CHAPTER SEVEN

Honours Without Impact: Emil von Behring's Inconsequential Nobel Prize

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Abstract

Emil von Behring was the first recipient of the Nobel Prize in Physiology or Medicine. This had surprisingly little impact on his career or on how he was remembered after his death. This is best explained as the result of Behring's failure to stage the event. Because he had developed a reputation for being unlikeable and domineering among his colleagues, they were reluctant to celebrate his Nobel Prize with him. At the same time he had gained a lofty reputation as the 'savior of the children' among the general public, and the Nobel Prize could hardly add to this exalted public reputation.

Keywords: Emil von Behring, Physiology, Medicine, reputation

Today most people, inside as well as outside academia, agree there might not be any greater scientific honor than receiving a Nobel Prize. It has become almost unthinkable that such a professional triumph would be ignored or downplayed in any reflection on the life stories of its proud recipients. In this light, it is remarkable that most early biographers of Emil von Behring, the first recipient of the Nobel Prize in Physiology or Medicine, pay only little or even no attention to this supposed highlight of Behring's career. Paul de Kruif's popularizing account of Behring's greatest accomplishments, published almost a decade after the latter's death, passionately stresses his brilliance without even once mentioning that widely recognized sign of genius that is the Nobel Prize.[1] A detailed biography, that Heinz Zeiss and Richard Bieling published fourteen years later, includes some observations about his acceptance speech but no reflection on the impact of the Nobel Prize on (the perception of) Behring's career.[2] In George Nuttall's 1924 biographical sketch, the Nobel Prize is mentioned as an afterthought in a short paragraph listing some of the scientific and state honours that Behring received throughout his life.[3] A three page German celebration of his sixtieth birthday in 1914 – when Behring was still alive and well – does not mention his Nobel Prize at all![4]

The lack of interest among Behring's early biographers in this moment of professional triumph invites the question of why his Nobel Prize success seems to have been perceived as no more than a minor footnote to an otherwise successful and eventful scientific career. The argument that the earliest Nobel Prizes did not yet have the standing that they would develop in later years might seem plausible at first. One recent study notes that international press coverage of the first ceremony was indeed limited: specialized journals mentioned such awards in their notices, but did not dedicate full articles to them.[5] However, this argument is not entirely convincing. In the first place, the biographers mentioned in the first paragraph all wrote their assessments at a time when the prestige of the Nobel Prize had already been firmly established for many years. Secondly, the desirability of the Nobel Prize had been very clear from the beginning onwards. Contemporary newspaper even used terms like "the Olympics of science" in their early coverage.[6] The large sum of money that was awarded to the Nobel Prize's recipients also illustrated its standing. The check that Behring sent to his mother-in-law in Berlin in 1901 had a value of no less than 169,513 Mark.[7]

In the following sections, I will draw on the suggestion of Nils Hansson, Thorsten Halling, and Heiner Fangerau to look at the effect of a prize as the result of the way in which it is "staged, performed, and celebrated" to understand the lukewarm reception of Behring's Nobel Prize.[8] The authors distinguish a "behind the scenes" preceding the prize ceremony, the ceremony or act "on stage" itself, and an "after show party," when the meaning and significance of the event are further shaped by the laureates, the media, and the public.[9] I will argue that courses of events and personal relations pertaining to the "behind the scenes" and, especially, to the "after show party" of Behring's Nobel Prize success contributed to the relative neglect of his triumph during – and immediately after – his lifetime. Before I delve into the different elements of (not) staging and performing his Nobel Prize, however, I will first provide some short biographical note of Behring's life. Next, I will pay special attention to the way in which he used foreign recognition to further his career in Germany in the years before the beginning of the twentieth century. This section will emphasize especially the vigour with which he made use of foreign acclaim in the 1890s. In the light of this vigour, the significance of the question why his Nobel Prize success remained such a minor chapter in his biography during his lifetime will become increasingly clear.

In the subsequent sections, I will discuss the contexts within which Behring's career developed and the way in which they shaped the place that his Nobel Prize would assume in his reputation in his home country. After discussing concisely Behring's selection for the Nobel Prize and the subsequent ceremony in Stockholm, I will examine more closely Behring's – often strained – relations with his German scientific peers. Next, I will investigate Behring's reputation as a heroic and

successful fighter of deadly disease among a broader public. The combination of the weakness of his ties to his medical and bacteriological peers, the strength of his ties to the Prussian state, and the allure of his heroic reputation among a broader audience will shed a light on the question of why neither Behring nor others were particularly keen on drawing on his Nobel Prize as a primary reason for recognizing his excellence. His excellence was, after all, widely recognized. The career overview celebrating his sixtieth birthday cited above was not the only publication to praise his "creative genius" and the "grand reshaping" of medical knowledge and practice that was his most famous accomplishment, the invention of serum therapy.[10] Finally, I will briefly reflect on how the way in which Behring was able to stage his Nobel Prize success sheds light on ideals of good scholarship and the appreciation of specific scholarly personae in early-twentieth-century Germany.

Early success and international acclaim

Emil Behring was born in 1854 in Hansdorf, a village in the Province of Prussia in modern-day Poland.[11] He studied medicine in Berlin, where he earned his doctorate in 1879, and his licence to practise medicine in 1880. Subsequently, he found employment as an army doctor in eastern Prussia. In this capacity he was stationed at the Pharmacological Institute in Bonn between 1887 and 1889, after which he was dispatched to Robert Koch's (1843-1910) Hygienic Institute at the University of Berlin. Because he proved to be a valuable collaborator on the institute's research programs, he followed Koch when he was appointed as director of the newly established Institute for Infectious Diseases in 1891. It was at this institution that Behring carried out most of the research that would eventually result in his Nobel Prize success ten years later. As one of Koch's most trusted and qualified assistants, he had the opportunity to do extensive and innovative research into the development of a blood serum against diphtheria.

