

**«Sport as an Early Form of Neurorehabilitation»:
Some Historical Considerations on the Changes in the Therapeutic
Approach of the German-British Neurosurgeon Ludwig Guttmann
(1899–1980) during his Forced-Exile»***

By Frank W. Stahnisch

Summary: One of the co-founders of the Paralympic Games was LUDWIG GUTTMANN, who fled the Nazi regime in 1933 and emigrated to Cambridge, England where he continued to practice as a clinical neurologist in affiliation with the Radcliffe Infirmary. However, we see the impact this exile had upon his clinical research program when he was forced to forsake his profession of being a trained neurosurgeon to becoming a clinical neurologist. It is well known that Sir LUDWIG later developed into a renowned rehabilitation specialist for paraplegia and became a “father” of the paralympic sports movement during his career – something that initiated with the early “hospital games” at Stoke Mandeville. The fascinating biography of GUTTMANN’s work embodies many traits and assumptions from the increasingly interdisciplinary and organized field of neuroscience in the first half of the 20th century. The aims of this paper are: 1) to introduce some general considerations on the process of forced-migration in the neurosciences, 2) to map the non-linear biographical development in GUTTMANN’s multi-

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faceted career and 3) to provide a perspective that challenges the frequent belief of a linear "brain gain" through the process of forced migration.

Keywords: Sir Ludwig Guttmann, Neurorehabilitation, Functional Enhancement, National Socialism, Germany, 1933–1945

«Sport als frühe Neurorehabilitation»: Einige historische Überlegungen zur Veränderung des therapeutischen Ansatzes im Exil bei dem deutsch-britischen Neurochirurgen Ludwig Guttmann (1899–1980)»

Zusammenfassung: Eine der Gründungsfiguren der internationalen „Paralympischen Spiele“ war der in Deutschland geborene Neurochirurg LUDWIG GUTTMANN, der nach seiner Ausbildung bei OTFRID FOERSTER (1873–1941) und verschiedenen klinischen Tätigkeiten an Krankenhäusern in Oberschlesien und in Breslau 1939 vor dem NS-Regime nach Cambridge in Großbritannien emigrieren musste. Während seiner Zeit im britischen Exil war er zunächst als *Public Health*-Forscher auf dem Gebiet der neurologisch-psychiatrischen Infrastruktur in Großbritannien tätig, bevor es ihm gelang, wieder als Neurologe klinisch zu arbeiten. Dieser Beitrag geht der Frage nach, welche konzeptuellen wie chirurgisch-praktischen Ressourcen von LUDWIG GUTTMANN aus der deutschen Neurochirurgie in die britische Versorgungslandschaft, besonders auf dem Gebiet der „Frührehabilitation“, mitgebracht wurden. Zugleich soll die Einführung von sportiven Elementen in die neurologische Frührehabilitation und dann sukzessive mit den ersten *Stoke Mandeville Hospital Games* die Entwicklung der Paralympischen Spiele erörtert werden. Dieser von GUTTMANN entscheidend angestoßene Trend wurde bald von vielen Neurochirurgen und Neurologen weltweit unterstützt, eine Entwicklung, die die disziplinüberschreitende Bedeutung der klinischen Neurowissenschaften im 20. Jahrhundert unterstreicht.

Schlüsselwörter: Sir Ludwig Guttmann, Neurorehabilitation, Funktionelles Enhancement, Nationalsozialismus, Deutschland, 1933–1945

“[Until] the later stages of the Second World War [...], it would have been quite inconceivable to assume that gymnastic activities, let alone competitive sport, could play a part in the treatment of people paralysed from the waist, chest and even higher levels, as a result of injury or disease of the spinal cord.”

(GUTTMANN, 1976, p. 19)

1. Introduction

The current article forms part of a recent historiographical project about the fate and development of exiled physicians and researchers following the process of forced-migration of hundreds of German-speaking neurologists and psychiatrists that ensued after the Nazi regime came into power in 1933.¹ LUDWIG GUTTMANN was one of the most prominent neurologists who were forced to leave Germany and, like many exiled physicians, had to find a new life and develop a new career in England when he escaped the Nazis under quite complex circumstances.² He is often referred to as “the father of the Paralympic movement”;³ and most certainly, without his enthusiasm for therapeutic and social changes in the support of people with spinal cord injuries, the Paralympics might never have seen the light of the day.

