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8 Reviving the Unity of Science Movement: Philipp Frank's Journey to Harvard

Abstract: Two unanswered questions in the history of philosophy of science are how Philipp Frank became a well-known philosopher in America and how he fell quickly into obscurity and disfavor within professional philosophy. In this paper we shall concentrate on a few preparatory issues: we will sketch the way Frank arrived at the States through the lens of his background in Prague to show that he was not a traditional refugee, as he saw a chance to establish logical empiricism in the States on a bigger scale than before. Recognizing opportunities and openings in the world of American education, he immersed himself to create an accessible brand of positivism and teach others how to propagate it in American schools and universities. This is a so-far underappreciated project for advancing the fortunes of scientific philosophy in America, one that Frank—more than any of his colleagues—would embrace and make his own.

8.1 Introduction

On September 19, 1938, Bertrand Russell and his family reached New York to take up his temporary professorship at the University of Chicago. Upon his arrival, the famous philosopher and logician was awaited by a couple of reporters, asking him about peace, war, and the world-situation. But Russell was not the only newly arrived philosopher with a special interest in these topics.

A few weeks later another philosopher arrived in New York, but without attention from the press. One of his friends saw him near Riverside Drive Park, "sitting on a bench, lonely, staring at the river, a refugee from Hitler's advance into Czechoslovakia" (Feuer 1988, 68). No one expected that within a few years, he would be almost as prominent in the United States as Bertrand Russell and his friend Albert Einstein. He would be interviewed as an authority by Boston newspapers about atomic scientists and atomic geopolitics, he would be one of the original members of the long-running *Conference on Science, Philosophy, and Religion*, he would appear on the cover of the *Saturday Review of Literature*, and J. Edgar Hoover's FBI would take note of his prominence as Einstein's biographer and investigate him as a possible communist. He was Philipp Frank, a physicist-turned-

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philosopher, prominent logical positivist, whose personal history and philosophical overview promises important lessons for historians of philosophy of science.[1]

Two unanswered questions in the history of philosophy of science are how Philipp Frank became so quickly such a well-known philosopher in America and how, shortly before his death in 1966, he fell just as quickly into obscurity and disfavor within professional philosophy. These questions require a detailed examination of Frank's popular, cultural, scientific, and educational trajectories from Vienna to Cambridge via Prague.[2] In this paper we shall concentrate on a few smaller, preparatory issues with two aims in mind. First, we will sketch the way Frank arrived at the States through the lens of his background in Prague to show that he was not a traditional refugee. Though he saw the recent and upcoming troubles, Frank aimed to go back home as a loyal citizen of the Czechoslovakian Republic. But once he was deprived of that possibility due to the war, he saw a chance to establish logical empiricism in the States on a bigger scale than before. Recognizing opportunities and openings in the world of American education, he immersed himself in creating an accessible brand of positivism and teaching others how to propagate it in American schools and universities. This is a so-far underappreciated project for advancing the fortunes of scientific philosophy in America, one that Frank—more than any of his colleagues—would embrace and make his own.

8.2 Preparing for America

In 1938, Frank began his twenty-sixth year in Prague, researching, teaching, and leading the Theoretical Physics Institute at the German University of Prague. Some of his previous colleagues had passed away, while others—young and old alike—emigrated in response to the growing daily threats. As Frank described the situation, "our university is such that one feels being transferred to the Third Reich."[3] Just a few years before, however, because of its liberal atmosphere

1 "Lise Meitner Termed Pacifist by Dr. Frank," *Boston Globe*, August 11, 1945, p. 6.; "Nazi Refugee Physicist Working in Argentina," *Boston Globe*, March 26, 1951, p. 28. On the FBI, see the declassified files on Einstein, and Reisch (2005, ch. 13). Eventually, Frank and Russell would meet in Chicago, the former commenting it as "a lot of famous philosophers are now concentrated in Chicago … you can speak almost of a concentration campus" (Frank to Ernest Nagel, October 28, 1938; from the personal collection of Yvonne Nagel).

2 On Frank, see Reisch and Tuboly (2021), cf. with George Reisch and Adam Tamas Tuboly's forthcoming biography of Frank (Reisch and Tuboly ms.).

3 Philipp Frank to Josef Frank, December 1936, Otto Neurath Nachlass, Wiener Kreis Archiv, Rijksarchief in Noord-Holland, Haarlem, The Netherlands, 327 (hereafter, ONN). All translations from the archive's German correspondence are our own unless indicated otherwise.

and its German-speaking university, Prague had become a center for German emigrants including many Jewish students unable to enroll at universities in the Third Reich. As Peter Bergmann—student of Frank, collaborator with Einstein, and theoretician of general relativity—recalled later, "among all the foreign universities offering instruction in German … Prague was least expensive by a considerable margin" (Bergmann 1966, 4). The very same reason turned out to be persuasive for many students from the Balkans, the Soviet Union, and even Baltic nations. The mathematician Lipman Bers, one of the refugee students from Livonia, recalled later that Czechoslovakia "was [in the 1930s] a haven for all political refugees" (Albers and Reid 1987, 274).

For those living permanently in the Republic, having no other perspective, it became obvious day after day in late 1938 that the German Reich was trying to get its hand on the last island of Eastern European democracy. As early as 1934, this paradise of diverging opinions and people had been challenged by street fights over nationalistic issues at the university. Anticipating further violence, Carnap decided to leave Prague where he had been teaching since 1932. In early 1935, he was invited to Harvard's 300th-anniversary conference to lecture and receive an honorary doctoral degree. "A first step towards America," he commented in his diaries in February. For the big event, Frank was nominated to be the official representative of the German University of Prague but owing to lack of time he handed over that task to Carnap who soon took a permanent position at the University of Chicago.[4]

Jeremy Bernstein's recollections help show how devastating the situation was in Prague:

> Frank once told me that in the 1930s, there were three factions at the university. There were the Nazis, who were afraid the Russians would invade. There were the Communists, who were afraid the Germans would invade. And there were the Jews, who knew that whoever invaded, it would be bad for them. There was only one thing the three groups could agree to. They hired a tutor to teach them English so they could emigrate to America. (Bernstein 2020, 145)

Frank, a Jew, belonged to the third group. He knew that independently of who the invaders were going to be, things would turn out badly for them.

