“One and the Same the World Over”: The International Culture of Surgical Exchange in an Age of Globalization, 1870–1914

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ABSTRACT

This paper examines the international exchange in surgery in the decades before World War I, a period of growing globalization in communication and transport. Focusing on Europe and North America, it looks first at the various means of exchange, especially surgical travel and the culture emerging around it and follows specific directions of exchange, from France and Britain, first to the German-speaking countries and finally to North America. Subsequently, the account turns to international organizations as an important means of exchange in this time period. The *International Society of Surgery*, in particular, provided a forum for a vivid internationalist discourse, which, however, stood in tension with simultaneous nationalist tendencies leading up to World War I. The paper finally discusses how the international exchange and communication at the time can be seen as an instance of modern surgeons claiming—and simultaneously trying to create—the global universality of surgical knowledge and practices, making sure that surgery is the same the world over.

KEYWORDS: surgery, technology transfer, internationalism, travel, globalization

“But surgery is one and the same the world over. Whether in the frozen north or under the equator, in civilized America or barbaric Africa, be the patient white Caucasian, swarthy Negro, red Indian or yellow Malay, the same accidents and diseases assail him, the same remedies save him, identical operations cure him: a new remedy discovered in Japan is equally efficacious in Philadelphia; a new operation devised in America is equally applicable in Egypt.”¹

1 W. W. Keen, “Address in Surgery. Delivered at the Semi-Centennial Meeting of the American Medical Association at Philadelphia, PA., June 3, 1897,” *JAMA*, June 12, 1897, 1102–10, see 1104.

This is how in 1897 the eminent American surgeon William W. Keen claimed that surgical knowledge and practices were valid and applicable independent of their geographical context. Keen made this claim to global universality at a time of a strongly felt acceleration and extension of communication and exchange, not only in surgery. Historians have characterized the period between 1870 and World War I as a time of an “emergent globality,” in which historical actors started thinking in terms of the global more than ever before.² It was a time of various “world projects”—world time, global metrology, and standardization—all of which made it possible to link up different parts of the globe more effectively than ever.³ In this “remarkable surge in globalization,” surgery participated in specific ways.⁴

In this paper, I look at the networks of communication and exchange among practitioners within and between the surgically leading countries from 1870 to 1914.⁵ Using a variety of sources such as travel reports, letters, scientific papers, and minutes of the meetings of international societies, I first investigate the means employed to spread surgical knowledge and practices in a context of intensified and accelerated communication and exchange. Particular emphasis will be placed on traveling, which, for surgery, was a central means of knowledge and technology transfer. I will then investigate, more specifically, the direction such transfers took, first from Britain and France to the German-speaking world, and then on to the United States. Finally, I will show how the emergence of an international surgical culture was formalized in the establishment of an international society, which combined the effort of creating surgical universality with the ideology of surgical internationalism. These processes need to be examined in various dimensions: at the level of medical and surgical knowledge, of the prevailing political conditions, ideologies, and theories, but also in terms of the materiality of the circulation of knowledge and skill.⁶ In all of these contexts, the tension between the local and the global comes up as a fundamental theme, as does the related question of the universality of surgical knowledge and practice. The paper ends with a general discussion of these questions, situating its findings within the broader theme of the emergence of the idea of a modern, universal, and globally applicable surgery in the decades before World War I.

2 Jürgen Osterhammel, *The Transformation of the World: A Global History of the Nineteenth Century* (Princeton, New Jersey: Princeton University Press, 2014), xv.

3 Markus Krajewski, *Restlosigkeit. Weltprojekte um 1900* (Fischer: Frankfurt on Main, 2006); Osterhammel, *Transformation*, 69–70.

4 Osterhammel, *Transformation*, 711.

5 This paper will focus on the West and its pretensions to universality. There is a whole other story to tell about non-Western contexts, e.g., colonial ones, which goes beyond the purview of this paper, for surgery, see, e.g., Anne Crowther and Marguerite W. Dupree, *Medical Lives in the Age of Surgical Revolution* (Cambridge: Cambridge University Press, 2007).

6 As suggested by James A. Secord, “Knowledge in Transit,” *Isis*, 2004, 95, 654–72, see 665–68.

WAYS OF TRANSCENDING THE LOCAL: EXCHANGE IN SURGERY

Looking at premodern surgery, Christopher Lawrence and colleagues have found a high degree of diversity in practices and preferences.⁷ Peter Stanley has described how observers in the early nineteenth century commented on the differences in surgical practices between nations, cities, and even between practitioners working in different hospitals within the same city. British journals, for example, reported on operations that had been developed in Germany and were not used in Britain. Similarly, the French had not adopted the aneurism operations developed by the British surgeon John Hunter, preferring their own older methods instead. In general, French surgeons were known for their speedy operations and their specialized instruments, whereas their English colleagues were supposedly particularly good at postoperative treatment, and so on.⁸ These examples also show that exchange between practitioners had existed for a long time, often at an international level. Surgeons rarely worked in complete isolation. In eighteenth- and nineteenth-century Britain, for example, practitioners often discussed innovations by colleagues from other countries. When promoting or justifying new operations, they drew on international literature for the relevant evidence, and Samuel Cooper's *Dictionary of Practical Surgery* devoted numerous entries to documenting the different national approaches to particular operations.⁹

In principle, the transfer of surgical technologies and knowledge could take various routes. Thus, they could be passed on in written form. It is known that textbooks played a significant role in exchange across national borders and helped spreading certain techniques.¹⁰ In the late nineteenth century, textbooks in German often underwent translation into multiple languages, such as Kurt Schimmelbusch's guide to aseptic surgery, or Theodor Kocher's *Operationslehre* after 1892¹¹—both standard textbooks of their time. In addition to books, journals gained in significance as a means of exchange in surgery (as in medicine more generally).¹² As Anne Crowther and Marguerite Dupree found for the 1880s, surgeons sometimes tried new techniques suggested by other practitioners in the medical journals.¹³

In the world of the written word, libraries were important hubs of exchange. In London, the library of the *Royal College of Surgeons* contained periodicals from

7 Christopher Lawrence, "Democratic, Divine and Heroic: The History and Historiography of Surgery," in *Medical Theory and Surgical Practice: Studies in the History of Surgery*, ed. Christopher Lawrence (London: Routledge, 1992), 1–47, see 17.

8 Peter Stanley, *For Fear of Pain: British Surgery, 1790–1850* (Amsterdam and New York: Editions Rodopi, 2003), e.g., 60–63. See also Ghislaine Lawrence, "The Ambiguous Artifact: Surgical Instruments and the Surgical Past," in *Medical Theory and Surgical Practice: Studies in the History of Surgery*, ed. Christopher Lawrence (London: Routledge, 1992), 295–314, see 307.

9 Stanley, *Fear*, 61–62.

10 For example, Ulrich Tröhler, *Auf dem Weg zur physiologischen Chirurgie. Der Nobelpreisträger Theodor Kocher 1841–1917* (Basel, Boston, Stuttgart: Birkhäuser, 1984), 19.

11 On Schimmelbusch: Thomas Schlich, "Asepsis and Bacteriology: A Realignment of Surgery and Laboratory Science," *Med. Hist.*, 2012, 56, 308–43, 323–26. On Kocher: Tröhler, *Nobelpreisträger*, 2.

12 Up until about the 1860s, even elite surgeons did not use journals very much for exchange: Ernst Kern, *Theodor Billroth. 1829–1894: Biographie anhand von Selbstzeugnissen* (Munich: Urban & Schwarzenberg, 1994), 78. On journals: William F. Bynum, Stephen Lock, and Roy Porter, eds., *Medical Journals and Medical Knowledge: Historical Essays* (London and New York: Routledge, 1992).

13 Crowther and Dupree, *Medical Lives*, 269.

Germany, France, Italy, and the United States. From its foundation in 1805, the *Medical and Chirurgical Society* had a “Foreign Secretary.” The Society purchased foreign books, so that by 1848, of the 432 books in its library, only 57 were in English.¹⁴ In the period of 1870–1914, an outstanding example is the library of the *Surgeon-General’s Office of the United States Army* in Washington. With its special tool, the “Index Catalogue” and its thousands of medical books and, in 1897, eleven hundred medical journals, it was a nodal point of the infrastructure that supported claims for the universality of modern medicine and surgery. American surgeons were rightly proud of it. In the same speech in which he claimed surgical universality, William W. Keen, one of the leading surgeons of the country (he was to be president of the *American Surgical* and of the *American Medical Association*) stressed that the library’s treasures were “freely at the service of the entire profession of the country,” and that the benefit went beyond one nation: the Index Catalogue, Keen exclaimed, was “a catalogue not for one country, but for all nations and all tongues.”¹⁵

However, surgical knowledge transfer was not solely based on books and journals. Ideas and practices were often attached to instruments and other material objects, which circulated between places and practitioners.¹⁶ For the decades before World War I, the importance of this point can be illustrated by an example from the spread of aseptic surgery: In 1898, Keen reported to have read an article on the use of cotton gloves written by Johann Mikulicz in the German journal *Deutsche Medizinische Wochenschrift*. However, in order to try out the gloves, he needed to obtain more detailed information about their “kind and quality.” Keen addressed a letter to the author, who in response sent him a sample of gloves back to the States. Along with these, Mikulicz enclosed one of his disinfected caps and his newly invented surgical mask: “a piece of gauze tied by two strings to the cap, and sweeping across the face so as to cover the nose and mouth and beard,” as the American surgeon described the then unfamiliar piece of surgical equipment.¹⁷ Having the material objects—which represent the main elements of today’s surgical garb—was essential. Descriptions were not enough.