Despite the already extensive research literature on GUTTMANN’s biography and his achievements in neurology and the disabled sport movement, this medical history article explores the interrelationship of the Paralympics movement together with the emergence of early forms of medical neurorehabilitation.⁴ The historiographical interest stems from an ongoing interdisciplinary research project by the author in conjunction with a Canadian disability scholar, a sports historian, a neuroethicist, a kinesiologist, as well as a sports economist who is also a member of the Canadian Paralympic Committee

¹ See, for example, the related publications of ASH and SOELLNER 1996, pp. 1–19, KARENBERG 2007, esp. pp. 168–170, STAHNISCH 2008a, pp. 414–442, and 2009b, pp. 29–60.

² On the forced-migration of neurologists, psychiatrists and psychoanalysts in the UK see, for example, in: WEINDLING 1996, pp. 86–114, PETERS 1996, FLECK 1996, pp. 198–223, or: PEIFFER 1998a, pp. 99–109, and 1998b, pp. 184–190.

³ Cf. GOODMAN 1986, pp. 11–42, and SCRUTON 1998, p. 11.

⁴ See also in: SCHUELTKKE 2001, pp. 300–307.

(CPC).⁵ The research angle taken in this article regards the multiple contingencies in the historical process of the forced-migration of intellectuals, researchers and physicians –⁶ and in this specific case, that of GUTTMANN.



Fig. 1: Ludwig Guttman opening the Hospital Games for the Paraplegic in Stoke Mandeville (near London) in 1952. Photograph courtesy of the Wellcome Library of the History of Medicine in London, and of International Wheelchair & Amputee Sports Federation (IWAS), Founders of the Original Paralympic Games), England (PP/GUT/B.8/2), box 7, photograph L0061040, n.pag.

All of this led to the latter's emigration to Cambridge where he had constrained beginnings in the British health care system as well as the consecutive changes that arose from being a well-versed operating neurosurgeon to becoming a clinical neurologist and therapist.⁷ It may come as some surprise then for neurologists in the field as well as medical and sport historians,⁸ that when one considers the many different areas in which GUTT-

⁵ More information on this research project can be retrieved online: University of Calgary: Community Rehabilitation and Disability Studies Program: Grants Received by CRDS Members. 30. Nov. 2011. http://www.crds.org/research/grants_received/Gregor_Wolbring.shtml (10. Dec. 2011).

⁶ FLEMING and BAYLING 1969.

⁷ Compare also: STAHNISCH and TYNEDAL 2012, 3 pp.

⁸ The author of this article was himself astonished, when in 2006 – while having just started preliminary research on émigré German-speaking neurologists and psychiatrists – he received a

MANN had been professionally active, having been a neurorehabilitation specialist at the Radcliffe Infirmary in Cambridge⁹ and at the Stoke Mandeville Hospital in Aylesbury, he ended up becoming an important founder of the Paralympics movement and even led a laboratory-based research program where he pursued specialized microanatomical investigations of nervous regeneration resulting from peripheral and central nerve injuries.

SIR LUDWIG GUTTMANN was a German-born brain researcher who had been trained as a neurosurgeon before becoming a rehabilitation specialist and a sports official was often misrepresented in secondary research literature.¹⁰ In line with some of these earlier views, another influencing factor was overlooked which changed GUTTMANN's life significantly, namely his long-term training and experience with the neurosurgeon and brain researcher OTFRID FOERSTER (1873–1941) at the University of Breslau (now: Wrocław, Poland). In fact, FOERSTER's operational methods and therapeutic regime were highly influential on GUTTMANN's theorizing and particularly on his therapeutic conduct with his patients. When returning to Breslau after a three-year training period in Hamburg, since 1930 GUTTMANN served as FOERSTER's first staff-attending assistant (*„Erster Assistent“*). During this period, he developed into a well-versed neurological diagnostician and therapeutic specialist for peripheral nerve injuries. In this context, he became acquainted with innovative surgical procedures such as the rhizotomies, cordotomies and the alcoholic blockage of peripheral nerve injuries in cases resulting in intractable pain and paralysias.¹¹ This prominent clinical role in the Breslau Institute for Neurology coincided with GUTTMANN's extensive research program on peripheral and central nerve regeneration. More than a dozen papers were produced in his microanatomical laboratory in Breslau and were later prepared for publication during the