But like others living through these uncertain times, especially those within the walls of the university which provided at least *some form* of normalcy and reg-

4 Philipp Frank to Institute of International Education, February 24, 1937, Emergency Committee in Aid of Displaced Foreign Scholars Papers, 1927–1949, Folders 15 and 16, "Frank, Philipp." The New York Public Library, Archives & Manuscripts (hereafter, ECFSR). About the situation in Prague that time, and for further references, see Reisch and Tuboly (ms.).

ular routine, Frank wavered for a long time between optimism, pessimism, and lethargy. This is well documented in his correspondence during these difficult years. At first, in March 1938, he wrote about the "Scylla and Charybdis" of the situation, owing partly to "threatening influences from our neighbors." The two options were to "undertake a shift to the right" and live in a semi-dictatorial regime "which will hand over all the cultural institutions such as theatres, schools, etc. in German territory to the Nazis," or to resist and "risk a war" that may lead to a major European incident. Neither option was feasible for Czechoslovakian citizens. Within two months, he recognized that the "the conditions are very critical" and all the problems will be resolved soon as the situation was unbearable for a long time. No one knew, however, whether it would be "done peacefully or violently. In any case, our university is likely to change in such a way that it will be practically unbearable." As the "acute fright has gradually turned into a chronic one" in the next month, people became aware of the "tactic of attrition" that will turn slowly, and at the right moment, "into a directly aggressive one." As he wrote to Otto Neurath, "there won't be many in our faculty who want to wage a decisive fight against swastika influences. Defensively, of course, they will do it, but few will want to create a new difficulty."[5]

Despite all difficulties and the continuously worsening situation of the university, Frank and his wife Hania were "doing well personally" and they even "started going to dance halls and dancing together." During such fearful times and crises, it could have been mentally lifesaving to find refuge in familiar routines or in taking up new ones. That did not mean, however, that *all* was well, and Frank did notice the strangeness of the situation. He called the situation "Ssanin 1905!"[6]

Ssanin was an Austrian-Polish silent film from 1924, based on a novel with the same title by the Russian Michail Petrowitsch Arzybaschew in 1907. It was written after the unsuccessful 1905 Revolution that was directed against the Russian Tsar and his system. The main figure of the novel and the film was Wladimir Petrowitsch Ssanin, a true nihilist of the time, a representative of a broken society that had failed to stand up for change. He suggested abortion and suicide to friends and relatives. He committed rape and spread his immorality and nihilism throughout the country. The story was designed to spark a revolution for sexual freedom, but the book was banned as pornographic. Ssanin and his followers had turned their attention from change and revolution to self-centered nihilism and sexuality without limits. Frank obviously exaggerated when he compared all this to his and

5 Frank to Otto Neurath, March 4 and May 5, 1936 (ONN/236).

6 Frank to Otto Neurath, November 13, 1936 (ONN/236).

Hania's dancing. But turning inward to such pleasures instead of changing the socio-political circumstances he nonetheless saw through the lens of Ssanin.

Frank's humor and sarcastic optimism did not last long. Pessimism and despair came when, as Frank put it, "all free-thinking people" became accustomed to the new military attitude of the Third Reich. While he saw the practicality of adopting such an attitude, Frank was afraid and existentially confused. He told Neurath, "everything is turned upside down and it is difficult to find your way around."[7]

Hans Kelsen, an internationally renowned leader in law and jurisprudence, helps illustrate the changes Frank observed. As early as 1933, when Kelsen was first considered for a post at the University of Prague, Nazi students protested with slogans like, "Out with Jewish professors!" Three years later, when Kelsen was appointed, the situation got worse. Once, when he was about to lecture, a "raucous crowd of nationalists," many of them not even students, occupied the lecture hall, making Kelsen's way to the podium almost impossible. When he started to lecture, one of them shouted, "Down with the Jews, all non-Jews must leave the hall," after which Kelsen was left alone in the lecture room. When he reported the incident to the Dean, he noted that his own students were "beaten up badly, thrown down the stairs and the like" (Schuett 2021, 123–124).

Though Kelsen was basically "prevented by force" to lecture, Frank took the worst part of the incident to be the fact that "academic authorities did everything they could to protect the rioters."[8] Kelsen received anonymous letters with swastikas, in which he was threatened with the fate of Theodore Lessing, a Zionist German philosopher, who had fled Nazi Germany to Czechoslovakia but was shot in his country house in August 1933 by Sudeten Nazi sympathizers. While Kelsen was protected for a while by detectives because of these threats, the rector of the university told him that the letters were written by communists and that he had no pressing need to worry about these issues since "such things do happen." Frank sarcastically agreed, telling the rector, "definitely, for example, during the Reichstag fire,"[9] when the burning of the German parliament was attributed to communists and used to rationalize curtailing civil rights as the Third Reich began its reign.

Frank wrote to Ernest Nagel that the future was "very dark," and added, "'Dark' is perhaps an optimistic expression. Because according to some, the future is 'clear', but unpleasant."[10] This note of resignation conveys the fact that Frank

7 Frank to Neurath, March 4, May, June 7, and June 1938 (ONN/237).

8 Frank to Otto Neurath, November 13, 1936 (ONN/236).

9 Philipp Frank to Josef Frank, December 1936 (ONN/327).

10 Frank to Ernest Nagel, May 28, 1938; from Yvonne Nagel's personal collection.

fundamentally believed—despite the gloomy observations of others and himself, obviously—that his planned life in the Czechoslovakian Republic could continue in the long run. Nonetheless, soon Frank would be outside of Czechoslovakia in the United States. His optimism and pessimism continued to vacillate until war broke out in September 1939. At that point, finally, Frank abandoned his loyal hope to remain living and working in Prague (Hofer 2021).

