had a "connection with the atomic energy project" and who worked on classified material on "a card index used for control of their future foreign travel." When an AEC employee applied for a passport, the State Department's Passport Office first contacted the AEC "in accordance with the routine arrangements" for its opinion on the applicant. Then the AEC consulted the card index to assess the national security risks the applicant's travel would entail. The card index also "made it possible to brief individuals going abroad on their security responsibilities, provided an opportu-nity to request assistance for intelligence units, and enabled the Commission to know where key individuals were in the case of emergency."[82]

Commissioner Henry DeWolfe Smyth could only wonder if the "security risks attendant on travel by the bulk of individuals thus indexed" were too low to justify the "control of their movements." Indeed, in the early 1950s, the "problems in connection with the granting of passports" were so "rare" that the five commissioners of the AEC would themselves make the final decision in doubtful cases. Still, the AEC deemed travel regulations for its employees so important that the Commission insisted on informing everyone who signed a job contract with them that they would be subject to such controls.

The U.S. government implemented these restrictions with serious ramifica-tions. A good example is Frank Oppenheimer—an atomic physicist, member of the Manhattan Project, and J. Robert's brother—whose travel plans prompted an AEC meeting. Oppenheimer was blacklisted without any chance to get a position at a U.S. institution because he had admitted during a HUAC hearing in 1949 that he had been a member of the Communist party. Therefore, he wanted to leave the country and work in India. But even though the AEC was generally aware that passport decisions had to consider "derogatory information," Oppenheimer's po-litical affiliations were not even once mentioned in the minutes. The AEC voted against issuing Oppenheimer a passport. Crucial for this decision was the question of what he *knew* and what he could share with others once he was abroad.

The AEC was divided in its risk assessment. Smyth was in favor of the appli-cant. Since Oppenheimer "presumably had no recent information concerning

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81. *Availability of Information from Federal Executive Agencies, Hearings before the House Subcommittee of the Committee on Government Operations, Part 4: Panel Discussion on Scientific and Technical Information*, March 1956, and *Part 15: Restrictions on Flow of Scientific and Technological Information*, January 1958 (Washington, DC, 1956 and 1958).

82. These and the following quotes, up to the end of this section, are taken from "Foreign Travel By Personnel, Excerpt from Minutes of AEC Meetings No. 363 (February 2, 1950) and No. 367 (February 8, 1950), box 10, RG 326, USNA, accessed May 12, 2017, http://blog.nucle-arsecrecy.com/2012/01/18/weekly-document-10-a-tale-of-two-oppenheimers-1950/.

the United States atomic energy project, it appeared to Mr. Smyth that the security risk attendant on his presence in India would be slight and no greater than the risk while he remained in this country, particularly if embittered by refusal of a passport." The security hardliner Lewis Strauss objected, stating that in his opinion there was "an element of a security risk" in Oppenheimer's visit to India and that "the doubt in such a case should be resolved in favor of the government." The end result was a two-to-two stalemate, which left the decision up to Chairman David Lilienthal. The "present matter," Lilienthal pointed out, "was not simply a question of transit or exit from the country, but appeared to be a question of livelihood."

In the end, he voted against issuing the passport. Lilienthal, a close friend of J. Robert Oppenheimer's, worried about creating the impression of "any possibility of personal prejudice in the case." It was probably also significant that these debates played out against the backdrop of the Klaus Fuchs espionage case. On the very day that it first discussed the Oppenheimer case, the AEC heard the news about the Fuchs case, which deeply shocked the U.S. atomic establishment and led to a further strengthening of the nuclear secrecy regime. In many ways it was the worst possible moment to issue a passport to a Communist atomic scientist.[83] Thus, even though the AEC minutes reveal an overall differentiated discussion of the many pros and cons in granting Oppenheimer's request, they also show the power of the espionage paradigm in passport cases involving high-ranking scientists. The mobility of every single knowledgeable brain mattered. Like a soldier in a time of conscription, every scientist constituted a valuable part of national "manpower," his knowledge doubling as a key resource in the bid to safeguard national security and thereby too precious or even dangerous to be allowed to leave the country.