phone-call from an Israeli neurophysiologist, Prof. ABRAHAM OHRY from the Sackler School of Medicine, Tel Aviv, who had found out about the project and mentioned the pivotal work of GUTTMANN under whom he had trained in the UK. This fortunate conversation made clear that GUTTMANN had indeed appeared as the very same protagonist in such diverse fields as neuronal plasticity, neurological epidemiology, neurosurgery, clinical neurology, professional neurorehabilitation and above all in the sports movement for the disabled. On GUTTMANN's brain plasticity research, see also in: STAHNISCH 2003a, pp. 422–425.

⁹ Letter of the Cambridge neurosurgeon SIR HUGH WILLIAM BELL CAIRNS (1896–1952) to GUTTMANN in Breslau dating January 30, 1939. In: GUTTMANN (1938/1939): Rescinding of License to Practice Medicine, Learning English, Translated Transcript of Documents (PP/GUT/A.1/3), box 1, p. 7.

¹⁰ See, for example, in: WHITTERIDGE 1983, pp. 227–244, and SCHUELKE 2001, pp. 300–307.

¹¹ See SILVER 2003, p. 181.

initial period of his Cambridge exile at Balliol College¹² – under the name of the “Research Fellow L. GUTTMANN”. This important body of work triggered a lot of interest in the scientific community as it counted among the first publications in the early 20th century brain research literature now advocating for an acceptance of “plastic properties” of the brain and spinal cord *vis-à-vis* the long-held dogma that the adult Central Nervous System (CNS) had no genuine capacity to regenerate after injuries and degenerative diseases.¹³ Although it could be argued that the complexity of the picture about GUTTMANN’s working contexts originated merely in the disciplinary constraints which influenced earlier historians and led to some ignorance to take his wider career in clinical neuroscience and its allied fields into account, it appears quite instructive turning this perception around:

First – as will be argued in the beginning part of this article –, the multilayered picture of GUTTMANN’s contributions was intricately related to his wide impact on so many medico-scientific as well as public health and social fields. As a consequence, we find his work received in neurosurgery, neurorehabilitation, history of forced-migration, sports historiography and particularly the Paralympics movement – as well as in anatomical and physiological publications on brain plasticity. All of these sources, though certainly some more extensive biographical works have given a more encompassing view of his career,¹⁴ have fallen into rather unrelated bodies of research literature.

Second, this paper aims to address the sheer complexity of GUTTMANN’s work and the confusion regarding his multifaceted contributions in the literature, which have emerged from the historical contingencies that influenced his life while seeking refuge in Britain. In this intriguing sense, GUTTMANN’s example presents us with a historical case that is seen as typical for many émigré-neurologists and psychiatrists who fled Nazi Germany and sought new living and working opportunities elsewhere. They had not anticipated, when arriving in other countries that their medical ideas and approaches would not be supported.¹⁵ Reflecting on the interplay of GUTTMANN’s biography and the wider context of the forced-migration movement one can reveal the many contingencies

¹² Most of GUTTMANN’s own experimental work as well as some landmark papers representing the contemporary discussion can be found in the following co-authored paper: WEDELL et al. 1941, pp. 206–225.

¹³ STAHNISCH 2003a, esp. pp. 420–430, and STAHNISCH 2003b, 243–269.

¹⁴ See for example: GOODMAN 1986, SCRUTON 1998, SCHUELKE 2001, SILVER 2003, and ROGAN 2010.