Such exchanges depended on reliable and expedient postal services. Surgeons of the time were very well aware of how the speed of knowledge transfer had increased with the introduction of new means of communication, not just through mail, but more and

14 Stanley, *Fear*, 61. This shows that at the time translation was not a necessary means of transmission.

15 Keen, “Address,” 1104. For the history of the catalog, see Wyndham D. Myles, *A History of the National Library of Medicine. The Nation’s Treasure of Medical Knowledge* (Bethesda, Maryland: National Institutes of Health, 1982), 111–39; and Carleton B. Chapman, *Order Out of Chaos. John Shaw Billings and America’s Coming of Age* (Boston: The Boston Medical Library, 1994), 171–98. On the role of libraries in nineteenth-century globalization more generally, see Osterhammel, *Transformation*, 9–11.

16 For example, the Paris surgeon Jean Civiale’s instrument for crushing bladder stones (lithotrity), which “drew enthusiastic attention to his operative techniques,” John Harley Warner, *Against the Spirit of the System. The French Impulse in Nineteenth-Century American Medicine* (Princeton, New Jersey: Princeton University Press, 1998), 138. Also Thomas Schlich, *Surgery, Science and Industry: A Revolution in Fracture Care, 1950s–1990s* (Houndsmills, Basingstoke: Palgrave, 2002).

17 W. W. Keen, “Transactions of the Section on General Surgery of the College of Physicians of Philadelphia,” *Ann. Surg.*, 1898, 27(2), 209–27, 225–26; Thomas Schlich, “Negotiating Technologies in Surgery: The Controversy about Surgical Gloves in the 1890s,” *Bull. Hist. Med.*, 2013, 87, 170–97.

more through new technologies such as the telegraph¹⁸—the “great new medium with a globalizing effect,” as historian Jürgen Osterhammel characterizes it.¹⁹ Contemporaries marveled at the new speed of communication. A surgical observer in 1904 noted the “electric promptness,” with which “events medical in the old world are chronicled in the news.”²⁰ Likewise, the American surgeon J. B. Murphy noted in 1910 that “in less than six weeks after some new discovery is made the entire medical world knows of it. The progress,” he asserted, “has been international.”²¹ Thus, surgeons seemed to have noted an acute acceleration of communication and increase in the global universality of their field. However, all of these communication technologies paled in comparison to the importance of personal exchange between surgeons—a mode of technology transfer that surgeons consistently considered crucial and which was likewise being transformed by advances in the technologies of transport.

TRAVEL: AROUND THE WORLD IN EIGHTY DAYS

The reason for the importance of personal exchange through traveling was that surgical knowledge was thought to be special. Due to its manual character, and in keeping with the craft tradition in the field, surgical knowledge was thought to be not completely transferable through language: much of it was considered “tacit” knowledge—the ability to perform skills without being able to articulate how to do them. Practitioners often emphasized the limits of the written word in surgery and developed a whole culture around the idea of tacit knowledge to be passed on in person.²² It was “one thing to read the description of a complicated operation; it is another thing to see it performed by the hands of a master,” Nicholas Senn from Chicago (who was an immigrant from Switzerland and an avid traveler) pointed out in 1905. “Textbooks,” he argued, “valuable as they are, are but poor substitutes for actual instruction and demonstrations.”²³ To efficiently pick up surgical skills, one had to travel.

To elucidate the special character of knowledge transfer in their field, surgeons sometimes took recourse to comparisons with other artisanal activities such as food preparation. In their antiseptic practices, the German pioneer of antisepsis Richard Volkmann noted in 1875, individual surgeons fared like housewives in their efforts at making fruit preserves—some women were always successful in that task, whereas others regularly had a high share of spoiled glasses. Often unnoticed details

18 On the new communication technologies and the telegraph in the globalization of science, see Elizabeth Crawford and Terry Shinn, “The Nationalization and Denationalization of the Sciences: An Introductory Essay,” in *Denationalizing Science: The Contexts of International Scientific Practice*, ed. Terry Shinn, Elisabeth Crawford, and Sverker Sörlin (Dordrecht: Kluwer, 1993), 1–42, see 12.

19 Osterhammel, *Transformation*, 719.

20 Lewellys F. Barker, “Is a Trip to Europe Worth Its Cost to the Medical Man?” *JAMA*, July 30, 1904, 328–29, 328. Acceleration has been described as a characteristic experience of that time period, see Osterhammel, *Transformation*, 74.

21 Anon., “Says U.S. Doctors Lead the World. DR. J.B. Murphy, Just Back from London, Has Praise for Americans,” *Chicago Daily Tribune*, August 8, 1910, 9, ProQuest Historical Newspapers.

22 Michael Polanyi, *Personal Knowledge: Toward a Post-Critical Philosophy* (London: Routledge and Kegan Paul), 1958; for tacit knowledge in the history of surgery: Schlich, *Surgery*, 67.

23 N[icholas] Senn, *Around the World via India. A Medical Tour* (Chicago: American Medical Association, 1905), 13.

such as storing the sulfurized glasses for the fruit upright instead of upside down made all the difference, he explained. The same thing was true for antiseptic surgery.²⁴ This was why antiseptic technique had to be passed on in person, as Theodor Kocher from Bern in Switzerland wrote in letter to Volkmann, asking his more experienced colleague if he could visit him to see the antiseptic methods applied in practice and thus not end up like those poor women who have always spoiled fruit preserves.²⁵

The personal character of antiseptic techniques was reflected in the geography of its transfer. As a German visitor to Scotland observed in 1872, the success in using Joseph Lister's antiseptics declined the further it got from Edinburgh (where Lister worked at that point). Already by Glasgow, many surgeons did not follow all the details correctly and the results were not as good.²⁶ This was also the case when antiseptics was used in colonial contexts, where the main obstacle consisted in the accurate application of Lister's complex methods in far-away hospitals.²⁷ The skill of using antiseptics seemed to follow a geographical gradient.

It thus made sense for surgeons such as Senn to invoke the old craft tradition of tradesmen acquiring "their technical knowledge by serving as apprentices for a number of years under the supervision of an acknowledged master, and after having obtained the required proficiency they spent another year or two, their *Wanderjahre*, in travelling from place to place in perfecting themselves in their vocation by familiarizing themselves with the practical work of different masters."²⁸ Like the traveling journeymen of the traditional world, modern surgeons liked to embark on Grand Tours as part of their education. For example, the later Nobel laureate Kocher visited famous colleagues in Berlin, London, and Paris after his graduation in 1865. In turn, surgeons from all over the world visited him in Bern later on in the century.²⁹ The idea of travel was not new at this time, but it was closely intertwined with the rhetoric of accelerating scientific and technological progress and the ethics of surgery. In an "age of research and discoveries," traveling, according to Senn, was more important than ever in order to keep pace "with the wonderful advancements and improvement of the most progressive of all professions."³⁰ It was no accident that this connection was increasingly made at the end of the century. As mentioned above, this was a seminal period for globalization and a time of growing exchange and increasing traffic, which was facilitated through new networks of transport and communication, such as steamship lines and trains. For the first time, such networks had a global reach, creating the idea of a common world that was spanning the globe.³¹

24 Richard Volkmann, "Herr Dr. R.U. Krönlein und seine Statistik," Beilage zu: *Sammlung klinischer Vorträge*, no. 96, ed. by Richard Volkmann (Chirurgie II, Leipzig: Breitkopf&Härtel [1875]), 759–812, see 799.

25 Letter, Theodor Kocher to Richard Volkmann, no date, The College of Physicians of Philadelphia, Library, Historical Collections, MSS 2/0227-01, Acc. 1991-139 Richard von Volkmann, Letters received 1867–89.

26 A. W. Schultze, "Ueber Lister's antiseptische Wundbehandlung nach persönlichen Erfahrungen," *Deutsche Militärärztliche Zeitschrift* 1872, 1(7), 287–312, see 312.