CONCLUSION: BUILDING THE NATIONAL SECURITY STATE, CONSTRUCTING KNOWLEDGE BORDERS

The comparison between scientists and soldiers can help us better understand the broader meaning of passport controls during the early Cold War. It allows us to conceive of the control of scientists as a measure of exploitation and mobilization of national resources for the political goals of the state. Moreover, historically speaking both the establishment of the draft and the documentary control regime that made it possible were key elements of state building. Indeed, in the case of Cold War America, the passport control regime is best understood as a building block in the construction of the U.S. national security state in the 1940s.[84]

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83. Alex Wellerstein, "The Tale of Two Oppenheimers (1950)," accessed October 22, 2017, http://blog.nuclearsecrecy.com/2012/01/18/weekly-document-10-a-tale-of-two-oppenheimers-1950/. For the impact the Fuchs case had on the AEC and the policy of nuclear control, see Wellerstein, "Knowledge and the Bomb," 293–304.

84. I borrow this idea from Michael Hogan who uses the term "state making." Hogan, *Cross of Iron*.

The sociologist John Torpey claims that not only the monopolization of violence, but also the "monopolization of the 'legitimate means of movement'" has historically played a crucial role in the building of the modern state. According to Torpey, "the result of this process has been to deprive people of the freedom to move across certain spaces and to render them dependent on states and the state system for the authorization to do so."[85] The introduction of documents for the identification of each citizen was essential to this process. Documents like passports and visas were increasingly used as instruments of in-/exclusion when it came to the question of crossing national borders, thus contributing to the construction of the complex of ideas that are denoted by terms like national collective, national citizenship, and the nation-state. At the same time, passports and other identification documents were used by the state to "reach into" and "embrace" societies for the "extraction of military services, taxes, and labor; the facilitation of law enforcement; the control of 'brain drain' . . . ;the restriction of access to areas 'off-limits' by the state" or "the exclusion, surveillance, and containment of 'undesirable elements.'" It is therefore by no means an exaggeration to claim that the "regulation of movement contributes to constituting the very 'state-ness' of states."[86]

If state-building can be understood as a process of "lay[ing] claim to people and goods" by the monopolization of the legitimate means of movement, it is not surprising that the re-introduction of the international passport system was influenced by World War I and that the U.S. passport regime was permanently established in World War II. [87] The mobilization of entire populations and national economies, and the perception that enemies were prone to attacking from both within and without national borders, demanded a more effective means of administrative control. In the first half of the twentieth century, the U.S. federal government was still a relatively "small" and "weak" government, limited in its competencies and reach. World War II changed this situation dramatically and ushered in the construction of a strong national security state with extensive powers to organize a strong military, mobilize the economy for foreign policy goals, and collect information through its expansive new intelligence apparatus. Within this context the passport proved to be a powerful tool for widening the reach and strengthening the "grip" of an increasingly powerful and intrusive U.S. federal government.[88]

Scientists meanwhile became entangled in the process of building the national security state. During World War II, the mobilization of scientific-technological knowledge became a hallmark of the new state, and scientists and engineers moved to the center of the political arena. As its utilization for

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85. John Torpey, "Coming and Going: On the State Monopolization of the Legitimate 'Means of Movement,'" *Sociological Theory* 16, no. 3 (November 1998): 239.

86. Ibid., 240–41.

87. Ibid., 244.

88. Ibid., 246.

warfare linked scientific-technological knowledge production to the security of the state, science became, in stark contrast to the interwar ideals of scientific internationalism, increasingly ensconced within national borders. In practice the passport regime enforced these borders and made them palpable to scientists. Passports turned scientists into national resources of highly coveted knowledge. Accordingly, the Cold War travel restrictions of scientists have a distinct techno-nationalist tinge, underpinned by a (in many ways justified) sense of American technological superiority and leadership of the "West."[89] Indeed, as superior technological and scientific capabilities, global political leadership, and the worldwide projection of military power became closely linked, scientists and their knowledge became ensnared in the U.S. project of building global hegemony.[90]

All of this is not to deny the importance that all U.S. Cold War administrations attached to international scientific-technological cooperation and exchange. But after 1945 "international" was a term that was synonymous with the "Free World" and thereby excluded everyone living beyond the Iron Curtain.[91] Knowledge circulation was maintained but it was subject to regulation that considered both the kind of knowledge that was moving across borders and the characteristics of the individual who was its bearer, notably nationality and political allegiance.