8.3 A Life-Saving Lecture Tour

In 1938, Frank turned fifty-four years old. Under normal conditions, he would have had a decade more to direct his institute, finish his official assignments, and to start think about his well-deserved pension time, presumably filled with travel, speeches, conferences, and holidays in the mountains. But at the age of fifty-four, Frank asked for an unpaid sabbatical from the University to give lectures in the United States that were arranged by the Institute of International Education. At that point, war seemed avoidable. Frank probably had in mind just a trip to explore the States, in case he might be later forced to follow his friends and colleagues who had emigrated.

The Institute, still existing today, was established in 1919, by Nicholas Murray Butler (President of Columbia University), Elihu Root (former Secretary of State), and Stephen Duggan (professor at City College of New York)—the latter being its director until 1946. In the wake of the Great War, they hoped that their new institute could foster mutual understanding between nations. In his 1938 annual report, Duggan stated that "international misunderstanding exists today to an unusual extent." But Duggan and his Institute were optimistic nonetheless: "it is safe to say that cultural relations have probably done more to draw us towards the desired goal than any other activity that has yet been attempted" (IIE 1938, 29).

For the Institute, the most important way to achieve, or at least to contribute to the goal of building understanding and acceptance was to develop a student-exchange program—first between the United States and Europe, and later including Asia and South America. American students, upon finishing their college education in the U.S., would then enroll for postgraduate work in a foreign university. Through 1929, at least 5000 American students went abroad, and the Institute helped close to 10,000 foreign students attend American colleges and universities. Eventually the program was extended and a new category of "visiting professor" was established. Visiting professors were recommended by the Institute's representatives abroad, based on their scholarship and ability to lecture in English. The terms were that universities and colleges at which visiting professors lectured

paid the lecturer's fee, while the Institute would "draw up his [sic] itinerary and program" (IIE 1938, 35).

Through 1938, the Institute organized lectures and lecture tours for 245 foreign scholars and "men of affairs" who visited 1782 colleges, universities, and other institutions. The visiting professors would spend half a week at the campus, "lecture to students on problems of international affairs and discuss with faculty members and advanced students details of these problems," often inviting the public as well (IIE 1938, 35).

Frank's lecture tour was conceived by the Institute in early 1937 after Carnap contacted the Institute to inquire about a possible tour for his former colleague. Frank wanted to speak generally on behalf of logical empiricism as a new movement, known in America through logicians and pragmatists, but not yet applied to the understanding of modern physics, his area of expertise. "Being equally familiar with the modern physical theories and the new logic of science, I think I should be able to explain this new conception of exact science to the American public,"[11] he wrote to the Institute in his application.

The Institute first investigated Frank's background and reputation (they contacted, for example, the émigré Viennese physicist and longtime friend of Frank, Arthur Haas), and reached out to various scholars for formal recommendation. Three letters of recommendation have survived. The first described Frank as an "eminent scholar" with one of the "keenest critical minds" at present in the field of philosophy of physics and science. Frank was of "high philosophical culture" and possessed "literary talents." He was so talented, the letter emphasized, that he was even recommended as Albert Einstein's successor in Prague after Einstein left in 1912.

The letter writer would know because he was Albert Einstein. Although Frank had asked Einstein to write a few words to the Institute in his favor, he may not have anticipated how important—at this juncture, and again in the future—his friendship with Einstein would turn out to be. By helping Frank obtain his lecture tour and leave Prague when he could, Einstein's letter was arguably lifesaving.[12]

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11 Rudolf Carnap to the IIE, December 20, 1936 (ECFSR); IIE to Frank, December 30, 1936; and Frank to the IIE, February 24, 1937 (ECFSR).

12 Frank to Albert Einstein, March 1937; Frank to Albert Einstein, March 1937, Albert Einstein Archive, The Hebrew University of Jerusalem; and Albert Einstein to the IIE, March 10, 1937, Harvard University Archives, Papers of Harlow Shapley, 1906–1966, HUG 4773 (hereafter, HSP). The other two very positive recommendations came from Frank's colleague and friend, the chemist Jaroslav Heyrovský, professor at the German University of Prague in the Department for Physical Chemistry, and from Brackett Lewis, secretary of the American Institute in Prague. Jaroslav Heyrovský to

Even after the recommendations, the Institute's director, Stephen Duggan had reservations about Frank's topics and feared that the tour "will not produce great results." He claimed that the Institute *could* put a note in their Bulletin about Frank's availability to lecture on the philosophical problems of modern physics, "but that is not the kind of subject for which there is a demand for lectures."[13] The Institute nonetheless published a flyer advertising Frank's planned lecture tour in the States during the autumn of 1937.

The flyer elicited inquiries immediately. This showed interest in Frank and his proposed topics and helped disprove Duggan's fears. One came from North Carolina, noting that in 1936, at the American Physical Society meeting the principal speaker was Niels Bohr. This year, they wanted Philipp Frank as they saw the advertisement in the Bulletin. The letter was signed by the young John A. Wheeler, then an associate professor of physics and later an important American physicist who collaborated with Bohr and Einstein.[14] Unfortunately, Frank was unable to deliver the lecture that Wheeler requested since his tour was delayed. In the end, he left Prague in the summer of 1938, and departed from England to America at the end of September, after the Cambridge Congress for the Unity of Science.[15]

On his way, he visited the London-office of the Society for the Protection of Science and Learning, founded in 1933 as the Academic Assistance Council and renamed in 1936 to help refugee academicians from the continent. The Society was established by the economist-politician William Beveridge who learned about the German situation during a tour in Vienna and immediately set up a plan to gather British politicians and philanthropists to organize a rescue committee. There Frank was asked about the political situation in Prague and the crisis in Czechoslovakia. A few weeks after his visit to this office, Frank sailed to New York. It was a long journey, with sufficient time to prepare lectures, and to conduct discus-

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Stephen Duggan, May 14, 1937 (HSP); Brackett Lewis to Stephen Duggan, May 15, 1937 (HSP). On Haas and Frank, having very similar scholarly and life paths until their emigration, see Wiescher (2021).