27 Crowther and Dupree, *Medical Lives*, 307.

28 Senn, *Around*, quotes on 10–11.

29 Tröhler, *Nobelpreisträger*, 10–15, 36. On American surgeons' tours, see e.g., Michael Bliss, *Harvey Cushing: A Life in Surgery* (New York: Oxford University Press, 2005), 256–57.

30 Senn, *Around*, 11.

31 Krajewski, *Restlosigkeit*, 11–19. Osterhammel, *Transformation*, 37–38.

The idea of globalization of the nineteenth century was captured and dramatized by Jules Verne in his futuristic story of 1873 “Around the World in 80 Days,” whose protagonist Phileas Fogg hurried from continent to continent using the intermeshing boat and railway lines that were now connecting the continents. Later in the nineteenth century, some real circumnavigators emulated Fogg’s feat. These were highly publicized projects functioning as powerful symbols of the new, global reality.³² Among surgeons of the time, Senn went on such a journey too. His travel reports bear a striking resemblance to Verne’s stories.³³ Senn undertook two surgical trips around the world, and the opening of the report on the second circumnavigation reads indeed like a Jules Verne story: “For the second time I am on a tour around the world—this time in the opposite direction, from East to West, via India. I leave San Francisco on the steamer *Sierra*, July 7, and if I am spared the disease-producing effects of the tropical climate and not delayed by failing to make timely connections, I expect to reach New York on the *Kronprinz Wilhelm*, October 11.”³⁴ Senn traveled via Adelaide to Colombo, from Colombo to Tuticorin, then to Bombay and on to Marseilles. Like Phileas Fogg, the surgeon used the first-class compartments of the Indian railways, which he describes in detail.³⁵ For Senn, his circumnavigations served the purpose of general education as well as professional exchange and learning. He published regular letters in the official organ of the American Medical Association, JAMA, where thirty-one thousand doctors could read them,³⁶ characterizing the countries and their people in political, cultural, economic, and medical terms. His destinations included centers of surgical innovation as well as places that were seen as peripheral. He reported about his colleague’s work, their instruments, techniques, operating rooms, and hospitals and included numerous case histories of patients from various corners of the world and different local populations. In addition, he provided comprehensive descriptions of their diagnosis and their course of treatment, at times relating how the same operations were done in different places. With their broad variety of information about the countries he had visited, Senn’s reports are a typical example of the genre of travel reports, which were becoming popular as an expression of the growing exchange, globalization, and the reach of Western dominance of the time.³⁷

Traveling for purposes of practical instruction was very much part of the contemporary professional culture in surgery. Surgical travel also occurred often within the same country, and became, for example, very important in the context of the vastness of the North American continent. When, in the 1880s, William and Charles Mayo were learning to be surgeons in the little town of Rochester in Minnesota, the brothers took turns visiting colleagues who might be able to teach them something to advance

32 On prominent circumnavigations in the period, see Osterhammel, *Transformation*, 711.

33 N[icholas] Senn, “Four Thousand Miles through India by Rail in Midsummer,” *JAMA*, start of the series January 5, 1905, 44, 62–65; last part of the series (February 4, 1905), 414–16.

34 Senn, *Around*, 9. In his first journey three years before he had “girdled the globe via Siberia in three months and twenty days,” *ibid.*

35 Senn, *Around*, 64.

36 Senn, *Around*, 10.

37 Osterhammel, for travel reports in medicine and science, see Theresa Neid, “Ärzte und Naturwissenschaftler auf Reisen. Reiseberichte aus der Deutschen Medizinischen und der Münchener Medizinischen Wochenschrift 1890–1930” (M.D. diss., University of Halle-Wittenberg, 2013).

surgery, seeking out surgeons in Chicago, New York, Philadelphia, Boston, or any other place that seemed to offer promise. From each trip, they brought back new knowledge and new operations and techniques. Later, when the Mayos had established their worldwide reputation, surgeons from many places traveled to Rochester to observe their operations at close range.³⁸

BOATS, TRAINS, AND AUTOMOBILES: SURGICAL TRAVEL CLUBS

Surgeons not only cultivated the custom of traveling individually to visit each other at work, they also developed a culture of organized group traveling. One of the many surgeons who were passionate about learning by observation was the famous neurosurgeon Harvey Cushing, who kept up a lifelong habit of constant travel for exchange with his colleagues.³⁹ It was thus not by chance that Cushing was also involved in founding one of the first surgical traveling clubs, the *American Society of Clinical Surgery*. These clubs became popular in North America and Britain in the early twentieth century for the purpose of watching one's colleagues' work at other places and picking up the elements of the successful performance of procedures that could not be specified in a written text.⁴⁰ Cushing and a few of his American colleagues decided "to join forces and periodically to visit one another's places of work." From the start, the purpose of the group, as Cushing emphasized, was to *see* other surgeons at work, not just to read their papers,⁴¹ in other words, to capture the tacit dimension of surgical work. The Society's projects included trips to Europe, documented in images of the American surgeons working with their European counterparts (figure 1).⁴²

Another such association, the *American Gynaecological Club*, was formed in 1911 to support exchange of information and ideas with colleagues at the national and international level.⁴³ Similar projects emerged in Britain too, such as the *Provincial Surgical Society*, which the *American Society of Clinical Surgery* visited in 1910.⁴⁴ The *Gynaecological Visiting Society* was founded in 1910 by a group of obstetrics and gynecologist in Liverpool to facilitate personal exchange among colleagues by visiting "each other's hospitals and departments and see firsthand their research activities, see them at work in their clinics and in the operating theatres."⁴⁵ In the United States, the *American College of Surgeons*

38 William F. Braasch, *Early Days in the Mayo Clinic* (Springfield, Illinois: Charles C. Thomas, 1969), 81–87. See also Bruce W. Fye, *Caring for the Heart. Mayo Clinic and the Rise of Specialization* (New York: Oxford University Press, 2015), on the new surgery, see 8–10.

39 Bliss, *Harvey Cushing*, 256–57.

40 Sally Wilde, "See One, Do One, Modify One: Prostate Surgery in the 1930s," *Med. Hist.*, 2004, 48, 351–66, see 363.

41 Harvey Cushing, "The Society of Clinical Surgery in Retrospect," *Ann. Surg.*, January 1969, 169, 1–9, see 3.

42 The College of Physicians of Philadelphia, Library, Historical Collections, MSS 3/0017-01, Acc. 1992-030, Society of Clinical Surgery, European tour 1925.

43 Michael W. Eby and Lawrence D. Longo, "Furthering the Profession: The Early Years of the American Gynecological Club and Its First European Tours," *Obstet. Gynecol.*, February 2002, 99(2), 308–15, see 308; also George Gray Ward, *The American Gynaecological Club 1911–1947. A Brief History* (no place: no publisher given, 1947), 7–9.

44 Cushing, "Society," 8.

45 John Peel, *The Gynaecological Visiting Society, 1911–1971* (Dorchester: Dorset Press, 1992), 8. Watching operations was the main feature of their meetings, *ibid.*, 26–36.

Fig. 1. Itinerary of the American Gynecological Club First European Tour, 1912, scrapbook from the collection of the J. Bay Jacobs Library in the Resource Center of the American College of Obstetricians and Gynecologists, Washington, DC.

goes back to the early years of the twentieth century and Franklin Martin's so-called wet clinics, which provided the opportunity to watch surgery performed.⁴⁶

Such activities depended on transport technology: When a group of the *American Society of Clinical Surgery* went on a trip to Europe in 1910, they sailed across the Atlantic on the *Mauretania* and back on the *Lusitania*.⁴⁷ These super liners were run by the Cunard line and built in 1903 with the support of the British government to regain the prestige of ocean travel—not only for the company, but also for the UK against Germany. On these ships, surgeons could marvel at the twenty-eight different types of wood used in the public rooms. They could use the elevators, installed next to the *Mauretania*'s grand staircase, and enjoy beverages in a weather-protected environment in the Verandah Café on the boat deck.⁴⁸ Such luxurious “swimming palaces” were not only the most important means of global transport in the three decades

46 Wilde, “See One,” 363.

47 Cushing, “Society,” 8.

48 J. Kent Layton, *The Edwardian Superliners: A Trio of Trios* (Stroud: Amberley, 2013); Chris Frame and Rachelle Cross, *The Evolution of the Transatlantic Liner* (Stroud: The History Press, 2013). By 1906, the Germans had five four-funnel superliners in service, four of the so-called Kaiser class, as used by Nicholas Senn for part of his trip around the world.