In this paper, I will not delve into the methodological and technical details of Behring's work.[12] Since the assessment of a researcher's excellence and the reception of a Nobel Prize take shape – at least to some extent –through interactions with and between their peers, I will study more closely somesome of the colleagues who contributed to Behring's success. Even if Koch was his supervisor during his years in Berlin, he was not his closest collaborator on the diphtheria blood serum. At least three people at Koch's research institutes stand out as key contributors to Behring's research programme: Shibasaburo Kitasato (1853-1931), Erich Wernicke (1859-1928), and Paul Ehrlich (1854-1915). Kitasato collaborated with Behring on the development of blood serums at Berlin's Hygienic Institute. The parallel work of Behring and Kitasato on diphtheria and tetanus would lay the groundwork of

their new approach towards immunity that was first made public in a co-authored article in 1890.[13] Wernicke was Behring's closest collaborator after he had followed Koch to the Institute for Infectious Diseases and Kitasato had returned to his home country of Japan.[14] Wernicke's contributions were crucial: while Behring struggled with poor health, Wernicke attended to most of the all-important animal testing.[15] Finally, the contributions of Paul Ehrlich, another researcher at the Institute for Infectious Diseases in the early 1890s, made it possible to measure the efficacy of the serum accurately, and to establish the correct dosing for the safe and effective treatment of humans.[16]

The culmination of Behring's investigations came in 1894 at a meeting at the Imperial Health Office, attended by fifteen doctors, the office's director Karl Köhler (1847-1912), and Friedrich Althoff (1839-1908), the official in charge of university affairs at the Prussian Ministry of Education. It was decided that the diphtheria serum could be made commercially available at pharmacies across the country.[17] Since Behring had already established a relationship with August Laubenheimer, a member of the board of directors of the *Höchster Farbwerke*, the serum could be made available before the end of the year: the festive opening of the production facility was on 24 November 1894.[18] At this point, Behring had arguably already reached the high point of his career, but this was not reflected in his continued junior position at the Institute for Infectious Diseases. In his correspondence with Friedrich Althoff, he was very clear about the unsustainability of this arrangement, as well as of his own ambitions. In February 1895 he underlined that it was no longer possible "to continue his association with Koch's institute in the old way" and emphasized that a professorship at a Prussian university would be his preferred solution to the increasingly tense relationship with his supervisor.[19]

Behring's demand put Althof in a difficult position, because there was only a very limited number of German professorial chairs that suited Behring's research interests. Behring was also held back in his search for a professorship by his limited teaching experience. So even if Althoff was obviously sympathetic to his cause, he was not able to satisfy Behring's persistent requests as quickly as the latter had been hoping for. At this moment Behring realized the value of the recognition of his peers abroad. In almost all his letters to Althoff he drew attention to the acclaim – and even job offers – he received from representatives of foreign universities and research institutes. His relations with the *Institut Pasteur* were particularly cordial. The Parisian institute's Émile Roux (1853-1933) had been the first to isolate the diphtheria toxin and had played a major role in the clinical implementation of the serum.[20] Behring was also friendly with Roux' colleague, and future Nobel Prize recipient, Élie Metchnikoff (1845-1916). His first urgent appeal to Althoff to find a Prussian professorial chair for him, was ostentatiously written from Paris.

He underlined his warm reception at the *Institut Pasteur*: "I cannot deny that the warm recognition, that I have found here so far, has done me a lot of good; and I have promised to prolong my [...] stay in Paris in the light of the planned expressions of support."[21] Almost two weeks later he reported that his "annoyance with the lack of [German] recognition" was disappearing in the light of his warm reception by representatives of the *Institut Pasteur*, the *Académie Française*, and even the French government.[22] The government had been involved because Roux had insisted that if he were to be made an *Officier de l'Ordre National de la Légion de Honneur* for his work on the diphtheria serum, Behring should certainly receive this same distinction![23]

Behring not only used foreign praise to emphasize that he was worthy of a full professorship at a Prussian university, but he also used job offers of foreign universities and research institutes to put pressure on Althoff. If the Ministry of Education could not provide him with his desired professorial chair, he would simply accept a position elsewhere! In his letter from Paris, he mentioned an offer from the Hungarian state to establish and supervise an institute for serum production. If he was not appointed appointed to a Prussian professorship, Behring added, "I would find myself in the predicament, to look for a professorship abroad and to resort to Hungary for now."[24] He soon added that he had also been invited for a similar position in Russia: "At a dinner, that I attended with the family of prince Oldenburg in Nice, I got the impression, that I can find what I need in Russia."[25] A few weeks later he added even more pressure by stressing that he could find his closest collaborators great jobs "[i]n Paris, in Rome, in Genoa, in Peterburg, in London, in Budapest, [and] in America."[26]

Behring's continuous emphasis of foreign recognition and job offers eventually paid off. In April 1895, Althoff forced the unwilling Faculty of Medicine of the University of Marburg to appoint Behring.[27] In the light of this success, by the end of the late nineteenth century, Behring was aware of the ways in which foreign recognition could help him to find recognition at home as well, and – at least as important – to achieve his professional goals. As a full professor in Marburg, he would continue to engage in new research, with a particularly strong emphasis on contributing to a field in which his former supervisor and current rival Robert Koch had failed earlier; the treatment of tuberculosis.[28] With such ambitions, all social and cultural capital that could be converted into financial support could be very useful. Therefore, it is striking that Behring scarcely tried to capitalize on his Nobel Prize victory. In the following sections I will elucidate this surprising fact in the light of Behring's professional isolation in Germany, on the one hand, and his pre-existing heroic image among the broader public, on the other.