13 Stephen Duggan to Brackett Lewis, May 28, 1937 (ECFSR) and Mary Waite to Rudolf Carnap, May 7, 1937 (ECFSR). Further positive letters were sent to the Institute by Charles Morris (May 1, 1937), Carnap (April 17, 1937), and Arthur Haas (April 13, 1937), all kept in ECFSR.

14 John A. Wheeler to Stephen Duggan, October 21, 1937 (ECFSR). For further letters, inquiring about Frank's availability as a lecturer, see S. B. Arenson from the University of Cincinnati Section of Sigma Xi (October 14, 1937); Edward S. Allen from Iowa State College (October 27, 1937); all kept in ECFSR. But Frank's advertisement note was sent to Virginia, Michigan, Harvard, Cornell, Columbia, Northwestern University, Ohia State University, Wellesley College, Syracuse University, Indiana University, University of Missouri, and Drexel Institute in Philadelphia.

15 Frank to Ernest Nagel, May 28, 1938, Archives of Scientific Philosophy, Ernest Nagel Papers, 1925–1982, ASP.2020.01, Archives & Special Collections, University of Pittsburgh Library (hereafter, ASP-ENP).

sions with various people on board. One topic of discussion was ominous and unforgettable. In a letter to his close friend Albína Dratvová, Frank described how news of the "Munich agreement" was broadcast on the ship. As part of a Western strategy to appease Hitler, the agreement allowed Germany to annex the Sudetenland, part of Czechoslovakia. As Frank described the fallout: "It was a French ship. At first, the French and the English people did not understand the news. They were rather happy that war has been avoided. But there were also Czech people on the ship, and they immediately knew what it was about and were very unhappy."[16]

Aiming to get back to Prague no later than early January 1939, Frank obtained a "visitor's visa" that was valid only for a few months. Perhaps naively, given this diplomatic success for Hitler's expansive ambitions, Frank still hoped that he could return to Prague in the winter of 1939 and continue his career. He was mistaken about this—perhaps distracted from the gravity of the situation by the busy, exciting lecture tour ahead of him. According to his letter to Dratvová, he was scheduled for talks at twelve universities, often jointly sponsored by Philosophy and Physics Departments, mainly about the philosophy of physics, of relativity, quantum mechanics and metaphysics.[17] As the tour began an officer at the IIE sent a circular letter to all the colleges and universities where Frank lectured to inquire about their impressions, the reception of the lectures, and their opinion of Frank's talks. Some of the replies survive to provide a picture of Frank's initial American reception. Charles Morris, who was his close friend and a sympathizer of logical empiricism and the Unity of Science Movement, claimed that in Chicago they were "highly pleased with Frank as a person and a lecturer." Frank was able to attract many people from various departments with "different standpoints" and faculty and students were "uniformly appreciative."[18]

Frank lectured at the nearby University of Illinois as well. Glenn R. Morrow, professor of philosophy, wrote that Frank was competent but his topic, "the logic of science," did not attract large audiences after his initial lecture. Morrow's view was not universal, however. Some of the university's best undergraduates "were much interested" in Frank's topics, according to P. Gerald Kruger, professor of physics, who reported that the lectures were "decidedly successful."[19]

Frank gave two lectures at the University of Notre Dame, where he spoke to the Departments of Physics, Mathematics, and Philosophy. All participants agreed that Frank's talks "were very much worthwhile" and stimulated a great deal of dis-

16 Frank's letter to Albína Dratvová, October 25, 1938, in Podaný (1995, 136).

17 "Philipp Frank (Prague), Lecture Tour" (HSP); brochure advertising Frank's American lecture series, October–November 1938 (ASP-ENP).

18 Charles Morris to Edgar J. Fisher November 20, 1938 (HSP).

19 M. T. McClure to Edgar J. Fisher, December 14, 1938 (HSP).

cussion, according to the head of the Physics Department. A famous attendee of the lectures was the above-mentioned friend of Haas who was by that time a renowned professor of physics at Notre Dame.[20]

At the Graduate School of the University of Oklahoma, Frank's appearance "was a very great success." The audience was bigger than expected and the university was "more than pleased" since Frank's talk attracted professors from other schools and universities.[21] The *Oklahoma Teacher* reported that Frank discussed popularized accounts of science and "pointed out incorrect popular attitudes which result from attempts to read metaphysical meanings into statements of scientific principles and suggested possible ill effects which might follow the spread of such attitudes." Frank's lecture was so successful, evidently, that he believed he might be offered a one-year position at the flagship campus in Norman.[22]

Finally, Frank lectured at the California Institute of Technology, Pasadena, after which Robert A. Millikan, the 1923 Nobel Prize Winner in physicist who knew Frank personally from Prague, reported that Frank drew "relatively large audiences from all our scientific departments." He "really understands both modern physics and philosophy and is therefore more competent to treat these two fields jointly than anyone else I know" Millikan added. Indeed, Frank's dual-expertise was becoming central to his reputation. Among the first courses Frank taught at Harvard was "philosophy of physics"—"the first systematic course" in this hybrid subject, the *New York Times* reported—one that would surely clarify and bring scholarly credibility to popular speculations and misconceptions, the announcement implied.[23]

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20 Henry J. Bolger to Edgar J. Fisher, November 23, 1938 (HSP). Later, when Frank was about to negotiate a place for himself in the country, he did not consider Notre Dame. He wrote to Richard von Mises, when he was also looking for a job in America, that he does not recommend the University of Notre Dame, "because there are already some Viennese who always do you more harm than good." He surely did not have Haas in mind, who just helped him with the IIE. In fact, he named Karl Menger "in particular [who] fights any hiring of foreigners." Frank to Richard von Mises, April 16, 1939, Harvard University Archives, Papers of Richard von Mises, HUG 4574.2 (hereafter, RVMP). Quoted from and translated by Siegmund-Schultze (2024). This claim of Frank among the competition between émigrés requires a substantive interpretation, which we cannot give here, though it already shows the even more complicated situation at the universities that Frank had to face as well.