Fig. 2. The American Gynecological Club First European Tour, 1912, the group on board of the “Mauretania,” scrapbook from the collection of the J. Bay Jacobs Library in the Resource Center of the American College of Obstetricians and Gynecologists, Washington, DC.

before World War I, with their technological perfection they also embodied, according to Osterhammel, “a capitalism with global reach,” and the “claims to superior civilization associated with sophisticated travel.” (figure 2)⁴⁹

This was also a time when steamboats, railways, and motorcars reshaped medicine in many ways, taking surgeons to their patients, or the other way round.⁵⁰ Surgeons of that generation viewed their field as part of technological modernity represented by industrial production, new means of communication, and modern transport.⁵¹ In their travelogues, they are consistently fascinated with transport technology. When Billroth’s student and successor in Vienna, Anton von Eiselsberg, visited the United States in 1910, he was as deeply impressed by the steamship *Kaiserin Auguste Victoria*, “a masterwork of modern technology,” the fast cars and the high-speed train from New York to Chicago, as he was by the scientific work of his colleagues.⁵² Likewise, on his 1909 American trip, the German Nikolai Guleke reported how traveling “with the *20th Century Limited* at a speed of 100 km per hour from New York to Chicago,” gave him an “impression of the immense size of the country, its power and its unequalled development.”⁵³

49 Osterhammel, *Transformation*, 715.

50 For Britain, see, e.g., Irvin Loudon, “Doctors and Their Transport,” *Med. Hist.*, 2001, 45, 185–206, see 196; for the United States: Bliss, *Harvey Cushing*, 258–59.

51 Thomas Schlich, “‘The Days of Brilliancy Are Past’: Skill, Styles and the Changing Rules of Surgical Performance, ca. 1820–1920,” *Med. Hist.*, 2015, 59, 379–403.

52 Anton von Eiselsberg, *Lebensweg eines Chirurgen* (Innsbruck, Wien: Tyrolia, 1938), 197–209.

53 N. Guleke, “Chirurgische Reiseeindrücke aus Nordamerika,” *MMW* 1909, 2321–24, 2380–83, 2426–28, see 2321–23.

The *American Gynecological Club's* report about their journey to Europe in 1912 shows the typical mixture of tourism, transport technology, and surgery such accounts thematized. The group of twenty-four men crossed the ocean on the *S. S. Rotterdam*, arriving in the city of the same name on July 10, and took a train to Amsterdam, where they watched their colleagues' operations and clinical demonstrations. At their next station, Bonn in Germany, they spent the morning once again watching surgeries, followed by "a delicious *al fresco* luncheon in the garden terrace of the University, overlooking the Rhine," as the report relates. From there, the group "departed by steamer in the afternoon for the ruins of *Drachenfels* in the *Siegebengebirge*, and proceeded by rail to Coblenz and were greeted on arrival by the hotel orchestra playing the 'Star Spangled Banner'." From Coblenz, "six automobiles conveyed" them "in the morning to Heidelberg" to visit Vincenz Czerny's famous cancer hospital.⁵⁴

THE SHIFT OF THE CENTERS OF INNOVATION TO THE GERMAN-SPEAKING COUNTRIES

The travel clubs demonstrate how the new means of transport made increasing international activities possible. Indeed, in many important respects, the world contracted appreciably during the prewar decades. Movement between nations, both of people and goods, became relatively frequent and easy.⁵⁵ The transmission of surgical knowledge and technologies reached a truly global level. However, surgeons' international travel activities were oriented toward particular destinations at particular periods in time, shaping surgical practices in particular ways. Before our time period, in the eighteenth and earlier nineteenth centuries, France, and especially Paris, had been the primary place where surgeons went to see new techniques and approaches.⁵⁶ In addition to British and German practitioners, about a thousand Americans crossed the Atlantic to study in the hospitals and dissecting rooms of the French capital.⁵⁷ Also Britain, first with Edinburgh, later especially with London, represented another hub of medical education and innovation.⁵⁸

In the course of the nineteenth century, however, the German-speaking countries overshadowed both France and Britain. The model of the research university with its emphasis on laboratory science was particularly successful in the German lands. Within this setting, doctors and scientists had the time and material resources for following

54 George Gellhorn, "Itinerary," in *Society of Clinical Surgery, European Tour 1912*, Scrapbook, J. Bay Jacobs Library in the Resource Center of the American College of Obstetricians and Gynecologists [no pagination].

55 Crawford and Shinn, "Nationalization," 13.

56 Toby Gelfand, *Professionalizing Modern Medicine* (Westport and London: Greenwood, 1980), 9; Sally Frampton, "'The Most Startling Innovation': Ovarian Surgery in Britain, c. 1740–1939" (Ph.D. diss., University College London, 2013), 57–58; Ernst von Bergmann, "Die Gruppierung der Wundkrankheiten," *Berliner klin. Wochenschr.*, 1882, 19, 677–79, 701–3, see 667.

57 Warner, *Against the Spirit*, 3; Thomas Neville Bonner, *American Doctors and German Universities* (Lincoln: University of Nebraska Press, 1963).

58 Frampton, *Innovation*, 57–58.

their research interests relatively unfettered by the requirements of medical service. Academic surgery in this context was located at large, well-organized, and publicly funded university hospitals. These were the places where novel ways of doing surgery now came from. The conditions of the large hospitals with a strong and hierarchically organized surgical staff facilitated the controlled spread of complex techniques such as antiseptics and asepsis. In addition, the prestige of laboratory science in Germany made it easier for German surgeons to integrate such laboratory-based methods as asepsis into their work.⁵⁹

Surgeons inside and outside of Germany noted the rise of German-language surgery. Theodor Billroth proclaimed in the 1869 edition of his textbook that German surgery had now reached a level on a par with the other countries; in the 1887 edition of the same book, he could even report that, at this point, German surgery was acknowledged as the ideal of perfection, emulated by the other nations.⁶⁰ To enjoy a high reputation in Russia, another leading German surgeon, Ernst von Bergmann, reported in 1882 that surgeons must “have drawn from German sources and have taken their knowledge from German teachers.”⁶¹ Foreign observers shared this evaluation. In the second edition of his *Student's Guide*, published in 1885, Charles Keetley noted how Vienna and Berlin had outranked Paris as the most popular continental medical school for postgraduate education (interestingly for the topic of growing international exchange, in the 1878 edition, he did not mention the possibility of going abroad at all). One of the reasons for this popularity was the high technological standard in surgery, since, as he explains, “throughout Germany antiseptic surgery has its most enthusiastic followers.”⁶² In his memoirs René Leriche from France related how, as a young surgeon, he admired the surgery at the German universities for its high level of expertise and the competitive selection of leading practitioners and academic teachers.⁶³ Around 1870, Americans, too, turned toward the German-speaking world for medical instruction. In the estimate of historian Thomas Neville Bonner no less than fifteen thousand American medical men went to study at a German university between 1870 and 1914, mostly in order to acquire knowledge or skill in some clinical specialty, one of them surgery. These Americans were attracted by the German culture of laboratory science and research. Many of them became famous and influential in their home country and tried to shape the American institutions after the German model.⁶⁴

59 For organ transplants, see Thomas Schlich, *The Origins of Organ Transplantation: Surgery and Laboratory Science, 1880s–1930s* (Rochester, New York: The University of Rochester Press, 2010), see 48–150; for antiseptics, see Thomas Schlich, “Farmer to Industrialist: Lister’s Antiseptics and the Making of Modern Surgery in Germany,” *Notes Rec. R. Soc.*, 2013, 67, 245–60, see 246–47.

60 Theodor Billroth, *Die allgemeine chirurgische Pathologie und Therapie in fünfzig Vorlesungen, ein Handbuch für Studierende und Aerzte* (Berlin: Reimer, 1869), 14; Theodor Billroth, *Die allgemeine chirurgische Pathologie und Therapie in fünfzig Vorlesungen, ein Handbuch für Studierende und Aerzte* (Berlin: Reimer, 1887), 15–16.

61 Bergmann, “Gruppierung,” 677.

62 Charles Robert Bell Keetley, *The Student's Guide to the Medical Profession*, 2nd ed. (London: Bailliere, Tindall and Cox, 1885), 87; Charles Robert Bell Keetley, *The Student's Guide to the Medical Profession* (London: Macmillan, 1878).