The travel restrictions placed on scientists demand to be seen in a wider context of knowledge control regimes of the Cold War, alongside export controls, security clearances, and the classification of information. Together, these three strands of knowledge control—targeting the mobility of people, "things," and information—reveal the full scope of the national security state built in the 1940s and 1950s. World War I legislation had earlier drawn a close parallel between them, showing how travel could be seen as a means of communicating information. Similarly, U.S. Cold War export controls tried to regulate the circulation of goods and information, thereby also impinging on the ability of individuals to interact with another. And as the case of Frank Oppenheimer shows, the very construction of a government secrecy regime betrays the basic assumption that knowledgeable people are carriers of information. Expressing the various degrees of dangerousness for the United States, the classification levels of documents (for example "confidential," "secret," and "top secret") are directly related to levels of security clearances for individuals, which are granted on the basis of security investigations into their loyalty.[92]

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89. For a critical discussion of the concept of "techno-nationalism," see David E. H. Edgerton, "The Contradictions of Techno-Nationalism and Techno-Globalism: A Historical Perspective," *New Global Studies* 1, no. 1 (2007): 1–32.

90. Krige, *American Hegemony*; Nelson and Wright, "Rise and Fall of American Technological Leadership."

91. Manzione, "Amusing and Amazing and Practical and Military," 38–52.

92. For an accessible introduction to Cold War classification, see Department of Defense, Industrial Security Division, *Questions and Answers on Safeguarding Classified Information* (Washington, DC, 1954).

It would be wrong to draw a simple correlation between travel restrictions and classification systems. Many of the scientists confronted with passport denials emphasized that they were not, or not any longer, working on classified projects. When the AEC discussed Oppenheimer's case in 1950, Commissioner Smyth emphasized that the physicist had not had access to classified information for some time and was therefore harmless. Before the Soviets sent "their" German rocket scientists back home, they made sure that these scientists had not had access to secret information for an extended period of time so that the dangerous knowledge that they were carrying would be at least partially obsolete. Yet, as we have seen, the information value of a traveling scientist did not just revolve around the question of whether what he or she knew was still "active" or has been made "obsolete" over time. Of at least equal importance was the *concept* of knowledge on which such an assessment was based. Thus, the idea of an "atomic secret" in the form of a formula that can easily be written down and transmitted to the enemy intensified considerably the atomic espionage fears of the early Cold War.[93]

The scientist was, however, not just a mere repository of formulas. The examples of Operation Paperclip and the transnational mobility of aerospace experts point to another concept of knowledge that informed the U.S. administration's view of traveling brains. The concern over the transfer of not just paper and merchandise, but also people speaks to the significance of "tacit knowledge" for the transfer of complex technologies from one intellectual-industrial-technological environment into another. Whereas the idea of "atomic secret" oversimplifies the issues involved, the emphasis on "tacit knowledge" appraises the intricacies of technology transfers. "Tacit knowledge" is an individual's accumulated experience, which consists not only of the entirety of acquired information, but also of the "bodily" coded knowledge that can only be gained through individual practice.[94] Sharing such knowledge requires face-to-face interaction between informed individuals engaged in related research practices.

The control of knowledge came at a price. It endangered the many freedoms that democracy was built upon, not to mention the scientific progress that national security depended on. In an editorial that appeared in the 1952 special edition of the *Bulletin of the Atomic Scientists* dedicated to visa and passport

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93. At the center of these claims was the rather simplistic idea of a distinct "atomic secret," a formula that a spy could easily communicate to his contacts and that could just as easily be used to build the bomb in the Soviet Union. Kaiser, "Atomic Secret in Red Hands," 30. See also Gregg Herken, "'A Most Deadly Illusion': The Atomic Secret and American Nuclear Weapons Policy, 1945–1950," *Pacific Historical* Review 49, no. 1 (February 1980): 51–76.