21 Homer L. Doge to Edgar J. Fisher, November 28, 1938 (HSP).

22 Frank to Shapley, March 17, 1939 (HSP) As far as we know, Frank never went back to lecture or teach in Oklahoma.

23 Robert A. Millikan to Edgar J. Fisher, December 7, 1938 (HSP). Cf. "Reported From the Fields of Research," *The New York Times*, April 21, 1940. The announcement of Frank's course at Harvard appeared without a byline. It was probably written, or at least edited by Waldemar Kaempffert

In addition to the twelve universities listed on Frank's IIE Itinerary, he also lectured at the University of California at Berkeley in November on "modern physics and common sense" and again on the same topic in December to the Philosophy and Physics Departments at Columbia University.[24] These lectures and an additional invitation from Brown University suggest that Frank's reputation and appeal were growing and spreading as his lecture tour continued.[25] In a letter to Edith Nagel, Frank joked that he felt "like a wandering actor who gives in every town his performance."[26] But Frank surely understood that his tour was a success that boded well for a future in the United States. This doesn't mean that Frank did not want to go back—he considered Prague to be his home, noting in a letter, "I would gladly stay in Prague and my wife sticks to Prague very much." Nor does it mean that Frank looked forward to rebuilding his career after being established in Prague. "Our university, where I was active for 25 years will hardly exist and I really do not know with what I will go further in my life,"[27] he wrote to a friend. But Frank ultimately did not have much of a choice in these matters.

8.4 Stuck in the Land of Promises

Soon after his tour concluded, Frank's visitor's visa was about to expire, and in February 1939 he asked for an extension of his unpaid leave from the German University of Prague. He received the extension along with a trickle of news from Prague that painted a bleak, "sinister" picture that Frank described to the Society for the Protection of Science and Learning in London, whose office he had visited on his way to the States. In a letter, Frank wrote,

> The pressure of the Nazi government has forced the Czech ministry to nazify the German university. Though the Sudetenland is now separated from Czechoslovakia and belongs to Germany, the German authorities force the Students who are of *Sudetengerman* origin to study at the German university in Prague, in order to form a center of Nazi propaganda within Prague. As

(see below), and therefore shows once more Kaempffert's journalistic support of Frank and the unity of science movement, more broadly.

24 "Campus Note," *The Columbia Daily Spectator*, December 9, 1938; Carnap's diary entry, November 22, 1938 (Carnap's Diaries 1936–1970). "Physics Lecture," *The Daily Californian*, November 18, 1938, p. 11.

25 Frank to Albína Dratvová, October 25, 1938, in Podaný (1995, 137); R. B. Lindsay to Edgar J. Fisher, October 12, 1938 (ECFSR).

26 Frank to Edith Nagel, October 28, 1938; from Yvonne Nagel's personal collection.

27 First letter to Jaroslav Heyrovský, second to Albína Dratvová, quoted from Podaný (1995, 137 and 138).

> I understood from Vienna, all students, who have their home in *Sudetenland*, are excluded from the Austrian and German universities, in order to force them to fill up the German university in Prague and to serve willy-nilly as Nazi agents among the Czechs.[28]

Within three months, German forces took control of the Czech lands of Czechoslovakia as the "Protectorate of Bohemia and Moravia." More than seventy professors were removed from their positions, and those few who were permitted to remain were closely supervised and inspected by the Nazis. "The situation in Prague becomes more and more sinister," Frank wrote. Bits of information that came to him, Frank implied, were cloaked by his old friends and colleagues' correspondents in coded or "hidden" text, presumably to circumvent Nazi censors:

> I received a letter today from Prague from a friend. He wrote in a hidden language that some professors of the German university as well as the Czech one were arrested; e.g. Oskar Kraus … a man without any political color, Privatdozent: Kurt Sitte … a Sudeten German, who dared to propagate democracy among the Sudeten German students. Prof. Zd. Nejedly of the Czech University, a professor of the history of musics, author of a large biography of Masaryk and of the composer, Smetana.[29]

With reports like this, by early 1939 Frank finally gave up on his plan to shortly return to Prague. "It is impossible for me to continue my teaching job," he told the Harvard physicist Edwin C. Kemble. In a letter sent from the address of the Institute of International Education, Frank declared that there is "widespread interest" in the States for the problems he has been working on in the last few years. "It would be a great advantage for my scientific work," he wrote, "if I succeeded to remain in this country."[30]

One immediate and enormous problem was that remaining in the States would mean that Frank would lose his salary and savings. As Frank commented to the Society for the Protection of Science and Learning, he now "belong[ed] to the people who have lost their position" and he asked whether the "organization would be able to give me a certain support during the few months I have to wait here."[31] But the Society could not help refugees in the United States and suggested that Frank turn to the local Emergency Committee for help.[32]

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28 Frank to the Society for the Protection of Science and Learning, January 20, 1939, Archive of the Society for the Protection of Science and Learning, Oxford University, Bodleian Archives & Manuscripts, Philipp Frank File, MS. S.P.S.: 327/6.

29 Frank to Edgar J. Fisher, May 8, 1939 (ECFSR).

30 Frank to Edwin C. Kemble, February 9, 1939 (HSP).

31 Frank to the Society for the Protection of Science and Learning, January 20, 1939 (Archive of the Society for the Protection of Science and Learning, Oxford University, Bodleian Archives & Manuscripts, Philipp Frank File, MS. S.P.S.: 327/6; hereafter "SPSL").