63 René Leriche, *Souvenirs de ma vie morte* (Paris: Éditions du Seuil, 1956), 58–59, 171.

64 Bonner, *American Doctors*, 18, 23–25, 55–58, 55–56.

Thus around 1890, American surgeons read about German-language surgery in their journals, they visited their German colleagues and tried out their techniques. Billroth in Vienna, Langenbeck in Berlin, Volkmann in Halle became their new heroes and influenced their approach to surgery.⁶⁵ Another entry on that list of surgical role models was Kocher. The Swiss was one the earliest proponents of a new style in surgery—often called “physiological surgery” by contemporaries as well as historians. This style stood out by its gentle and thorough operating technique and its scientific base in experimental research in the physiological laboratory. Kocher was much admired. Senn, for example, described him in 1887 as “in every sense of the word the greatest surgeon I have ever seen.”⁶⁶ In 1909, Kocher was the first surgeon to be awarded the *Nobel Prize* for his work on the thyroid gland. The Swiss surgeon maintained a lively exchange with colleagues in different countries, for the most part in Britain and the United States. There was always someone from overseas visiting his clinic. A table of his 135 most important visitors of the year 1910 alone shows that they came from 24 different countries. Kocher himself also traveled frequently. The list of his travels abroad between 1875 and 1917 contains forty trips.⁶⁷

The main representative of this new, “physiological” surgery in North America was William Halsted, head surgeon at Johns Hopkins. In the late 1870s, Halsted had spent two years in Europe, mostly in the German-speaking countries, especially at Billroth’s department in Vienna.⁶⁸ But he also went to other places, such as Halle where he was able to watch Volkmann applying Lister’s antiseptic technique.⁶⁹ Later on Halsted continued visiting the clinics of Europe, watched and discussed the work of leading surgeons there, attended the meetings of the *German Surgical Association*, and maintained close relations to his European colleagues.

During his visits, the American got to know the German system with its long training periods, its highly competitive selection of top surgeons, and its close connection of science and medical practice. Back in the States, he used it as a model for his newly established home department at Johns Hopkins, where he, among other things, introduced long training periods for his house surgeons.⁷⁰ Johns Hopkins University was an example of a newly emerging milieu of scientific surgery on North America. It was one of the new medical schools that were sponsored by wealthy industrialists and the most influential case of the emulation of the German system in the United States.⁷¹ Its most important founding figure, the pathologist William Welch, had spent two years in

65 Peter English, *Shock, Physiological Surgery, and George Washington Crile: Innovation in the Progressive Era* (Westport, Connecticut: Greenwood Press, 1980), 31–32.

66 N[icholas] Senn, “Lucerne, Berne and Geneva,” *JAMA*, 1887, 9(12), 379–82, quote 369.

67 Tröhler, *Nobelpreisträger*, 2, 67–68.

68 W. G. MacCallum, *William Stewart Halsted, Surgeon* (Baltimore: Johns Hopkins Press, 1930), 160; Samuel James Crowe, *Halsted of Johns Hopkins. The Man and His Men* (Springfield, Illinois: Thomas, 1957), 20.

69 College of Physicians of Philadelphia, Library, Historical Collections, MSS 2/0227-01, Acc. 1991-139 Richard von Volkmann, Letters received 1867–89. Letter Henry W. Farnham to Volkmann of October 8, 1878, recommending Halsted.

70 William Halsted, “The Training of the Surgeon” (first published 1904) in William S. Halsted, *Surgical Papers* (Baltimore: Johns Hopkins Press, 1924), 512–31, 520, 523; MacCallum, *Halsted*, 23–24.

71 Bonner, *American Doctors*, 21, 58, 60–61.

Germany, at a time, as he stated in retrospect, when the universities there had “far outstripped those of other lands in their plan and organization, scientific spirit, facilities, for imparting knowledge, and productivity.” He not only brought Koch-style bacteriology to the United States, but he also introduced the German full-time system, in which scientists did not have to practice medicine in order to supplement their salary. It is interesting to note that Welch translated a book that Billroth had written in 1876 on medical education at the German universities into English, almost fifty years after its first publication, because of the valuable lessons that he thought it still had to offer for the task of re-organizing medical teaching in the United States.⁷² From the start, Johns Hopkins emphasized experimental research after the German model, and many researchers there had been trained in German laboratories. The school was going to exert a profound influence on the planning and organization of medical teaching and research in the United States.⁷³

AMERICAN LEADERSHIP IN SURGERY

The perception of German leadership in surgery gradually decreased in the decades around 1900. In fact, in the realm of surgery, as opposed to medical science more generally, the superiority of the German-speaking countries had been less clear from the start. Americans always had a strong operative tradition of their own and often saw German achievements as being limited to the theoretical aspects of the field.⁷⁴ Even earlier in the nineteenth century, Americans could point to special achievements that came from their country, most importantly perhaps, the invention of anesthesia, which, according to Keen, “made all the ‘four quarters of the globe,’ our grateful and everlasting debtors.”⁷⁵ Abdominal surgery and elective operations such as appendectomy and cholecystectomy were also considered “of American birth,” and, as Senn wrote, “a priceless honor to American Surgery.”⁷⁶

While at first most of the specialized literature came from abroad, often in translation, this changed rapidly in the course of the century, so that in 1897, Keen was able to point to many “distinctly American surgeries” that had been written in the previous two decades, which were “the equals of any similar European works.”⁷⁷ Simultaneously, “the conduct of operations and operating clinics” in the United States, as Cushing wrote in retrospect, had gone through “a veritable transformation,” “an improvement almost beyond belief.” Cushing attributed this change in part to surgeons’ organizations

72 William H. Welch, “Introduction,” in Theodor Billroth, *The Medical Sciences in the German Universities. A Study in the History of Civilization. Translated from the German of Theodor Billroth. With an Introduction by William H. Welch* (New York: Macmillan, 1924), v–x, quote on vi. Crowe, *Halsted*, 10–11.

73 MacCallum, *Halsted*, 59–61; Bonner, *American Doctors*, 62.

74 Bonner, *American Doctors*, 9, 103.

75 Keen, “Address,” 1102.

76 N[icholas] Seen, “Address in Surgery. The Present Status of Abdominal Surgery,” *Lancet*, June 5, 1886, 6, 617–626, see 626; Keen, “Address,” 1100, 1108–9; Halsted, “Training,” 531.

77 Keen, “Address,” 1103. He stated that surgical textbooks used in the United States were all European. “The literary labors of American surgeons consisted chiefly in translating foreign surgeries, or in annotating American editions of English text-books.” As exceptions, he mentions [Joseph] Pancoast, *Operative Surgery* [1844], and Samuel Gross, *System of Surgery* [1859].

such as travel clubs, for example, the *Surgical Society* which he helped create, so that the “art of surgery, so far as operative technique was concerned, had literally been elevated by the boot straps.”⁷⁸

Other reasons for American leadership in surgery (and increasingly in medical science more generally) included the size and capacity of the medical institutions, the higher degree and spread of specialization, and, in general, the increased wealth leading to better material conditions for research and education.⁷⁹ Business and industry became influential models for hospitals and scientific institutions in American medicine. Their funding came increasingly from philanthropies.⁸⁰ British surgeons, for example, envied their overseas colleagues for the specifically American type of financing through donations by wealthy industrialists that emerged at the time.⁸¹ Based on the better facilities and the establishment of the full-time system for professors, the new generation of academic surgeons placed more emphasis on knowledge production within the context of a new kind of academic department.⁸² This went along with important changes in surgical training, especially the residency system as it was introduced in an exemplary manner at Johns Hopkins and spread to the whole country in the following decades.⁸³

The rapid advance of surgery in the United States was also attributed to the wider cultural atmosphere of that country. Americans prized practicality as an important value. “The bent of the mind of the American surgeon is, like ours, practical rather than scientific,”⁸⁴ mused the famous English surgeon John Eric Erichsen after a trip to America in 1874. Whatever the truth value of such a judgment—practicality was an important value in American self-descriptions,⁸⁵ and, as Lawrence notes, surgery in particular was “invested with all those qualities which Americans were celebrating in themselves”—down to earth practicality, self-reliance, independence, fearlessness, democratic spirit.⁸⁶ This together with a supposed penchant toward mechanical thinking was seen as a favorable condition for surgical progress, since surgery, as the journalist Samuel H. Adams explained in a popularizing article in 1905, was nothing else but the application of “mechanical principles to the solution of pathologic problems.”⁸⁷

78 Cushing, “Society,” 8.

79 Bonner, *American Doctors*, 148–52.

80 On the business and industry-inspired model of modern American medicine, see, for example, Joel D. Howell, *Technology in the Hospital. Transforming Patient Care in the Early Twentieth Century* (Baltimore: Johns Hopkins University Press, 1995).

81 A. W. Mayo Robson, “The Advance in Surgery During 30 Years,” *Lancet*, October 4, 1902, 912–16, see 913; Keen, “Address,” 1104; W. W. Keen, “Recent Progress in Surgery,” *Harper’s Monthly Magazine*, October 1889, 79(473), 703–13, see 712–13.

82 Barker, “Trip,” 328; Kernahan, “Franklin Martin and the Standardization of American Surgery, 1890–1940” (Ph.D. diss., University of Minnesota, 2010), 179–80.