Receiving the Nobel Prize

Behring's reception of the Nobel Prize clearly illustrated his standing outside of Germany. Not only was the prize itself an honour from abroad, but all his nominations were by foreign scholars as well. This was remarkable, because other scholars with many nominations tended to be championed by their compatriots. The Russian physiologist Ivan Pavlov (1849-1936), who had received the most nominations, was primarily supported by members of Petersburg's Faculty of Military Medicine, while the runner-up, the Spanish neuroscientist Santiago Ramón y Cajal (1852-1934) relied heavily on the votes of his colleagues from Madrid.[29] Behring, however, was only nominated by his peers from Switzerland (Berne), Norway (Kristiana), Hungary (Budapest), and the Netherlands (Leiden). None of the people who suggested Behring seem to have been personally close to him. The Swiss anatomist Theodor Langhans (1839-1915) had worked in Marburg for some years but had already been teaching in Berne for more than two decades when Behring arrived there. The Norwegian and Hungarian nominators may have been oriented towards German scholarship in general, but had no personal relationship with Behring, either. The same is true for the nine Leiden professors, who collectively nominated Behring for the Nobel Prize.[30] Surprisingly, none of his admiring friends at the *Institut Pasteur* nominated Behring.[31]

The Nobel Committee only agreed on Behring after long deliberations. The struggle to reach an agreement is best understood as the result of the criteria set out in Alfred Nobel's will: the prize should be awarded to honour discoveries that were first recent and groundbreaking, and second of the "greatest benefit to mankind."[32] The Committee was initially divided among advocates of Ronald Ross's (1857-1932) groundbreaking discovery of the life cycle of the causative agent of malaria, and proponents of Niels Finsen's (1860-1904) new phototherapy for skin diseases. The former was the more groundbreaking theoretical innovation, while the latter was more easily applied in practice and could therefore be seen as an invention of greater immediate benefit to many people.[33] Behring's blood serum therapy provided the perfect compromise. After all, it was both a major theoretical innovation in the study of immunity and obviously of great benefit to those who suffered from this deadly disease. Count Karl Mörner (1854-1917) emphasized both virtues in his speech at the ceremony: "Up until now, serum therapy has had particularly splendid triumphs in the case of diphtheria, but its significance is not limited to this disease […]. The field which is opened up for research by the development of serum therapy has […] no discernible limits."[34]

Even if nobody at the *Institut Pasteur* had nominated Behring, the warmest congratulations immediately came to him from Paris. While Behring was still enjoying the Stockholm celebrations – and before he had even given his acceptance speech

– both Metchnikoff and Roux wrote to congratulate their Marburg colleague. "I hurry to express to you my most heartfelt and sincere congratulations for this high distinction, which you have deserved so fully," wrote Metchnikoff.[35] Émile Roux was even more jubilant on behalf of his whole institute: "We are all cheering at the *Institut Pasteur* at the decision of the Nobel Committee, which rewards your marvelous [sic] discoveries and the great service that you have rendered to mankind."[36] His German peers seem to have been less keen to congratulate their compatriot, even if he had earlier received a short but enthusiastic telegram from Althoff, who sent him his greetings "with a joyous hurrah."[37]

Though the ceremony and the congratulations from Paris reaffirmed Behring's international standing, his acceptance speech showed subtle signs of his less cordial relations with his German peers. After a reflection on the success of his diphtheria serum in the first half of his speech, Behring discussed his more recent research into bovine tuberculosis in its second half. He used the festive occasion of the award show to distance himself from the findings of his former supervisor Koch. The latter had suggested that tuberculosis bacteria might not be the same in humans and cattle. Behring framed most of his Stockholm remarks as a presentation of the results of experiments on goats and cattle, that proved that recently cultivated human tuberculosis cultures were "by no means unharmful" to cattle.[38] To German insiders it was clear that Behring's decision to single out Koch for criticism at this occasion was not part of a friendly, scientific debate. This was especially clear in the light of the fact that the break between them had been solidified by a long litigation process at the Patent Office, in which Koch had unsuccessfully challenged the patentability of a tuberculosis antitoxin developed in Behring's Marburg laboratory.[39]

Isolation among his peers

To many of his German peers, Behring's use of the festive ceremony to engage in such a loaded debate with a highly respected colleague, must have appeared as a typical example of his bellicose character. This aspect of his personality had earlier complicated Althoff's efforts to find a university willing to appoint him as a full professor. When in 1894 a Berlin newspaper reported early successful experiments with the diphtheria serum by the Berlin physician Rudolf Virchow (1821-1902), Behring felt his priority claim was threatened and reacted furiously. Since Virchow had earlier been critical of Behring's theoretical underpinning of the serum's efficacy, Behring chose to frame him as a "medical doctrinaire," whose ideas about the causes of diseases were "heresies," and whose "dogmatism" had resulted in an "inquisition." His serum could certainly never have been developed under the supervision of Virchow![40] Meanwhile, Virchow denied the newspaper's reports and recommended further

research into Behring's serum, that he had happily and successfully administered at Berlin's *Kaiser- und Kaiserin-Friedrich-Kinderkrankhaus*.[41] Althoff's informant in Marburg, Carl Fraenkel (1861-1915), told him that Behring's unnecessarily hostile demeanour towards Virchow had been one of the main reasons why his peers at the Faculty of Medicine preferred to appoint another colleague.[42]