¹⁵ A very informative account of the starting conditions of many émigrés-intellectuals, researchers and physicians is given in: COSER 1984, pp. 214–218.

in GUTTMANN’S life and offer good explanations of the historical development of his clinical work, medical research and social engagement. To put it briefly: How was it possible that this gifted neurosurgeon became the founder of the Paralympic movement and a public advocate for people with spinal cord and peripheral nerve injuries? These two perspectives on GUTTMANN shall be further explored by drawing on the biography of the German neurosurgeon, his medical training and contingent changes since his neurosurgical work at the Breslau Neurological Institute to the establishment of the “neurorehabilitation” program at the Stoke Mandeville Hospital in Britain.

A final question, for which tentative answers shall be given, regards the interrelationship of therapeutic sport with elements of functional restitution and functional enhancement in GUTTMANN’S neurorehabilitation approach as well as that of his contemporary co-workers. While the Paralympic sport initiative started as a therapeutic approach to serve the paraplegic at the Stoke Mandeville Hospital, today it has emerged as a truly global movement which faces similar problems as the regular sport competitions for able-bodied athletes.¹⁶ How did elements of the “enhancement of functions” or even of “therapeutic doping”¹⁷ make their way into the Paralympic movement? When looking at the context of the Para-Olympian body, (i.e. the injured body of the paraplegic, blind or deaf), as an “artefact” –the same way as GUTTMANN himself viewed it –, a wider research perspective needs to be taken that also sheds light on the multiple uses of bodily assistive devices, such as crutches, wheelchairs, plaster casts and fixation devices which GUTTMANN integrated into his neurorehabilitative program.¹⁸ The history of neurology has a genuine interest in these long-term developments, along with finding answers for how the approaches from the medical sphere were introduced in neighbouring areas such as functional rehabilitation, physiotherapy and certainly sports.¹⁹ Of particular interest here is the fact that GUTTMANN not only emphasized the normal-pathological distinction from a perspective of a specialized spinal cord neurosurgeon, but, as a physical therapist he also sought to strengthen the “residual functions” in his patients. All of these questions may inform a more general perspective as to the emergence of interdisciplinary approaches in the neurosciences during and after WWII.

¹⁶ Cf. WOLBRING et al. 2010, esp. pp. 81–85.

¹⁷ See also in: WOLBRING 2008, pp. 25–27.

¹⁸ KIRSCHNER et al. 2010, pp. 294–297.

¹⁹ LEGG et al. 2009, pp. 30–35.

2. Historical Background of the Breslau Neurosurgeon LUDWIG GUTTMANN

When exploring GUTTMANN's background and biography, the transformations in his neurosurgical approach, in particular, need to be taken into account since his practice at Stoke Mandeville witnessed an important change from an "operational focus" to "neurorehabilitational approaches" that implicated the conceptual opposition of "functional restitution" and "functional enhancement" in his clinical and physiological work.²⁰ It will become evident that GUTTMANN's forced-migration to Cambridge was largely responsible for many of the crucial changes in his later medical and scientific career as a non-operating neurologist. This is an interesting development and deserves further scrutiny, as the historiography of neurology had often endorsed the view that the development of neurological programs and institutions had followed rather preconceived trajectories.²¹ As compelling as this view may seem, the working realities of the neurological pioneers in the early 20th century were often far more complex as some earlier research literature stated. GUTTMANN'S example visibly shows how a broad education, love for clinical work, and perseverance in continuing his medical research could nevertheless lead to an important enrichment of clinical neurological work.²²

LUDWIG GUTTMANN was born in 1899 as the son of large-scale distiller BERNHARD GUTTMANN, in Tost (Upper Silesia) – at the pinnacle of the Wilhelmian Empire. GUTTMANN received his education at the German-Jewish High School of Breslau which was a humanistic and pragmatically oriented secondary college.²³ At the end of WWI, he graduated from high-school early and became a warden in a specialized coal miners' hospital in Koenigshuette (Upper Silesia). It was at this hospital that GUTTMANN came into contact with the spinal-injured for the first time and where he observed some severe clinical cases including concussions and poly-traumatized patients. During the interwar period, motivated by his Koenigshuette experiences, he pursued his medical studies – from 1918 to 1923 – at the premier Universities of Breslau (with FOERSTER), Wuerzburg (with WILHELM NONNENBRUCH, 1887–

²⁰ Cf. WOLBRING et al. 2010, esp. pp. 81–85.