83 Kernahan, “Franklin Martin,” 179–80.

84 John Erichsen, “Impressions of American Surgery,” *Lancet*, November 21, 1874, 104(2673), 717–20, see 717.

85 Warner, *Against the Spirit*, 11.

86 Lawrence, “Democratic,” 29–30, quote: 29.

87 Samuel Hopkins Adams, “Modern Surgery,” *McClure’s Magazine*, 1905, 24, 482–92, see 491.

But it was not only the “technical skill of Americans” that “made them specially fitted to be surgeons,” an observer noted in the early twentieth century, it was also that the population “with their unusual understanding of technical achievements, followed the progress of surgery with the greatest interest.” The American patient “given the choice between an operation and prolonged internal treatment . . . will not hesitate to choose the former,” he reported.⁸⁸ Likewise, a visiting surgeon from Germany found in 1909 that “patients, in the hope of speedy recovery, were much more likely to take on the risk of an operation.” Many cases that in Germany would be left to the internist were likely to go to the operating table in American.⁸⁹ In many ways, surgery became a characteristic part of the American brand of modernity with its confidence in technology and its consumer culture. To sum up, the American leadership in surgery was probably due to a combination of conditions: the general wealth in the rapidly industrializing United States, its specific model of private funding, which at that point seemed to work better than the European state-based model, a rising consumer culture with a particular preference of technological solutions to medical problems, and finally the devastations of World War I in Europe. The case of the United States thus points to the broad range of factors that could influence the spread of surgical technique, well beyond the attitudes and proclivities of just the surgical practitioners. On a more general level, the United States is a good example of how particular national contexts were themselves often influenced by input from other countries, but at the same time represented emerging national cultures of surgery.

In any case, around the turn of the century, the United States was replacing the German-speaking countries as the center of innovation in the field. Cushing’s personal experience provides evidence of this change. When the budding surgeon asked Halsted for a position on his staff in 1895, the master urged his young colleague to spend at least six months in Europe, preferably in the German-speaking countries, before coming to work with him at John Hopkins. “You probably know,” he wrote, “that there is little of any scientific work done in this country in medicine, and that most of it is done in Germany.”⁹⁰ Cushing followed this advice (though not at that point, but a few years later), but things turned out to be different than Halsted had predicted. Cushing found that, at this point, Europe offered “no opportunities better than those at home,” as he wrote in his “Letter from a Post-Graduate Student,” a journal article published in 1901. The future, he stated, belonged to the United States, and the “great international postgraduate schools of medicine will ere long be transferred to America.”⁹¹ With this declaration, he echoed a prediction by the famous physician William Osler who had claimed the year before that, because of the recent improvements in medical training and “cultivation of the scientific branches of medicine” in North America, “in the twentieth century the young English physicians will find their keenest inspiration in the

88 Henry E. Sigerist, *American Medicine* (New York: W.W. Norton and Co., Inc., 1934), 270.

89 Guleke, “Chirurgische Reiseindrücke,” 2381.

90 Letter of December 7, 1895, Halsted to Cushing, Cushing Papers, Yale University, roll no. 27, Box 33, Folder 634.

91 Harvey Cushing, “Haller and His Native Town. Letter from a Post-Graduate Student,” *Am. Med.*, October 5 and October 1901, II, 542–44, 580–82, 581.

land of the setting sun.”⁹² This opinion was shared by the popular press: American surgeons, the *Chicago Daily Tribune* wrote, now returned from international conferences feeling that they were “far ahead of other nations in many branches of surgery and medicine,” and that “it was the height of insanity for Americans to go abroad for treatment by foreign specialists.”⁹³ Under these circumstances, surgical traveling to Europe was still good for widening one’s horizon and developing critical powers, but no longer necessary for surgical education, the American surgeon Lewellys Barker noted shortly after the turn of the century in an article with the telling title “Is a Trip to Europe Worth Its Cost to The Medical Man?”⁹⁴

While Cushing had still gone to Europe to train with Theodor Kocher, six years later Kocher himself sent his son Albert in the other direction to study with the American colleague and ended his thank-you letter to him with the declaration, “Our turn now to admire others!”⁹⁵ The Johns Hopkins Hospital, which had been modeled after the German example, now in turn became a model for visitors from Europe.⁹⁶ Its head surgeon Halsted was much admired by his German colleagues and was appointed an honorary member of the German Society of Surgeons in 1914.⁹⁷ The direction of travel was reversed, and Germans started going to the United States, as was noted, among others, by Nikolai Guleke in the report on his own ten-and-a-half-week journey to the United States in 1909. Guleke was a student and nephew of Ernst von Bergmann’s and went on to be a prominent surgeon in Germany. He is a nice example of the inversion of the knowledge transfer, because the influence of American surgery on his practices is visible in his later surgical work.⁹⁸ According to him, “American surgery hardly existed 20 years ago,” but it had “now hurried ahead of its European mother discipline.” Like other travelers, he admired the “astounding luxury” of the American hospitals—the high standard of comfort for the patients, the medical–technical infrastructure, the operating rooms, the clerical service with its secretaries and their typewriters, standardized patient records, elevators, central heating, electric lighting, advanced facilities for laboratory research—all of this made these hospitals incomparable to their European counterparts.⁹⁹

By contrast to the luxurious American facilities, the surgical infrastructure in Europe had been crumbling even before the war.¹⁰⁰ World War I and its aftermath accelerated its deterioration and caused Central Europe to fall into abject poverty, thus sealing the move of the centers of innovation to North America. Postwar poverty also isolated the European surgeons professionally. Thus, the Austrian Erwin Payr asked Cushing in a letter to sponsor a subscription of one of the important American journals for him,

92 William Osler, “The Importance of Post-Graduate Study,” *Lancet*, July 14, 1900, 156, 73–75, see 75.

93 Anon., “Doctors of U.S. Lead World. Delegate to Budapest Congress Has Praise for Americans,” *Chicago Daily Tribune*, September 19, 1909, A6, ProQuest Historical Newspapers.

94 Barker, “Trip,” 328.

95 Letter Kocher to Cushing, September 22, 1907, CP, roll no. 32, Box 40, Folder 793.

96 Bliss, *Harvey Cushing*, 198.

97 MacCallum, *Halsted*, 165–66.

98 See Neid, “Ärzte,” 49.

99 Guleke, “Chirurgische Reiseindrücke,” 2321–23. For background, see Howell, *Technology*.

100 Ulrich Tröhler, *Der Schweizer Chirurg J.F.de Quervain (1868–1940)* (Sauerländer, Aarau, 1973), 36.

because he saw no other way of getting it and keeping up-to-date.¹⁰¹ Leriche reported that in 1921, Eiselsberg, by now one of the leading figures in German-language surgery, could not receive him socially in his home, because of the lack of food. He had had only two herrings for a whole week.¹⁰² Eiselsberg also petitioned Cushing for material help,¹⁰³ and his exchange of letters with Halsted in 1919 and 1920 turned around the same theme. In December 1919, he wrote about the miserable life in Vienna and the acute shortage of coal and food. Some professors at the university, especially at the philosophical faculty “have nearly nothing to eat,” he wrote, old officers were starving to death, and old men with the starvation-caused spontaneous bone fractures typical of children were not uncommon in his practice.¹⁰⁴

“THE WORLD IS OUR COUNTRY”: INTERNATIONALISM AND NATIONALISM

By contrast, before the war, we can see a more optimistic attitude among surgeons. There was a growing consciousness of an international culture of modern surgery. Many felt that the whole world was now the arena where modern surgery took place. This sentiment of globalization was accompanied by conscious efforts to organize international exchange in the field. Some of these efforts were based on the values of internationalism, a movement that was spreading at that time, although, as we will see, also limited by the counter-movement of increasing nationalism.

Organized professional exchange was not new. Earlier in the nineteenth century, during the period of consolidation and expansion of the nation states, the structures of national scientific communities had taken shape. Journals, regular meetings, and national associations were established. In surgery too, national societies were founded in many countries—in Germany in 1872, the United States in 1880, Italy in 1882, and France in 1883.¹⁰⁵ However, in tandem with the consolidation of its national character, surgery expanded into the international arena as never before. As early as 1869 Billroth looked back to the “middle of the century” as a time when “the stark contrasts between the nations in the field of surgery faded.” “With increasing means of communication,” he explained, “all the advances in science spread with undreamt speed across the civilized world. Innumerable journals, national and international medical congresses, personal contacts of the most varied nature have created a lively intercourse also among surgeons.”¹⁰⁶ The internationalist spirit was seen as based on exchange and travel: “Nothing contributes more to liberal-mindedness, to broad cosmopolitanism, to the dissipation of narrow Chauvinism than the first-hand acquaintance with the methods and results of medical workers in different lands and in different places of the same land,” the American surgeon Barker wrote in 1904,

101 Correspondence Erwin Payr, Cushing Papers, Yale University roll no. 43, Box 53, Folder 1126.

102 Leriche, *Souvenir*, 195–96.

103 Cushing Papers, Yale University, roll no. 21, Box 25, Folder 467.

104 Eiselsberg to Halsted of December 5, 1919, Johns Hopkins, Mason Chesney Archives, Halsted papers, correspondence, Box 7, Folder 15, Eiselsberg 1906.05–1922.09.