As the soured relationship with his former supervisor Koch suggests, Behring's interaction with his close collaborators could also be awkward. The deterioration of his relationship with Koch was certainly not only Behring's fault. After all, Koch's impulse to protect his own primacy in the fight against tuberculosis by challenging Behring's patents was a major contributing factor to the disintegration of their cordial relationship. However, Behring's troubles with maintaining amicable ties with his colleagues could not always be blamed on the others. This can be illustrated by a closer look at his relationships with his peers who had made major contributions to the development of the diphtheria serum. The only relationship that did not sour was the one with Kitasato. Kitasato had returned to Japan in the early 1890s, and he soon established his own Institute for Study of Infectious Diseases there. At his departure, he let Behring know that he counted "the time of my collaborative work with you among the most enjoyable hours of my stay in Berlin."[43] A few years later he would send one of his most promising students, Taichi Kitashima (1870-1956), to Marburg to study with Behring.[44] Kitashima would stay in Marburg for four years, seemingly to the satisfaction of both Behring and Kitasato. He would later succeed the latter as director of the Tokyo research institute, and would stay on friendly terms with his German teacher. Ten years after Behring's death Kiashima would still visit Behring's widow on a trip to Europe.[45]

Behring's relationships with his collaborators who stayed in Germany, Erich Wernicke and Paul Ehrlich, were much more complicated. Wernicke was five years younger than Behring and when he first arrived at the Institute for Infectious Diseases he was "caught by Behring's towering idiosyncratic character."[46] In the early 1890s, their relationship was very intimate. Behring even suggested to share an apartment and observed that they were "already semi-married, after all."[47] It would not be long, however, for their relationship to take a turn for the worse. Wernicke soon started to accuse Behring of bossing him around, to which Behring curtly reacted with the admonition to please write him "many, but less reproachful, letters."[48] A few years later, their relationship would sour even further, when Wernicke complained about the meagre financial rewards he received for his indispensable contributions to the commercially very successful diphtheria serum. Behring rebuked him by simply claiming to own the full "scientific and financial rights of discovery."[49] Their relationship only improved when Wernicke later moved far away from Marburg after he had been appointed as director of the Hygienic Institute of Posen in 1899.

Like Wernicke, Ehrlich was disappointed about his rewards for his contributions to the diphtheria serum. Behring had convinced him to abstain from a share of the serum's profits, and had promised that he would surely arrange a secure, permanent, position as director of an independent serum testing institute for him.[50] The establishment of this institute and the appointment of Ehrlich took longer than he had hoped for, and, once he had started in this new position, he was dissatisfied by the fact that Behring seemed to conceive of it as a state-sponsored support organization for his own research programme rather than as a truly independent testing institute. The relationship between Behring and Ehrlich never fully recovered. Even Althoff could not fix the unease between the two great bacteriologists. When Althoff pressed Ehrlich to work with Behring again, Ehrlich curtly replied that collaborating with Behring could only be expected from "a slavish character, but not from an independent researcher with the greatest thirst for freedom (such as I am, after all)."[51] Through the years, Behring would lose more professional friends. Eventually, he would even admit to Wernicke that "among the many reproaches I make myself, one of the most severe is that through the years I have lost one friend after the other by my own fault."[52]

Scientific hero or benefactor of humanity?

Behring's troubled relations with his German peers limited the ways in which he could stage his Nobel Prize reception. His colleagues were largely unwilling to recognize him proudly as a shining example of the internationally recognized greatness of German science. Most of the few compatriots who were willing to celebrate his Nobel Prize with him were not prominent scientists themselves. Althoff, even if he maintained close relations with several prominent medical scholars, had no training in medicine. Julius Holtz (1836-1911), who sent his congratulations to Else Behring (1876-1936) while her husband was in Stockholm, was a representative of the pharmaceutical industry rather than of the academic medical community.[53] Ernst Schweninger (1850-1924) was one of the few medical professors to express his happiness about Behring's Nobel Prize.[54] However, Schweninger's reputation among his peers was even worse than Behring's: while they tended to dislike Behring's character but did not doubt his capabilities, Schweninger was seen as both an unpleasant person and an unqualified scholar.[55] Without the support of his scientific peers, it was neither easy nor obvious for Behring to present himself as a proud paragon of German science. And since the Nobel Prize in Medicine had also been awarded based on its recipient being of the "greatest benefit to mankind," it made more sense for Behring to present himself as a great benefactor of humanity rather than as a great German scientist.

After all, in the eyes of a broader, non-academic, audience, Behring's Nobel Prize did not add significantly to his already stellar reputation. Even if few members of

this wider audience may have cared about this twentieth-century investigations into bovine tuberculosis, he was loved and admired for the success of his diphtheria blood serum. Throughout the years, Behring received thankful letters from parents whose children had been cured from diphtheria by his invention. In the light of the high mortality rate among children with diphtheria before the invention of the serum, the tremendous thankfulness of the families was understandable. A quick look into the discourse of gratitude in the letters that Behring continued to receive throughout the late 1890s and the early 1900s, illustrates how little the Nobel Prize could add to the lofty popular image of Behring as "the benefactor of humanity" and "the saviour of the children."