²¹ For some of these traditional views see, for example: HAYMAKER and SCHILLER 1970, pp. 353–368.

²² SCHUELKE 2001, pp. 300–302.

²³ VAN RAHDEN 2008, pp. 134–155.

1955) and Freiburg (with ALFRED ERICH HOCHÉ, 1865–1943)²⁴, before returning to the Silesian capital and working as a clinical assistant in FOERSTER's service at the Breslau Institute for Neurology. In 1924, he married ELSE SAMUEL who had been his girlfriend from university days. Between 1928 and 1930, GUTTMANN worked as a staff-attending physician with the renowned neurologist MAX NONNE (1861–1959) in Hamburg, before returning to his hometown of Breslau, where after submitting his *Habilitation* thesis in 1930, he became the first physician assistant in FOERSTER's clinic.²⁵

GUTTMANN's life – and this certainly deviates from traditional views that looked at the development of medicine and health care as based on quite regular, one-dimensional and directed biographical processes –, then took many numerous detours that could have led to very different developments at the time:

“I [GUTTMANN] went in search for a job to the Breslau Municipal Hospital, waiting for an interview with the Chief of Paediatrics, when I suddenly met a young doctor friend. He advised me that it would be impossible to get a job in this overcrowded specialty, but that I should rather try the floor below to see whether there would be a vacancy in the Department of Neurology [...]. More than any others, these words shaped my whole life [...].”²⁶

Following this event at the academic *Wenzel Hancke Krankenhaus*, GUTTMANN got his first long-term position. In the 1920s and 1930s, peripheral nerve centers had developed, particularly in Germany, at the end of WWI, and his mentor FOERSTER became a strong advocate for the advantages emanating from a centralization of patients with

²⁴ See in: Wellcome Library for the History of Medicine: Sir Ludwig Guttmann Papers: PP/GUT/A.1/1. Education Medical Career, London, England, p. 1. Interestingly, GUTTMANN's autographs in the collection at the Wellcome Library do not include any letters that reflected on how he perceived the fact that he had “paradoxically” studied under (later) leading Nazi professors – with HOCHÉ significantly informing the NS eugenics laws and SS-major NONNENBRUCH becoming an academic supervisor of a number of concentration camp physicians and member of the committee for health issues in the German KZ system, lead by the Hygiene and Public Health Commissioner DR. KARL BRANDT (1904–1948). In a macabre sense, his own medical teachers were also the intellectual architects of GUTTMANN's expulsion from Germany as well as the destruction of his research program in Breslau. Only with regard to the situation in his beloved hometown did GUTTMANN criticize his medical colleagues for their inhumane acts and the marginalization of their Jewish peers. Cf. GUTTMANN (1938–1939): Rescinding of license to practice medicine; translated transcripts of documents (PP/GUT/A.1/3), box 1, p. 1.

²⁵ GOODMAN 1986, pp. 11–20.

²⁶ LUDWIG GUTTMANN 1964, qtd. after SCRUTON 1998, p. 11.

seemingly rigorous needs.²⁷ He documented more than 4,000 neurosurgery cases at the Breslau Neurological Institute and outlined the achievements of his center. The center had introduced a variety of new surgical techniques, followed by a physical treatment approach, which would "start the very first day" – as neurosurgeon WILDER PENFIELD (1891–1976) wrote in his reports to McGill University, after his extended visits in Breslau in 1928 and 1932.²⁸ In the 1920s, FOERSTER's laboratory had been located on the outskirts of the medical campus – in the basement of the Breslau Faculty of Dentistry. During the 1930s it moved in closer vicinity to the Departments of Internal Medicine, Surgery and Psychiatry. Canadian neurosurgeon PENFIELD was one of the most famous visitors of those days, when dozens of foreign researchers and clinicians visited FOERSTER's group in Breslau. It is likewise interesting to note the great similarities in the structure of both centers in Breslau and the Montreal Neurological Institute (MNI), as well as the overlap in the neurosurgical approaches and electrical brain stimulation methods that gave rise to PENFIELD's worldwide reputation for his work on human cortex physiology.²⁹ In many ways, the Breslau Institute for Neurology served as a blueprint model for PENFIELD's creation of the MNI, where he continued the brain stimulation practices.