105 Crawford and Shinn, “Nationalization,” see 1, 11–13. National societies: Tröhler, *Der Schweizer Chirurg*, 38.

106 Billroth, *Pathologie*, 1869, 13–14.

continuing that to “become a medical *Weltbürger*, one must learn to appreciate the virtues of his fellow-craftsmen of all nations.”¹⁰⁷ Surgical progress looked more and more like a phenomenon that was transcending the limits of individual countries. In this context, the diffusion of new surgical knowledge across national boundaries was not just an ideal, it seemed to be a simple inevitability.¹⁰⁸

Activities that transcended national borders multiplied. The Universal Exhibitions showcased the industrial and economic prowess of the various nations and at the same time symbolized a spectacular internationalization of trade and commerce. International science associations cropped up everywhere and international congresses were organized in almost every discipline.¹⁰⁹ A series of regular International Medical Congresses was inaugurated in Paris in 1867. These congresses were highly visible events, where leading doctors and scientists met up and presented themselves as part of one medical world culture. In 1881 in London, more than three thousand delegates from over seventy countries came together, among them many prominent surgeons. The tenth International Congress in 1890 in Berlin had visitors from all continents, including Japan, China, Russia, India, Dutch India, and Australia. Notably for the earlier discussion of centers of innovation, the strongest contingent came from the United States with 659 doctors.¹¹⁰

Scientific internationalism seemed to be the advanced version of general internationalism. Scientists with their rational approach were seen as being in a unique position to contribute to improving the human condition in all nations and enhancing civilization more generally—an idea that was symbolized in the Nobel Prize, first awarded in 1901.¹¹¹ This internationalist spirit included medicine in particular: “The Great Republic of Medicine,” Osler proclaimed in 1900, “knows . . . no national boundaries.”¹¹² Surgeons evoked a new globalism. According to Senn, with accelerating scientific progress, scientific work was being conducted “in all parts of the civilized globe” and a “genuine feeling of fraternity among medical men throughout the entire world” emerged.¹¹³ The world, or at least its “civilized” part, was now imagined as the space in which modern surgical progress would take place. “The civilized world” was, of course, an approximate synonym to “the West,” a benchmark within the hierarchy of nations, as Osterhammel has characterized it.¹¹⁴ The use of this phrase also points to the tension between internationalism and the continuing importance of colonialism at the time. Ovariectomy, for example, was successfully performed, Keen emphasized in 1889, “all over the civilized world.”¹¹⁵ Together, so the idea went, the world’s nations

107 Barker, “Trip,” 328–29.

108 Frampton, *Innovation*, 166.

109 Crawford and Shinn, “Nationalization,” 13–19. On the world exhibitions and their role in globalization, see Osterhammel, *Transformation*, 15.

110 William F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge: Cambridge University Press, 1994), 142–44; Emil Schiff, “Der zehnte internationale medizinische Kongress,” *Die Nation. Wochenschrift für Politik, Volkswirtschaft und Literatur*, August 16, 1890, 7(46), 690–93, see 691.

111 Crawford and Shinn, “Nationalization,” 18.

112 Osler, “Importance,” 75.

113 Senn, *Around*, 12–13.

114 Osterhammel, *Transformation*, 87.

115 Keen, “Recent Progress,” 708.

could tackle the world's medical problems: "It is by the concerted, systematic, scientific investigation of disease in all climes and under varying conditions," Senn proclaimed, "that we must look for more radical measures in the prevention and more successful treatment of disease."¹¹⁶

In the early twentieth century, a decades-long tradition of political and cultural internationalism had accustomed medical practitioners in central Europe to traveling freely from university to university, and from country to country.¹¹⁷ Networks of cooperation and friendship between individual surgeons spanned not only Europe but also the Atlantic.¹¹⁸ The foremost representatives of physiological surgery were in close contact with each other, in Europe and Britain, Kocher, Harold Stiles, and Victor Horsley; and, in America, Halsted, Cushing, George W. Crile, Senn, and the Mayo brothers.¹¹⁹

In addition to these networks among individuals, more formal institutions were set up.¹²⁰ The founding of such transnational private or nongovernmental networks reached a peak in the period between 1890 and 1910.¹²¹ One of them was the *International Society of Surgery*, which was established in the middle of this period, in 1902 in Brussels. It was organized by nationality; and its members were nominated by national committees.¹²² According to the Society's statutes, its goal was "to contribute to the progress of surgery by elucidation of certain surgical questions."¹²³ In other words, the Society aimed at international agreement over contentious issues in the field, an important step toward global standardization and a universal surgical practice.

Kocher as the president of its first congress in 1906 welcomed the "elite of the surgeons from all civilized countries," emphasizing how the meeting would further the progress of true science to the benefit of mankind.¹²⁴ Another speaker at that congress evoked the goal of creating universality around the globe: The society was established to determine the principles of universal surgery, he held, which were to become the legacy for the whole medical world, for the benefit of all of humanity.¹²⁵ The society chose the treatment of cancer as the thematic focus of its second congress in 1908, because cancer was seen as a disease that affected all of humanity.¹²⁶ In order to find the best universal treatment options, every surgical progress had to be taken

116 Senn, *Around*, 12.

117 Bonner, *American Doctors*, 1.

118 Bliss, *Harvey Cushing*, 256–57.

119 Tröhler, *Nobelpreisträger*, 2.

120 See Tröhler, *Der Schweizer Chirurg*, 40.

121 Osterhammel, *Transformation*, 505.

122 Tröhler, *Der Schweizer Chirurg*, 38–42.

123 *Premier congrès de la Société internationale de la chirurgie*, Bruxelles, septembre 18–23, 1905, procès-verbaux et discussion, publiés par A. Depage (Brussels: Hayez, 1906) (SIC 1), see 9.

124 Discours Kocher, SIC 1, 55–62, see 56.

125 Demosthen, SIC 1, 50–52, see 51.

126 Discours Kocher, SIC 1, 55–62, see 58. Also allocution Davignon, *Deuxième congrès de la Société internationale de la chirurgie*, septembre 21–25, 1908, procès-verbaux et discussion, publiés par A. Depage et L. Mayer (Brussels: Hayez, 1908) (SIC 2), 2–3; discours Willems, *Troisième congrès de la Société internationale de la chirurgie*, Bruxelles, septembre 26–30, 1911, procès-verbaux et discussion, publiés par A. Depage et L. Mayer (Brussels: Hayez, 1911) (SIC 3), 589.

into consideration, no matter which country it came from. Out of all sciences, the famous French surgeon, Just Lucas-Champonnière, proclaimed in a 1911 speech at the Society's congress, surgery had the greatest need of such an international perspective.¹²⁷ Three years later, at the Society's fourth Congress in New York, William Mayo ascribed an "essentially cosmopolitan" character to the field.¹²⁸ "There may be in the different countries divisions political, divisions financial," another speaker at this congress noted, "but in the world of surgery," he continued, "there are no boundaries, the world is our country."¹²⁹ Statements like these point to the fiction, as Lawrence has put it, that medicine, and surgery in particular, have nothing to do with politics. Surgical internationalism embodies this vision in a specific way, presenting surgical knowledge and practice as objective, context-independent, and portable.¹³⁰

Internationalism formed part of a broader set of altruistic surgical values, of which another element was anticommercialism—in Keen's words, the profession's "noble stand . . . against patenting any instrument, any operation or any method of treatment." Such values, the American surgeon explained, made "every sick or injured man my brother, and makes me his keeper, under every sky, and clothed in any skin. Heaven bless such a divine profession, such a noble array of generous men battling for the life and health of all mankind, the world over, in on serried phalanx of unselfish heroes!"¹³¹ Within this logic, surgery was a deeply ethical enterprise. Its "noble cause" was incompatible with national egotism, as the president of the Belgian Society of Surgery claimed at the second congress in 1908.¹³² Surgeons characterized themselves as "pacifists by nature and by instinct," working toward "universal peace," representing a "silent and permanent protest against the evils of war."¹³³

However, even at the high time of internationalism, national pride was often one of the motivations behind the move toward international science.¹³⁴ In the same way that western countries were competing for ownership of colonial territories, nations were also, as Senn explained, "engaged in a laudable competition to excel in blazing new pathways through the still unexplored territories of scientific medicine."¹³⁵ In surgery, such competitive attitudes manifested themselves in a variety of ways: Surgeons claimed superiority of particular national styles of surgery, they emphasized

127 Discours Lucas-Champonnière, SIC 3, 592–99.

128 Discours William J. Mayo, *Quatrième congrès de la Société internationale de la chirurgie*, New York, avril 13–16, 1914, procès-verbaux et discussion, publiés par L. Mayer (Brussels : Hayez, 1914) (SIC 4), 478–79, see 479.