A letter of thanks Behring received from a grateful Moscow father in November 1901 is quite representative of the kind of praise he received: "I had the opportunity to observe how the serum – an everlasting monument for your honour for eternity – works like a miracle, and I believe I am not alone when I allow myself to put my gratitude for the saviour of countless lives, the comforter of innumerable, saddened hearts of parents [...] into words."[56] This emphasis on the extent to which Behring's serum had benefited not just the families of the individual letter writers, but humanity at large, was a recurring theme. Another Moscow father was even more jubilant than the one cited above: "My soul is so full of the most profound gratitude for you, whose great discovery has given the wretched people such a remarkable remedy to fight diphtheria, this dreadful scourge of humanity. [...] The thought about how much you have done for wretched humanity, as well as boundless gratitude make me cry tears of the most profound emotion."[57]

One way for grateful parents to express the profoundness of their thankfulness was by sending unsolicited presents to Marburg. The first Moscow father quoted above added 100 Mark to his letter. He left Behring free to donate this money to a charity of his own choice. One week before Christmas 1899, the grateful painter Leo Reiffenstein (1856-1924) sent Behring a painting that he had named *Weihnachtslied* (Christmas Song): "I do not, alas, know whether it suits your taste and whether it will be able to give you the joy that we hope for; may you just recognize the desire to give you a minor favour in return [...] for the great blessing that you have given all of humanity."[58] Another way in which parents expressed the depth of their admiration for Behring was by using language that bestowed an almost godly status on him. A professor at the Prussian military academy wrote: "While he was growing up to be a promising young man, my child has always been reminded that, next to God, he should always gratefully recognize you as the provider of his new life."[59]

A special category among the many letters of thanks that Behring received were those written by recovered children themselves. Sometimes these letters drew on the discourse of Behring's God-like status: "I am 10 years old; had a terrible diphtheria and would surely have died, if the doctor would not have injected me with your

serum. I owe my life only to God and to you."[60] A few months before Behring heard about his Nobel Prize, a German-American girl was less lofty but not less grateful in the note she sent: "I am eight years old. In March I was very sick and now I am healthy and happy again; my dad told me that your medicine has cured me and therefore I would like to thank you. […] I am tired. Good night, dear *Herr Doktor*, I would love to know what you look like."[61] Another young girl wrote Behring in a somewhat more formal style but was as thankful as the others: "Forgive me if I, as a young girl unknown to you, thank you sincerely for inventing the serum. I was seriously ill with diphtheria this year and I definitely owe my life to the immediate use of the serum! I could not resist the wish to send you my most sincere gratitude."[62]

The praise for Behring in the popular press that followed were discourses of Behring as benefactor of humanity and saviour of the children rather than those of scholarly excellence we tend to associate with the Nobel Prize for Medicine in the twenty-first century. Even one of his closest scientific collaborators in Marburg, Paul Römer (1876-1916), emphasized how Behring's work has been of the greatest benefit to mankind over a discussion of his scientific genius by titling a celebratory review of Bering's career "A Benefactor of Humanity."[63] Römer's review was written in honour of Behring's sixtieth birthday. The local newspaper also reported on the festivities and underscored that Behring's work not only had scholarly merit but also had great "merit for humanity."[64] The newspaper's reporting did not go into any detail about Behring's scholarly accomplishments, but focused mostly on the celebrations itself, highlighting the floral arrangements, the congratulations from local gymnastic societies (*Turnvereine*), Behring's honorary citizenship of the city of Marburg, and the congratulatory address presented by the dean of Marburg's Faculty of Medicine. The newspaper further emphasized that the certificate for Behring's honorary citizenship, the imagery added to the Faculty's address, and a celebratory postcard had all been designed by local artist Otto Ubbelohde (1867-1922). All things considered, the local reporters wrote about Behring as a local celebrity rather than as a medical researcher of international renown.

(Not) Staging a Nobel Prize

Two of the more complex and compelling reasons why Behring's Nobel Prize victory was scarcely used as an opportunity to stage an image of scientific excellence in his home country have been treated in-depth above. First, Behring was a bit of an outcast in the circles of his medical and bacteriological peers. Second, his popular image as a noble benefactor of mankind was already well-established by the time he received his Nobel Prize, which lowered the need to lean into the image of scientific excellence that his Nobel Prize success would have allowed him to stage. While

discussing these two points, I have also touched on some other circumstances that may have shaped Behring's ability and willingness to use his Nobel Prize victory as an opportunity to underline his scientific excellence in the eyes of both his peers and a broader audience. For a more comprehensive view of the contexts that contributed to the insignificance of the Nobel Prize in early accounts of Behring's life, account must be taken of two circumstances that I have only hinted at above.

The first of these circumstances was suggested in the discussion of Behring's reliance on foreign acclaim to force Althoff at the Ministry of Education to secure him a full professorship at a Prussian university. Behring's willingness to pressure Althoff was the result of two things. First, he was conducting his research at Koch's Institute for Infectious Diseases, which was bound to eventually limit his freedom to engage in his own research. Second, he was not yet sure that Althoff would be willing and able to find him the professorial chair he desired. When he received his Nobel Prize almost a decade later, all these limiting circumstances had been handled. Since he was secure in his position as a full professor at Marburg, he no longer had to worry about his research priorities being steered by anyone else. In addition, Althoff had proven to be a trustworthy and capable ally at the ministry, which took away the perceived need to use foreign praise to put pressure on him. Althoff even became a friend of the Behring family. In 1903 he even accepted the Behrings' invitation to be godfather to their third son, Hans Adolf.[65]

The second way in which Behring's life was very different in 1901 than it had been in the early 1890s was also suggested above, when I drew attention to his collaboration with the *Höchster Farbwerke* to make his diphtheria serum available at pharmacies across the nation. The mass production of his serum not only impacted his life by provoking awkward disagreements about financial compensation with his close collaborators Wernicke and Ehrlich, it also made him a rich man with warm relationships with the pharmaceutical industry. During the first year of its production, the serum generated a profit of almost 450, 000 Marks, and in the second year this number rose even further to more than 750,000 Marks.[66] Behring's contract at the time stipulated that he would receive half of these profits, so between 1894 and 1896 alone his serum made him more than half a million Marks.[67] Because of this commercial success, Behring's relationships with the industry increased while his relationships with his academic peers dramatically deteriorated. The new financial security also ensured that he would be much less dependent on other parties' willingness to invest in his endeavors than ever before, which reduced the need to put additional effort into using his Nobel Prize to stage himself as an excellent, groundbreaking researcher, who both needed and deserved financial support to carry out his new promising research projects.