Similar to PENFIELD's program in clinical neurophysiology, the concentration of patients with spinal cord and peripheral nerve injuries at the Neurological Institute in Breslau provided GUTTMANN with great opportunities to see many more patients and significant treatment advances that were hardly possible in other European centres of the time. Throughout his medical career, GUTTMANN showed strong concerns for the limited reintegration of the patients in working life and he vigorously strove to improve their miserable conditions. At this time, plaster casts and plaster beds were still in wide use for the treatment of paraplegic patients while they were kept in the hospital for months without significant improvement in their condition.³⁰ In his later perception of the available neurosurgical treatment options and the necessity for an early beginning of rehabilitative purposes, GUTTMANN remained strongly influenced by the pioneering work that FOERSTER had begun in Breslau, combining basic methodologies from neuroanatomy, neurophysiology and neuropathology with clinical approaches in non-

²⁷ SILVER 2003, p. 179f.

²⁸ PENFIELD 1928, p. 6f.

²⁹ PENFIELD and JASPER 1954, pp. 19–35.

³⁰ See, for example, in SCRUTON 1998, p. 11.

operative neurology, neurosurgery and even psychiatric treatment.³¹ There are numerous accounts in the literature that have highlighted the impact of FOERSTER's work ethic on GUTTMANN, such as their mutual twelve- to sixteen hour-shifts or the starting of the patients' rehabilitation measures as early as six o'clock in the morning, when the patients were hardly awake.³² These forms of therapy have often been perceived as awkwardly "autocratic" or as "German-style." Later during his time at Stoke Mandeville, GUTTMANN's humoristic response was: "You think I am bad. You should have seen what FOERSTER was like!"³³ The very good treatment outcomes at Stoke Mandeville, however, gradually spoke for themselves and became highly praised in the U.K.:³⁴

"The installation in this country of several centres for the treatment of peripheral nerve injuries is a great step forward. The congregation of cases in a single department under the same specialised staff, with continuous staff under the same supervision, is certainly the best guarantee for the systemic study of the whole question, for better results. [...] Although [FOERSTER] worked under conditions by no means ideal compared with those of a modern centre in this country, his results were remarkably good and better than those of many other authors of that time. [...] The main reason was a better and systematic after-treatment and after-care, in other words, a good understanding of rehabilitation."³⁵

GUTTMANN's own life took another drastic turn in the 1930s that was largely caused by the political developments in Germany and the enactment of the NS-Law "On the Re-establishment of a Professional Civil Service" on April-7, 1933. Through the inauguration of this law, many Jewish physicians became ousted from their official academic positions at German universities and from state-run general hospitals.³⁶ It is at this point that the impact of foreign exile can be explored in GUTTMANN's clinical research program which strongly reflected an emigration-dependent process of professional change from being a trained neurosurgeon to becoming a fervent neurological clinician.³⁷

³¹ STAHNISCH 2009a, pp. 48–51.

³² Some underlying ethical assumptions in the treatment of hospital patients at that time are also described in: NICOSIA and HUEBNER 2002, pp. 1–12.

³³ SILVER 2003, p. 179.

³⁴ SCHUELKE 2000, p. 302, and SILVER 2003, p. 179.

³⁵ GUTTMANN 1939, qtd. after SILVER 2003, p. 179.

³⁶ Cf. BLEKER and ENGELMANN 1993, pp. 87–96.

³⁷ For a discussion of emigration-induced scientific changes, see also: HARWOOD 1993, pp. 138–180, or ASH and SOELLNER 1996, pp. 1–19.