94. O'Reagan, "French Scientific Exploitation and Technology Transfer from Germany in the Diplomatic Context of the Early Cold War," 380; Hagood, "Why Does Technology Transfer Fail," 86–88; Seely, "Historical Patterns in the Scholarship on Technology Transfers," 22; Donald MacKenzie and Graham Spinardi, "Tacit Knowledge, Weapons Design, and the Uninvention of Nuclear Weapons," *American Journal of Sociology* 101, no. 1 (July 1995): 44–99; Michael Polanyi, *The Tacit Dimension* (Garden City, NY, 1966).

restrictions for scientists, the sociologist Edward Shils wrote: "A free society is an open society, permitting and encouraging the unhampered pursuit of truth, facilitating the free interchange of ideas. But are we living as free men if we are not allowed to have personal contact with our foreign colleagues?" Was the United States turning into the twin of the very enemy it was fighting against? Shils was afraid that it was: "The very crime against freedom with which the Soviet Union is rightly charged—the refusal to permit its citizens to meet foreigners and to hear the ideas of foreigners—is one which we too, in a less thoroughgoing fashion, are committing. The American way of life is built around the ideal of personal and intellectual freedom."[95]

Many deemed the implications that travel restrictions had for the American ideal of democracy to be especially problematic, and these implications would eventually lead the way to an incremental revision of the U.S. passport policy. In the second half of the 1950s, a series of court decisions would reverse the administrative practices of the State Department's Passport Office on the grounds that they did not conform to the due process demanded by the Fifth Amendment.[96]

The greatest blow to the Passport Office came in 1958 when the Supreme Court, after hearing the case of the Communist artist Rockwell Kent, who had sued the office after being denied his passport, defined the freedom of travel as a basic democratic value. The court observed that the relevant passages in the Internal Security Act were too broad and ill-defined, this being especially problematic given the State Department's "authority to withhold passports from citizens because of their political beliefs." It stopped short, all the same, of decreeing that freedom of movement was a fundamental constitutional right. It also did not deny that the State Department had the right to refuse to issue travel documents to an applicant.[97] On the same day the Supreme Court also heard the case of the physicist Weldon Bruce Dayton. In 1954, the State Department had denied his application for a passport to go to India because he was suspected of having had not only connections to Communists, but also to the Rosenberg espionage ring.[98] Now, four years later, the Supreme Court forced the State Department to issue a passport to Weldon.[99] The court's

95. Edward Shils, "Editorial: America's Paper Curtain," *Bulletin of the Atomic Scientists* 8, no. 7 (1952): 212.

96. Lansing, "Freedom to Travel"; "Passport Refusal for Political Reasons: Constitutional Issues and Judicial Review," *The Yale Law Journal* 61, no. 2 (February 1952): 171–203; Leonard Boudin, "The Constitutional Right to Travel," *Columbia Law Review* 56, no. 1 (January 1956): 47–75; Alan Vestal, Freedom of Movement," *Iowa Law Review* 41, no. 1 (Fall 1955): 6–49.

97. Alan Rogers, "Passports and Politics: The Courts and the Cold War," *The Historian* 47, no. 4 (August 1985): 497–511; Ken Lawless, "'Continental Imprisonment': Rockwell Kent and the Passport Controversy," *The Antioch Review* 38, no. 3 (Summer 1980): 304–12.

98. *Dayton v. Dulles*, accessed October 31, 2017, https://www.law.cornell.edu/supremecourt/text/357/144.

99. Rogers, "Passports and Politics," 508–9; Bernard Schwartz, *The Unpublished Opinions of the Warren Court* (Oxford, 1985), 45–51.

decision left no doubt that times had changed: for the first time in the Cold War, the Fifth Amendment and the freedom of travel trumped the fear of espionage.

The end of passport restrictions in the late 1950s and early 1960s did not mean the end of the national security state's efforts to control the international flow of knowledge by controlling people. Up to the present day, the visa applications of foreign scientists are being carefully screened, and no doubt denied, if they come from states deemed to be adversarial to the United States. In programs like "Visas Mantis," which builds on similar programs running since the 1950s, visa decisions are based on a vetting of the research interests of the applicants and closely linked to export controls. After scientists arrive in the United States, "deemed export" regulations restrict, on the basis of nationality defined by travel and identification documents, their access to certain research information and facilities within the United States. Thus, the key question remains what foreign scientists know and what they could learn if they travel to and work in the United States—and what harm they could do to national security if they learn too much.