With these final additions, it has become clear why receiving the Nobel Prize seems to have had so little impact on the life and early perception of Emil Behring.

There was no evident, straightforward way to use his victory to stage himself as an exemplar of scientific excellence. This was the case both because there was only limited *opportunity* to do this, and because there was very little *need* to do this. The opportunity was limited because Behring had set his mind on having a career in Germany. However, his relationships with most other prominent medical and bacteriological researchers in Germany were badly tarnished. Therefore, the audience most likely both to recognize the groundbreaking merit of his work and to validate his scientific excellence in the eyes of a broader audience, was reluctant to celebrate his Nobel Prize with him. In the years after his Nobel Prize, Behring did not notice an increase in his colleagues' willingness to engage with him. On the contrary, he soon started noticing that he was occasionally no longer even invited to scientific conferences in his own field of research![68] By 1906, Behring even characterized himself as an "outsider" in "our medical university life" in a disheartened letter to Althoff.[69]

The lack of possibilities to stage his excellence in front of an audience of his peers, was to some extent compensated by a number of circumstances that together removed the need to seek their recognition. First, since the 1890s he had developed a strong reputation not primarily as an excellent researcher but as a civic hero: a benefactor of mankind and a saviour of th children. Among a broad public, he enjoyed a reputation that was even loftier than that of just another excellent German academic. Second, he no longer needed a reputation for scientific excellence to continue his research on his own terms. He had the secure basis of a permanent position as a full professor, an extraordinarily good relationship with the most influential individual in the field of university policy at the Ministry of Education, and a good working relationship with the pharmaceutical industry. He could not expect to gain a great deal by staging himself as an excellent researcher on the basis of his Nobel Prize success: apart from the sympathy of his peers, he had everything he could wish for.

Behring's modest efforts and success in staging his election for the Nobel Prize highlight both his outsider status among his peers and his heroic image among a broader audience. This also sheds light on early-twentieth-century ideals of good scholarship. The concept of the scholarly persona is particularly suited to reflect on the relation between individual biography and shared conceptions of what it means to be an exemplary scholar. This becomes particularly apparent in the light of the fact that this concept allows both for the investigation of conceptions of scholarly virtue as they are shared in scholarly communities and for the search for the ways in which individual scholars stage their careers and fashion themselves as deserving members of such communities.[70] The lukewarm reception of Behring's Nobel Prize draws attention to the existence of shared ideals of scholarship, as well as the ways in which such ideals are intertwined with the individual scholar's ability and willingness to perform them.

In breaking – or at least failing to live up to – some of the norms of good scholarship, Behring's example illustrates the scholarly virtues that were most highly valued in early-twentieth-century German academia. To be sure, he did live up to some weighty expectations: nobody denied, for example, the originality of his thought or his work ethic. He fell short, however, in regard to the norms and virtues that shape the social texture of the scholarly world. His harsh public attacks of Virchow suggested a lack of both respect and modesty; his relationships with (former) collaborators could be interpreted as lacking willingness to acknowledge others' contributions to his success, as well as a lack of personal loyalty; his attempts to control an independent serum testing institute were seen by its director Ehrlich as a threat to his intellectual independence.[71] It is worth noting, however, that none of this damaged his reputation among a broader audience. Apparently, public and academic ideals of good scholarship did not overlap entirely. In light of the popular admiration for his accomplishments, Behring was able to ignore academic conceptions of scholarly virtue at least to some extent. However, by refusing to embody the persona that his academic peers expected him to adhere to, by embracing his reputation as a civic hero at least as much as a scientific hero, he limited his opportunities to stage his Nobel Prize as a scientific triumph.

Therefore, the decision of the Nobel Committee to give its first Nobel Prize in Physiology or Medicine to Behring, hardly had any impact on the latter's career. The committee's selection seems to have been fortunate, however, in at least one way. The bar that had been set for this prize was high: its recipient was expected not only to have made a discovery that was both recent and groundbreaking, this discovery was also expected to have been of the "greatest benefit to mankind." Only very few groundbreaking discoveries prove to be of the greatest benefit to mankind while still being recent. With his recent, groundbreaking, child-saving diphtheria serum, Behring gave the Nobel Committee the prize recipient it was looking for. In retrospect, Behring may have done more for the prestige of the Nobel Prize than the Nobel Prize has done to (the memory of) his career.

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Notes

1 Paul de Kruif, *Microbe Hunters* (New York: Blue Ribbon Books, 1926), 184–206.

2 Heinz Zeiss and Richard Bieling, *Behring: Gestalt und Werk* (Berlin-Grunewald: Bruno Schultz, 1940), 276.

3 George H.F. Nuttall, "Biographical Notes Bearing on Koch, Ehrlich, Behring and Loeffler, With Their Portraits and Letters from Three of Them," *Parasitology* 16 (1924), 232.

4 Hans Much, "E. von Behring. Ein Wort zu seinem sechzigsten Geburtstage," *Berliner klinische Wochenschrift* 11 (1914), 1–3.

5 Derek S. Linton, *Emil von Behring: Infectious Disease, Immunology, Serum Therapy* (Philadelphia: American Philosophical Society, 2005), 238.

6 Nils Hansson and Ulrike Enke, "Emil von Behring: erster Nobelpreisträger für Medizin – Die Bekämpfung der Diphterie," *Deutsche medizinische Wochenschrift* 140 (2015), 1898. The comparison between the Olympics and the Nobel Prize is particularly convincing because the first modern Olympics took place only five years before the first Nobel Prize ceremony. In both cases its international appeal was clear from the beginning.