For another six years, he continued to practice as a staff-attending physician at the Breslau Jewish Hospital under working conditions which he described as dreadful and during a period in which he witnessed the loss of many active doctors in that hospital. Months before the outbreak of WWII, GUTTMANN managed to escape to England via Portugal. This escape was facilitated by a petition from a Portuguese neurohistologist and influential politician ANTÓNIO EGAS MONIZ (1874–1955) who wrote to the German foreign minister JOACHIM VON RIBBENTROP (1893–1946) in Berlin.³⁸ After he secured visas for himself, his wife and children, GUTTMANN first fled to Portugal and then embarked on a ship to Guatemala. However, the vessel was redirected to England, where GUTTMANN immediately sought political refuge. Had he been successful in reaching Central America,³⁹ he might have become a successful neurosurgeon after the war again, but the world might never have seen the Paralympic movement emerging.

3. LUDWIG GUTTMANN's Early Time in the British Exile

Between 1939 and 1943 "four very difficult years" ensued for GUTTMANN.⁴⁰ Although he was not interned as an "enemy alien" like many of his compatriot émigré physicians – ⁴¹ he was still not allowed to practice as a doctor, instead he had to find medical and public health research work, in which he explored the status of U.K. rehabilitation facilities. This research was largely funded through external monetary sources that he received

³⁸ It is not well known that EGAS MONIZ was also an important politician in Portugal before the onset of the rightist revolutions on the Iberian Peninsula (1926 in Portugal; 1929 in Spain). MONIZ was even one of the few Portuguese representatives at the Treaty of Versailles in 1919. Cf. FUSAR-POLI et al. 2008, p. 50.

³⁹ See the letter from the Consul of Guatemala to GUTTMANN in Breslau, dated 14th December, 1938: "We herewith certify that we have been authorized through the Foreign Ministry in Guatemala to issue the immigration visas for Dr. LUDWIG GUTTMANN, Breslau, his wife ELSE GUTTMANN (née SAMUEL), DIETER GUTTMANN [b. 1929] and EVA GUTTMANN [b. 1930?]. Signed – The Consul" (transl. FWS). In: GUTTMANN (1938/1939): Rescinding of License to Practice Medicine, Learning English, Translated Transcript of Documents (PP/GUT/A.1/3), box 1, p. 5.

⁴⁰ GUTTMANN (1938/1939): Rescinding of License to Practice Medicine, Learning English, Translated Transcript of Documents (PP/GUT/A.1/3), box 1, p. 6.

⁴¹ This was also the tragic fate of many émigrés-psychiatrists and neurologists in the UK, as PAUL WEINDLING and others have shown. However, GUTTMANN was never interned in one of the detention camps (such as the Isle of Man in the Atlantic Channel). See WEINDLING 2004, pp. 257–267.

from the Rockefeller Foundation in New York.⁴² The preparations for D-Day – the Allied Landing in Normandy in the summer of 1944 – suddenly led to the foundation of new *National Spinal Injuries Centers*, and the changed war context offered new practical working fields for the émigrés-physicians.

British military leaders were already familiar with GUTTMANN's publications on nervous regeneration research and functional rehabilitation programs for peripheral and spinal cord injuries. Although Nobel Prize winner SANTIAGO RAMÓN Y CAJAL (1852–1934) and other luminaries of contemporary brain research claimed to have "unquestionably" discovered sprouting phenomena in the CNS, important questions remained as to the physiological meaning of these experimental observations. If something had been discovered by CAJAL, then how could the findings be applied to the therapeutic repertoire of the neurologists?

"[JEAN] NAGEOTTE [1866–1948] and CAJAL had recognized that sensory axons can develop collateral branches even in the absence of any detectable traumatic stimulus. Furthermore, the studies of [CARL CASKEY] SPEIDEL [1923–1964] and of [GRAHAM] WEDELL [1906–1990], LUDWIG GUTTMANN and ERNEST GUTTMANN [1910–1978] on partially denervated cutaneous areas had already demonstrated the extension of sprouts from intact nerve fibres into zones of sensory loss. But these facts merely lent additional support to the hypothesis, and the next step was obviously a neurohistological analysis."⁴³

This next step, however, was not a preconceived logical step in the research program on anatomical plasticity. As Brown University's neuroanatomist MAC VINCENT EDDS (1917–1975) frankly admitted in 1953, the experimental studies of NAGEOTTE and CAJAL had only given rise to new speculations that the results could be beneficial in a wider clinical context; but this therapeutic hypothesis had not been proven yet. In conjunction with an anatomy professor from Oxford, SIR GRAHAM WEDELL, and the involvement of the Czech émigré-neuropathologist ERNEST GUTTMANN⁴⁴, LUDWIG GUTTMANN continued to work on the specific problem of how these findings could offer new clinical applications.⁴⁵ The specific problems he faced at the Stoke Mandeville

⁴² RICHARDSON 1990, pp. 21–58.