Frank was in contact also with Cecilia Razovsky at the National Coordinating Committee in New York that was established in 1934 and became known after 1939 as National Refugee Service. He explained that his loss of salary was just one problem to be solved. In addition, his visa-situation was dire. He urgently needed help because he had obtained only a temporary, visitor visa to the United States. As Frank's problem became known, his American colleagues went into action to find Frank a position at a college or university that would allow his visa to become permanent. Kemble approached Percy Bridgman, who happily supported Frank's case and wrote immediately to Frank that his chances were "very good" to obtain a permanent position and American citizenship after two years of lecturing. His field of research is "one of great importance, one of increasing interest at this present one, and one with which very few, if any, competent persons in this country are at present occupied." Bridgman also noted that he always read Frank's papers with pleasure and found his "clarity and sanity of thought almost unique," leaving his best supportive remark to the end: "Personally I would be glad to do what I can to help him to a permanent position."[33]

While Bridgman reassured Frank that there was demand for his expertise within the American intellectual scene, Frank's Viennese friends counseled him to tailor his philosophical lectures, and even his specific terminology, carefully for American audiences. Arthur Haas advised Frank not to use such words as "diealism" and "materialism" as a foreigner in America because it would be considered "tactless and an interference in American relationships." Neurath agreed with Haas and told Frank not to prepare his lectures in detail, but instead to read the room and "adapt himself" to the "respective forum as far as possible" by talking about "specialties that hardly anyone but [he] knows so well, at least within a radius of 100 miles." During the hiring process of Frank at Harvard, the astronomer Harlow Shapley argued that Frank "has something that no one else in America provides—a special relation to the fields of physics and philosophy."[34] This is indeed what Frank did after all, he stood out from the crowd as the major representative in America of the growing unified science movement as a physicist-turned-philosopher with an insider's understanding of professional physics who

32 Esther Simpson to Frank, January 30, 1939 (SPSL).

33 Percy W. Bridgman to Frank, February 15, 1939; and Bridgman to Cecilia Razovsky, February 15, 1939 (HSP).

34 Harlow Shapley to the Emergency Committee in Aid of Displaced Foreign Scholars, April 10, 1939 (HSP).

could also enlighten the public about the philosophical significance and interpretation of modern achievements.[35]

Neurath had in fact prepared the ground for Frank's arrival as a public intellectual in the United States. A few years before he had urged Frank to write an article for the American audience that would introduce himself. An ideal place to do that would have been the *New York Times*, where Neurath's cousin, Waldemar Kaempffert was the science-editor. Frank sent to Kaempffert a translation of his talk, "Modern efforts towards the 'Unity of Science'," that Frank delivered over the radio in Prague in March 1936.[36]

Kaempffert did not publish the paper, but certainly agreed to help Frank become better known to educated Americans. In one of several pieces that Kaempffert wrote about Neurath and the unity of science movement and its new *International Encyclopedia of Unified Science* (IEUS), Kaempffert wrote that "to most Americans the name of Professor Philipp Frank means little, to Europeans much." He drew a lively picture of the Vienna Circle, especially in terms of where they came from (Mach, James, Russell), and borrowed from Frank's manuscript to describe the movement's current plans and ambitions. [37]

Frank would utilize Kaempffert's introduction by sending a copy to the Institute of International Education when he first inquired about a lecture tour. It helped kickstart Frank's reputation as an expert in both physics and philosophy of science

8.5 Getting a Job

However promising Kaempffert's publicity, the success of Frank's lecture tour and his emerging profile as a public intellectual did not provide Frank with what he needed most: a permanent position that would provide income and allow him to remain legally in the United States.

A series of opportunities appeared, but many were unattractive or impossible. One was the University of Istanbul in Turkey, where Frank would replace Reichenbach who went to UCLA in 1938. But Frank had "certain aversions to the pros-

35 Frank to Neurath, September 1937; Neurath to Frank, September 16 and November 18, 1937 (ONN/237).

36 Frank to Otto Neurath, March 1936; Neurath to Frank, March 27, 1936; Frank to Neurath, April 1936 (ONN/236). Frank's radio lecture was called "Neue Bestrebungen für die Einheit der Wissenschaft," *Der Hausarzt*, March 26, 1936, p. 1.; cf. Frank to Neurath, May 5, 1936 (ONN/236).

37 Frank, "Modern efforts towards the 'Unity of Science'" (ONN/382/R.20 – 2); and Kaempffert, "Unifying the Sciences," *The New York Times*, January 10, 1937.

pect of living permanently in a country," where he has "no opportunity of any scientific contact and collaboration," he noted to Kemble. Frank seemed to realize, however, that he may not be in a position to choose where he would go. In correspondence with Richard von Mises—then at Istanbul—he indicated that he would have been willing to be interviewed by the rector at the University of Istanbul had he not been already in New York that time.[38] Frank was desperate enough to tell different people what they needed to hear in order that he keep his options open, even in Turkey.

Another possibility was the New School for Social Research in New York City. In March 1939, Neurath was in active contact with Alvin Johnson and Horace Kallen, the former being the director, the latter a founding professor there. They arranged a deal: if Frank could secure funding in advance, he would be granted a position. Neurath put a lot of effort into this mission, and he quickly secured replies and a positive decision from the leaders of the New School. He even seemed to be proud of what he arranged for his old friend. But Frank, apparently enamored with other possibilities and rumors, let Neurath down by failing to follow up and write to the New School.[39] Frank did not burn any bridges, however, for he would later lecture there. [40]

The wait and the uncertainty weighted heavily on Frank and Hania. Financial pressures mounted as well. Frank was not able to retrieve his savings and he had spent the money he had brought with him on costs from his lecture tour.[41] Royalties from Frank's books were now in question, too, because there were non-Aryan authors among the contributors to the famous Frank-Mises (an edited textbook of mathematical physics from the mid-1920s) and sales declined precipitously in Ger-

38 Frank to Edwin C. Kemble, February 9, 1939 (HSP); Frank to Richard von Mises, February 7, 1939 (RVMP).

39 Neurath to Frank, March 7, 1939, and Frank to Neurath, April 15, 1939 (ONN/237); Neurath to Carnap, April 14, 1939, RCP, 102–53–29. Frank commented on his invitations to the New School via Neurath and Kallen also to Richard von Mises, see his letter of April 30, 1939 (RVMP).