7 Emil von Behring to Elise Spinola, 12 December 1901, Behring-Nachlass digital (hereafter BNd): EvB/B 214/32.

8 Nils Hansson, Thorsten Halling and Heiner Fangerau, "Introduction," in *Attributing Excellence in Medicine: The History of the Nobel Prize*, eds. Nils Hansson, Thorsten Halling and Heiner Fangerau (Leiden: Brill, 2019), 5.

9 Ibid., 3.

10 Much, "E. von Behring," 2.

11 These biographical details are based on Linton, *Emil von Behring*, 17–40 and Zeiss and Bieling, *Behring*, 13–53.

12 For a concise overview of the way in which Behring's serum built and innovated on the research of his peers, see: Christoph Gradmann, "Locating Therapeutic Vaccines in Nineteenth-Century History," *Science in Context* 21 (2008), 145–160.

13 Emil Behring and Shibasaburo Kitasato, "Über das Zustandekommen der Diphtherie-Immunität und der Tetanus-Immunität bei Thieren," *Deutsche medizinische Wochenschrift* 16 (1890), 1113–1114. Emil Behring was elevated to nobility in January 1901, which allowed him to call himself 'von Behring. I will refer to 'Emil Behring' when citing sources from before January 1901 and to 'Emil von Behring' when citing later sources. Some more details about the collaboration between Behring and Kitasato are provided in Franz Luttenberger, "Excellence and Chance: The Nobel Prize Case of E. von Behring and É. Roux," *History and Philosophy of the Life Sciences* 18, (1996), 225–227.

14 An extensive investigation of the collaboration between Behring and Wernicke can be found in Erika Schulte, *Der Anteil Erich Wernickes an der Entwicklung des Diphtherieantitoxins* (Berlin: Mensch & Buch, 2001).

15 Erich Wernicke to Bernhard Möllers, 29 August 1924, NBd: EvB/F 5.

16 Axel C. Hüntelmann, *Paul Ehrlich: Leben, Forschung, Ökonomien, Netzwerke* (Göttingen: Wallstein Verlag, 2011), 91–108; Ernst Baumler, *Paul Ehrlich: Forscher für das Leben*, 3. Durchgesehene Auflage (Frankfurt am Main: Edition Wötzel, 1997), 92–93.

17 Beratung betreffend das Diphtherieserum [o. Datum; sich aber am 3.1.1895], BNd: EvB/B196/5.

18 Linton, *Emil von Behring*, 179.

19 Emil Behring to Friedrich Althoff, 8 February 1895, Geheimes Staatsarchiv Preußischer Kulturbesitz (hereafter GStA PK), VI. HA, Nl Althoff, No. 325.

[20] Luttenberger, "Excellence and Chance," 238.
[21] Emil Behring to Friedrich Althoff, 24 December 1894, GStA PK, VI. HA, Nl Althoff, No. 325.
[22] Emil Behring to Friedrich Althoff, 2 January 1895, GStA PK, VI. HA, Nl Althoff, No. 325.
[23] Ulf Lagerkvist, *Pioneers of Microbiology and the Nobel Prize* (New Jersey: World Scientific, 2003), 99.
[24] Emil Behring to Friedrich Althoff, 24 December 1894, GStA PK, VI. HA, Nl Althoff, No. 325.
[25] Emil Behring to Friedrich Althoff, 24 January 1895, GStA PK, VI. HA, Nl Althoff, No. 325.
[26] Emil Behring to Friedrich Althoff, 8 February 1895, GStA PK, VI. HA, Nl Althoff, No. 325.
[27] I have described this process in more detail in Christiaan Engberts, *Scholarly Virtues in Nineteenth-Century Sciences and Humanities: Loyalty and Independence Entangled* (Cham: Palgrave MacMillan, 2022), 153–156.
[28] For Koch's failed attempts to find a cure for tuberculosis, see: Christoph Gradmann, "Robert Koch und das Tuberkulin – Anatomie eines Fehlschlags," *Deutsche medizinische Wochenschrift* 124 (1999), 1253–1256. For more on Behring's tuberculosis research, see: Linton, *Emil von Behring*, chapter 6.
[29] Ulrike Enke, "„Der erste zu sein." – Über den ersten Medizinnobelpreis für Emil von Behring im Jahr 1901," *Berichte zur Wissenschaftsgeschichte* 41, No. 1 (2018), 24. Even though Enke identifies Ramón y Cajal as receiving the second-most number of nominations, Luttenberger identifies Behring as the runner-up and suggests that Ramón y Cajal received fewer votes than Ronald Ross, who received seven: Luttenberger, "Excellence and Chance," 229.
[30] Enke, "Der erste zu sein," 24–25.
[31] Nor did anyone at the *Institut Pasteur* nominate its very own Émile Roux, see: Luttenberger, "Excellence and Chance," 230.
[32] Hansson, Halling and Fangerau, "Introduction," 1.
[33] Luttenberger, "Excellence and Chance," 231–232.
[34] Quoted in Scott H. Podolsky, "From Global Recognition to Global Health: Antimicrobials and the Nobel Prize, 1901-2015," in *Attributing Excellence in Medicine: The History of the Nobel Prize*, eds. Nils Hansson, Thorsten Halling and Heiner Fangerau (Leiden: Brill, 2019), 83.
[35] Élie Metchnikoff to Emil von Behring, 11 December 1901, BNd: EvB/B 101/13.
[36] Émile Roux to Emil von Behring, 11 December 1901, BNd: EvB/B 126/6.
[37] Friedrich Althoff to Emil von Behring, 19 November 1901, BNd: EvB/B 3/17.
[38] Emil von Behring, *Nobel Lecture: Serum Therapy in Therapeutics and Medical Science*, 12 December 1901, https://www.nobelprize.org/prizes/medicine/1901/behring/lecture/.
[39] Linton, *Emil von Behring*, 265–268.
[40] Emil Behring, "Das neue Diphtheriemittel," *Die Zukunft* 9 (1894), 97–100 and 249–264.
[41] Rudolf Virchow to Friedrich Althoff, 17 October 1894, GStA PK, VI. HA, Nl. Althoff, No. 326.
[42] Carl Fraenkel to Friedrich Althoff, 18 December 1894, GStA PK, VI. HA, Nl. Althoff, No. 326.
[43] Shibasaburo Kitasato to Emil Behring, 27 March 1892, BNd: EvB/B 70/2.
[44] Ulrike Enke and Aeka Ishihara, "Ein Japaner in Marburg: Aus den Erinnerungen – *Jiden* – des japanischen Bakteriologen Taichi Kitashima (1870-1956)," *NTM Zeitschrift für Geschichte der Wissenschaften, Technik und Medizin* 25 (2017), 239–240.
[45] Private guestbook of Emil and Else von Behring, entry for 8 April 1927, BNd: EvB/L 266.
[46] Erich Wernicke to Bernhard Möllers, 29 August 1924, BNd: EvB/F 5.
[47] Emil Behring to Erich Wernicke, 22 November 1891, BNd: EvB/B B 1/177 and 15 February 1892, BNd, EvB/B 1/186.
[48] Emil Behring to Erich Wernicke, 25 February 1897, BNd: EvB/B B 1/244.
[49] Emil Behring to Erich Wernicke, 2 January 1899, BNd: EvB/B B 1/248.
[50] Hüntelmann, *Paul Ehrlich*, 104.
[51] Paul Ehrlich to Friedrich Althoff, 12 September 1903, GStA PK, VI. HA, Nl Althoff, No. 709.