129 Discours Lewis L. McArthur, SIC 4, 483–84, see 483.

130 Lawrence, "Democratic," 32.

131 Keen, "Address," 1104–5.

132 Discours Verneuil, Président de al la Société Belge de Chirurgie, SIC 2, 5–7, see 6–7.

133 "Pacifists by nature and by instinct," see Discours Czerny, SIC 2, 11–22, quotes 12. "Universal peace," see Allocution Logie, SIC 1, 49–50; "protest," see Discours Depage, SIC 4, 484–90, see 485. These remarks referred explicitly to the pacifist movement, which was at its strongest at in the two decades before World War I, though it never attained mainstream status, Osterhammel, *Transformation*, 509–10.

134 Crawford and Shinn, "Nationalization," 14. For surgery, see, e.g., Tatjana Buklijas, "Surgery and the National Identity in Late Nineteenth-Century Vienna," *Stud. Hist. Phil. Biol. Biomed. Sci.*, 2007, 38, 756–74, see 757.

135 Senn, *Around*, 12.

the surgical achievements of their own country, and claimed national ownership for certain operations.¹³⁶ Thus, when Sampson Gamgee from Birmingham visited the *Exposition Universelle* in Paris in 1867, one of his aims was to see if the French had surpassed British supremacy in manufacturing and industry.¹³⁷ But in his travel notes for the *Lancet*, he also compared his own country's standing in surgery to that of the French—"our former masters and present rivals,"¹³⁸ as he put it, and he went on to praise his own country's surgeons for their, in Sally Frampton's words, "uniquely British characteristics of courage and persistence," which "enabled them to retain their standing even in the face of national competition."¹³⁹ Nationalism had not dissipated over the course of the nineteenth century. Enthusiastic patriotism was seen as very well reconcilable with mutual respect and goodwill, as the president of the Belgian Society of Surgery explained in 1908 to the congress participants.¹⁴⁰ After all, the International Society was structured by national committees, which autonomously selected the members that represented them in the Society. So even in this instance, nations formed the very foundation of internationalism. The world of internationalism consisted of nations as its basic units. It was literally "inter-nationalism."

Once the war had started, nationalist tendencies erupted on all sides. In 1915, the *British Journal of Surgery's* editorial disowned any German credit for modern surgery. In a comparison of the various national characters, the British mind was distinguished by its originality, the French by an "austere logic." "The German mind," however, the journal posited, "is avaricious. It is a gross feeder, not scrupulous in its choice, nor very discriminating in its taste; it is not severely logical, nor balanced: it lacks insight and judgment. . . . The Teuton is an . . . exploiter rather than explorer."¹⁴¹ According to Anne Crowther, such a statement was more than ironic from a journal that had Joseph Lister as its figurehead—a pacifist, an internationalist, and the recipient of German and Austrian honors.¹⁴²

Thus, what looked in retrospect like the golden age of medical internationalism came to an abrupt end with World War I. In the summer of 1913, "the last of the great International Congresses was held in London, and from present prospects there may never be another," Cushing noted with nostalgia in 1922.¹⁴³ Surgeons experienced the suddenness of the change. At the end of the American Gynecological Club's European trip in Freiburg on July 25, in the evening, the hosts had organized "a delightful party at a resort in the Black Forest. After dinner we were startled when one of the men present jumped upon a table and waved a telegram that he had received

136 See, e.g., for ovariectomy as a British or an American operation, Frampton, *Innovation*, 166–67.

137 Sampson Gamgee, "The Present State of Surgery in Paris," *Lancet*, 1867, 90, 273–74, 295–97, 392–93, 483–84, 670–71, 799–802, see 273.

138 "Masters": Gamgee, "The Present State," 800.

139 Frampton, *Innovation*, 169–70.

140 Discours. Verneuil, *SIC* 2, 5–7, see 6.

141 Anon., "Introductory," *Br. J. Surg.*, 1915, 3(2), 1–2.

142 Anne Crowther, "Lister at Home and Abroad: A Continuing Legacy," *Notes Rec. R. Soc.*, 2013, 67, 281–94, see 288. The International Society of Surgery excluded German and Austrian surgeons in 1920 and abolished the German language as one of their official languages Tröhler, *Der Schweizer Chirurg*, 65–69.

143 Cushing, "The Society," 9.

announcing the declaration of war with Serbia [sic] by Austria as a result of the assassination of the Austrian Crown Prince.” The group hurried to get back home via London, but this turned out to be difficult because about 1,100 doctors who had been attending the Clinical Congress of Surgeons and other meetings were stranded in England.¹⁴⁴ The party was over, quite literally.

CONCLUSION: THE LOCAL AND THE GLOBAL

Throughout this paper, the tension between the local and the global has been a common theme. Starting with W. W. Keen’s quote, we have seen how historical actors dealt with this tension; we have looked at how they claimed the universality of surgery across geographic spaces and national cultures and at the same time tried to produce this universality by creating homogeneity in surgical knowledge and practice.¹⁴⁵ The kind of geographic universality examined here has been discussed by historians of medicine in the context of broader claims to universality in modern medicine. Lawrence, for example, has contextualized the idea within the semantic field of progress, modernity, and democracy. In his seminal essay about the notion of progress and its repercussions on the historiography of surgery, he has used the same sentence by Keen quoted at the beginning of the present paper as evidence of democratic values in surgery at the time.¹⁴⁶

Geographic universality has been characterized as a notion that is typical to Western medicine in modern times. Medical anthropologists Margaret Lock and Vinh Kim Nguyen have identified the expectation that bodies and diseases anywhere are amenable to the same interventions through standardized approaches to medical management as “the key to biomedicine’s global reach,” to “its universal claim to efficacy, and indeed its miraculous effects when technologies such as vaccinations, curative medication, and surgery are put to work.”¹⁴⁷ Surgery is indeed an excellent case in point.

However, especially for surgery, universality in the sense of independence from local contexts is not an obvious claim to make. Within medicine, surgery seems to be particularly susceptible to local and national variation, because of its base in practical skill acquired through local master–apprentice relationships. Historians have found that surgical practice has been influenced by multiple variables such as the organization of healthcare, patterns of training, licensing and specialization, and the division of medical labor, often reflecting the contingencies of medical cultures and local traditions.¹⁴⁸ In fact, surgical work has an obvious local character to start with, because it is inherently bound up with the practitioner who performs it. In order to spread

144 Ward, *Club*, 16–17.

145 About the relative neglect of the history of similarities, see Secord “Knowledge,” 657, and Peter Keating and Alberto Cambrosio, *Cancer on Trial: Oncology as a New Style of Practice* (Chicago: The University of Chicago Press, 2012), 11.

146 Lawrence, “Democratic,” 29–30.

147 Margaret Lock and Vinh-Kim Nguyen, *An Anthropology of Biomedicine* (Oxford: Wiley-Blackwell, 2010), for the quotes, see 1, 56.

148 Ilana Löwy, *Preventive Strikes. Women, Precancer, and Prophylactic Surgery* (Baltimore: The Johns Hopkins University Press, 2010), 14, 35.

it, the necessary skills and knowledge have to be spread along with the appropriate material conditions. Scholars in science and technology studies have emphasized the active character of such a spread and used the notion of “networks” that are linking and holding heterogeneous configurations together. These networks are both local and global, but dependent on continued maintenance. Like the case of the railway, as Bruno Latour has noted: “there are continuous paths that lead from the local to the global, from the circumstantial to the universal, from the contingent to the necessary, only as long as the branch lines are paid for.”¹⁴⁹ This applies to modern surgery too.

In order for, as Lawrence has phrased it, a “modern, relatively uniform surgical theory and practice”¹⁵⁰ to emerge, knowledge and practices had to be actively spread through journals, books, and objects, but most importantly through practitioners’ travel. We have seen how the manual character of surgical knowledge gave rise to a whole culture of surgical travel, which was contingent on the development of new reliable and interconnected means of transport. While the spread of surgical techniques and knowledge followed particular routes and directions, surgery was increasingly seen as being international and universal. Surgical internationalism came with an idea of an altruistic and universal surgical profession, working toward medical progress in one common surgical world where bodies as well as techniques were increasingly interchangeable. It was an international culture of surgery that was, in fact, both the outcome of the idea of universality but also a factor for bringing it about, making surgery look, more than ever before, “one and the same the world over.”

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149 Bruno Latour, *We Have Never Been Modern* (New York: Harvester Wheatsheaf, 1993), 117. Mol Annemarie and John Law, “Regions, Network and Fluids: Anaemia and Social Topology,” *Soc. Stud. Sci.*, 1994, 24, 641–71, see 651–52.

150 Lawrence, “Democratic,” see 17, “modern, relatively uniform,” see 19.