40 Neurath to Frank, March 7, 1939, and Frank to Neurath, April 15, 1939 (ONN/237); Max Horkheimer to Frank, November 15, 1939, Max Horkheimer Archiv, Frankfurt am Main, "Briefwechsel Horkheimer-Frank" (I, 7). Frank had held an introductory lecture in Horkheimer's circle in November, due to the extensive interest in positivism. As Karl Korsch—who replied to the talk—wrote in a letter, Frank's lecture was "not uninteresting," although he and the members of the Horkheimer circle talked at cross purposes. See Dahms (1990, 61). Even later, in the mid-1950s, after his retirement, Frank became a lecturer there, having his own full courses on "philosophical interpretations of science," "the liberation of atomic energy," and "the fundamental laws of physical science." See the *New School Bulletin*, September 5, 1955 (vol. 13, no. 1); January 21, 1957 (vol. 14, no. 21), and September 3, 1956 (vol. 14, no. 1).

41 Frank to Edwin C. Kemble, April 7, 1939 (HSP); Frank to Society for the Protection of Science and Learning in London, January 20, 1939 (SPSL).

many.[42] Indirectly, Frank's financial savior turned out to be Einstein. With the assistance of Kaempffert, Frank negotiated a contract with the publisher Alfred Knopf to write a biography of Einstein. A generous advanced royalty payment took some weight from Frank's shoulders, but only for a while.[43]

Frank's hopes for a university position were raised in late 1939 when Charles Morris and Rudolf Carnap at the University of Chicago arranged a one-year position for him. But that fell through—largely, Frank believed, because of the contentious academic politics that pitted the university's president, Robert Maynard Hutchins, against positivism and the unity of science movement. Hania was so desperate about the situation that she wrote a letter to an aid committee, suggesting that someone from the university put pressure on the administration.[44] Upon hearing this news, Frank's acquaintances at Harvard—namely Bridgman, Shapley, and the university president James Bryant Conant—eventually managed to provide Frank with a one-year position that would take care of his visa requirements. After a subsequent one-year contract and sustained support from these colleagues, Frank obtained in 1941 a tenured, half-time position in Harvard's physics department.

8.6 Americanization and Education

Besides his help and support from Bridgman and Shapley, Frank was presumably attractive to Harvard's physics department. During the 1920s and early 1930s, American Physics Departments significantly oriented themselves towards experimental work. They had achieved many important results, but did not care much about theoretical work, which was partially relegated to the mathematicians. Physics teachers who tried to introduce American students to the quantum revolution and relativity theory often failed in their efforts. As I. I. Rabi (who would later befriend Frank) once put it, students of his generation were taught by second-rate scholars—though "to call them second-rate would be high praise" (Hoch 1983, 232).

Frank was among those few European physicists who learned from and came to know the most important European physicists, such as Ludwig Boltzmann, Ehrenfest, Schrödinger, Einstein, Born, and Ernst Mach himself. In Europe, he was also an accomplished theoretical, mathematical physicist, dealing with the biggest names, co-writing an influential handbook, publishing textbook articles and edi-

42 Frank to Edwin C. Kemble, February 25, 1939 (HSP).

43 Frank to Edwin C. Kemble, February 25, 1939 (HSP).

44 Carnap's diary entry, May 3, 1939 (Carnap's Diaries 1936–1970). For more details, see Reisch and Tuboly (2021, 18–24).

tions, and knowing his way around the most advanced and sophisticated theories. He was not an original, creative physicist, but certainly a good one who was known and respected in the community.

On the other hand, in coming to America Frank was late: he arrived years after the first big refugee boom that included many physicists and mathematicians. And when he arrived, he was welcomed not as a first-rate physicist but as an interdisciplinary figure representing philosophy of science and the unity of science movement.[45] But even among philosophers of science, including Feigl, Hempel, Carnap, Tarski, and others who had arrived from Europe before him, and among American philosophers such as Charles Morris, Sidney Hook, W. V. O. Quine, and Albert Blumberg, who brought logical positivism to the States after their European tours in the 1930s, Frank was—again—late.

Even one of Frank's most important supporters at Harvard, Percy Bridgman, had doubts that Frank's best days were ahead of him. In a letter to Frank's other prominent supporter Shapley, Bridgman wondered whether Frank could do anything new and novel as the "'Vienna School' has shot its bolt."[46] But once Frank settled into his position at Harvard, he quickly began to distinguish himself and build upon his reputation as the logical positivist who was the most trained and knowledgeable in theoretical physics. While most of his European colleagues pursued more and more refined intellectual agendas and helped to create philosophy of science as a recognized subdiscipline within philosophy apart from the social and cultural ambitions of the unity of science movement, Frank's agenda expanded along with his American audiences. He participated regularly, for example, in the *Conference on Science, Philosophy, and Religion* where he established himself as an expert in science education and, in particular, relations between science education and political culture. At the controversial first meeting of the Conference in 1940, where Mortimer Adler made headlines by declaring that the philosophers' current infatuation with "positivism" was more corrosive to culture than Hitler, Frank offered a thoughtful defense of positivistic science education as a bulwark against Nazism and totalitarianism—the very specters that the Conference had dedicated itself to fighting.

Without an appointment in Harvard's philosophy department, Frank was not equipped to train many future professors of philosophy. Instead he gravited naturally to teaching undergraduates of different kinds and in different fields. In the United States, where graduate assistants and nontenured faculty taught elementa-

45 On the emigration of mathematicians, many of whom were relevant even within the context of theoretical physics as well, see Siegmund-Schultze (2009).

46 Percy W. Bridgman to Harlow Shapley, March 28, 1940 (HSP).

ry courses, Frank was at first not allowed to teach the introductory and elementary courses he wanted to teach, but the war changed that. After the attack on Pearl Harbor in December 1941, Conant had made the university available for military training and Frank appears to have thrived teaching introductory physics to military officers in training. Frank helped fill a gap, because Harvard's physics faculty shrank during the war. Only "eight of 44 prewar lecturers and instructors were still on hand" by late 1943 (more than 20,000 Harvard men and women were enlisted and "under arms" by the beginning of 1944). Newspapers reported on the strain and noted that even undergraduates and a female teacher were working alongside Frank, who, instead of his usual theory of relativity, now taught elementary thermodynamics. "In a certain way it is a new and interesting adventure for me," he wrote to Neurath. "I come into much closer contact with the students and learn much more of the human side of the American student."[47] By teaching undergraduate thermodynamics, Frank first came into contact with Thomas Kuhn.[48]