[52] Emil von Behring to Erich Wernicke, 12 December 1908, BNd: EvB/B 1/273.

[53] Julius Holtz to Else Behring, 11 December 1901, BNd: EvB/B 171. For more on Julius Holtz, see his entry in *Deutsche Biographie*: https://www.deutsche-biographie.de/pnd137067216.html?language=de.

[54] Ernst Schweninger to Emil von Behring, 3 February 1902, BNd: EvB/B 138/2.

[55] See, for example, the remarks in Karl Ed. Rothschuh, "Ernst Schweninger (1850-1924) Zu seinem Leben und Wirken: Ergänzungen, Korrekturen," *Medizinhistorisches Journal* 19 (1984), 250–258.

[56] Ludwig Mandl to Emil Behring, 15 November 1900, BNd: EvB/B 161/33.

[57] N. Kovalensky to Emil von Behring, 22 December 1902, BNd: EvB/B 161/26.

[58] Leo Reiffenstein to Emil Behring, 18 December 1899, BNd: EvB/B 161/37.

[59] Wilhelm Julius von Goerne to Emil von Behring, 13 September 1903, BNd: EvB/B 161/15. The letter is signed "von Goerne an der Haupt-Kadetten-Anstalt." I have assumed it is Wilhelm Julius von Goerne because he is mentioned as professor at this academy at the website of the *Deutsche Gesellschaft für Ordenskunde*: Nikolai Scheuring, *Liste der Ehrenritter des Johanniterordens 1853-1918*, https://www.deutsche-gesellschaft-fuer-ordenskunde.de/DGOWP/wp-content/uploads/2021/07/Liste_Ehrenritter_Johanniterorden_N_Scheuring.pdf.

[60] Ebba Othman to Emil von Behring, no date [probably around 1908], BNd: EvB/B 161/36.

[61] Gerda Fischer to Emil von Behring, 18 June 1901, BNd: EvB/B 161/8. My italics.

[62] Berta Schleicher to Emil von Behring, 11 September 1910, BNd: EvB/B 161/40.

[63] Paul Römer, "Ein Wohltäter der Menschheit," *Reclams Universum. Moderne Illustrierte Wochenschrift* 30 (1914), 84–87. Accessed at BNd: EvB/S 5/4.

[64] "Geheimrat v. Behrings 60s Geburtstag," *Oberhessische Zeitung* 49 (1914), 1. Accessed at BNd: EvB/S 5/3.

[65] Else von Behring to Friedrich Althoff, 3 November 1903, GStA PK, VI. HA, Nl Althoff, No. 668; Friedrich Althoff to Emil von Behring, 14 December 1903, BNd: EvB/B 3/24.

[66] Based on a note reading '*Diphterie Heilserum*': BNd: EvB/B 196/115. The profit for 1894 is also mentioned in a report by *Farbwerke* director Laubenheimer: BNd, EvB/B 196/7.

[67] Vertrag zwischen Emil Behring und den Farbwerken Vormals Meister, Lucius & Brüning betreffend 'Gewinnung von Diphterie-Heilserum', § IV, EvB/B 196/2/4.

[68] Ferdinand Hueppe to Emil von Behring, 13 February 1906, GStA PK, VI. HA, Nl Althoff, No. 668.

[69] Emil von Behring to Friedrich Althoff, 15 February 1906, GStA PK, VI. HA, Nl Althoff, No. 668.

[70] For more detail on the first approach, see: Herman Paul, "What is a Scholarly Persona? Ten Theses on Virtues, Skills, and Desires," *History and Theory* 53 (2014), 348–371. For more details on the second approach, see: Mineke Bosch, "Scholarly Personae and Twentieth-Century Historians: Explorations of a Concept," *BMGN – Low Countries Historical Review* 131 (2016), 33–54.

[71] I have discussed the relationship between Behring and Ehrlich in more detail in Engberts, *Scholarly Virtues*, 193–194.

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