Frank's growing interest and familiarity with "the human side of the American student" set the stage for his involvement in President Conant's postwar educational inititative in General Education. Announced in 1943 and up-and-running by the late 1940s, the program introduced curricular reforms at Harvard that Conant hoped would be adopted by colleges as well as secondary schools across the nation. Having lived and traveled in the United States for four years, and now teaching introductory physics to young soldiers-in-training, Frank was growing familiar with habits, customs, values, and sensibilities of Americans. This allowed him to see a place for the unity of science movement and logical empiricism to find a home, and to grow, in American culture. He excitedly wrote to Neurath in late 1943 that the time was ripe for a "revival" of the unity of science movement.[49]

There were two elements in the nation's character that Frank mentioned to Neurath as he described his ambition. One was America's penchant for practical utility, for invention, for finding ways to quickly and effectively get any job done. As one of his supervisors had once put it, Frank reported to Neurath, he should be sure to give students a 'whipping' and "pack into them as much 'material' as possible and to control as strictly as possible that they have assimilated it."[50] The other

47 Frank to Otto Neurath, February 12, 1942 (ONN/237); information on Harvard taken from John T. Bethell (1998, 160–161). Bethell named Frank as "one prominent refugee" and Charlotte Houermans from Radcliffe as the woman instructor.

48 Kuhn noted that if he had an undergraduate thermodynamics course, it must have been with Frank. Kuhn graduated in 1943, thus he must have been in one of the first classes of Frank. See Baltas, Gavroglu, and Kindi (2000, 268).

49 Frank to Otto Neurath, December 10, 1943 (ONN/237).

50 Frank to Otto Neurath, February 12, 1942 (ONN/237).

element was the foundation of Conant's new program: the nation's faith in education. During the war, education was key to preparing the military officers who would lead the nation (hopefully) to victory. During peacetime, it was the path by which citizens pursued wealth, happiness, and success. Now was the time for a revival of the unity of science movement, Frank explained to Neurath because "As in this country education has been regarded as a very important and serious job, it seems to me very helpful to make use of this interest as a starting point."[51] Joined to and established within the kind of science education that Conant's new project called for, Conant's reforms could function as "the thin end of a wedge" that could propagate logical empiricism's theory of science and the unity of science movement throughout North American culture. Scientific philosophy could spread and thrive, that is, not only as an esoteric, academic theory of science, but also alongside American pragmatism as a tool for 'getting the job done'—for understanding the world scientifically, as the Vienna Circle had long advocated, and for sustaining modern, democratic culture against the threat of totalitarianism. This was the existential goal behind the annual *Conferences on Science, Philosophy of Religion*, and it was the geopolitical aim of Conant's educational reforms, as well. An effective curriculum for all educated Americans—one that included basic familiarity with modern science, its methods, and its history—would help preserve the essential, democratic spirit of the United States in the face of threats from communism and socialism that Conant—soon to become one of America's leading intellectual cold warriors—glimpsed on the nation's horizon (Reisch 2019; Conant 2017).

Frank became an enthusiastic teacher in the General Education Program, offering courses on "The Philosophical Interpretation of Twentieth Century Physics" (*Natural Sciences 113*) and "Introduction to the Philosophy of Science" (*Natural Sciences 112*). He gave lectures at Harvard (often in connection with its many summer courses) and across the country about general education and the roles of philosophy of science within it. In these lectures and in several publications, both for academics and the public, he articulated his now-familiar picture of scientific theories as logical and mathematical structures that absorbed empirical meaning through "operational" connections to observations statements and empirical measurements. By capitalizing on Bridgman's terminology, Frank took care to present logical empiricism not as a European import, but a natural complement to American pragmatism—a theme he would return to frequently in his postwar writings. He also cultivated a linguistic focus on how scientific theories are interpreted, often metaphysically, by scientists as well as popularizers and political leaders—

51 Frank to Otto Neurath, December 10, 1943 (ONN/237).

a focus that joined Frank's American philosophy of science to the popular general semantics movement, to which his colleagues Roman Jakobson (at Harvard, and previously a friend from Prague) and Charles Morris (at Chicago), himself a champion of the pragmatic tradition, were important contributors (Frank 2021).

In the eyes of many of his colleagues, Frank's writings and his projects were sometimes seen as unprofessional and bordering on 'mere' popularization. Against the backdrop of technical philosophy of science practiced by Carnap, Reichenbach, Feigl, Hempel and others, Frank's writings could seem introductory, even literally childish. As Stephen Toulmin would put it in a 1951 review, Frank's book *Relativity—A Richer Truth* came off as children's literature: "It's sub-title would perhaps be 'Logical Empiricism Told to the Children'" (Toulmin 1951, 181). Hilary Putnam would extend this line of criticism in his 1958 review of Frank's book *Philosophy of Science: The Link between Science and the Humanities.* The profession and its interests had grown up, Putnam suggested, but Frank had not. "Anyone who still thinks that the issue in philosophy of science is between 'operational definition' and 'metaphysical interpretation' might enjoy reading Frank's book. Afterward, he should learn some *real* philosophy of science" (Putnam 1958, 750).

Toulmin and Putnam were right. Frank *did* want to teach logical empiricism to children. But to Frank, such an observation was hardly an insult. It instead acknowledged his ambition to teach the basic ideas and sensibilities of logical empiricism to everyone—to children, to their teachers within the General Education movement, to educated adults interested in semantics, and even to practicing professional scientists whose textbooks and papers, Frank observed, betrayed mistaken understandings of logic, evidence, confirmation, and truth. Only by so promoting and popularizing scientific philosophy, Frank realized—probably correctly, in our view—could scientific philosophy's original enlightenment ambitions have a chance of being realized in the postwar world.[52]

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52 For that, see the relevant upcoming chapters of Reisch and Tuboly. Both authors were supported by the MTA Lendület Values and Science Research Group. We are indebted to Sander Verhaegh for his invitation to this project, and to Reinhard Siegmund-Schultze for discussions and help. For more personal acknowledgments, see Reisch and Tuboly (ms.).

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