⁴³ EDDS 1953, p. 263.

⁴⁴ Despite the close similarity in their surnames, ERNEST GUTTMANN (written with one "t") from Chechnya and LUDWIG GUTTMANN from Silesia did not have a direct family relationship.

⁴⁵ HILTON and HINK 1978, p. 1.

Hospital in Aylesbury led him to experiment with a variety of therapeutic measures, such as the introduction of adjuvant Penicillin application or the practice of intermittent catheterization in long-term hospitalized paraplegic patients to reduce urinal infection rates. Above all, GUTTMANN strongly promoted sports and gymnastics as rehabilitative tools, while becoming first a rehabilitation specialist and eventually the “founding father” of the *Paralympic sports movement*:

“After lunch one day in 1945, I [GUTTMANN] came across a group of patients in their heavy leather padded wheelchairs [...] hitting a puck with reversed walking sticks. My eyes brightened as it had become clear to me: Games, sport, that is what we must have!”⁴⁶

The idea to integrate sports in the immediate hospital activities developed shortly after the war, and led to the creation of the “Stoke Mandeville Games” for the paraplegic in 1948, finding its zenith in the 1960 “Paralympics” at the Olympic site in Rome.⁴⁷



Fig. 2: Tenth Anniversary (1958) of the Stoke Mandeville Games for the Paraplegic: Here: the national teams of Yugoslavia and Great Britain enter the sports field on the hospital ground. Photograph courtesy of the Wellcome Library of the History of Medicine in London, and of International Wheelchair & Amputee Sports Federation (IWAS), Founders of the Original Paralympic Games), England (PP/GUT/B.8/2), box 7, photograph L0061039, n.pag.

⁴⁶ LUDWIG GUTTMANN 1964, qtd. after WHITTERIDGE 1983, pp. 243–244.

⁴⁷ LEGG and JARVIS 2004, pp. 43–44.

Viewed together, GUTTMANN’s achievements in many clinical and research areas as well as his fascinating biography embody many traits of an emerging interdisciplinary field of clinical neuroscience,⁴⁸ which integrated central aspects of physical rehabilitation in the pursuit to enhance neuronal plasticity. GUTTMANN thus presents a good example of how to address questions of the ways social work norms – such as the autocratic style of medical research in Breslau, the prohibition of clinical practice of émigré physicians in Britain, or the enabling of competitive sports activities through modern societies – influenced scientific development. Conventional research has thus far neglected the impact of the forced-migration process itself,⁴⁹ which through GUTTMANN led to the new field of neurorehabilitation:

“If ever I [GUTTMANN] did one thing in my medical career it was to introduce sport in the treatment and rehabilitation of spinal cord sufferers and others severely disabled. [It is useful to ...] prevent boredom of hospital life; by restoring activity of mind and body, by instilling self-respect, self-discipline, a competitive spirit, and comradeship, sport develops mental attitudes that are essential for social reintegration.”⁵⁰

4. Changes in the Neurosurgical Approach: From “Operations” to “Rehabilitation” at the Centre for the Paraplegic in Stoke Mandeville

The development of GUTTMANN’s fascinating biography, which eventually led to his pioneering work in the field of neurological rehabilitation, was far from obvious at the beginning of his career. The leadership of GUTTMANN as the chief of service in the specialized hospital of Aylesbury and his strong relationships with the British medical community and with military officials helped profoundly to find social and financial support “to provide full facilities for the disabled to enable them, through the medium of sport, to reintegrate fully into the life”.⁵¹ A major change in GUTTMANN’s treatment of paraplegic patients is also represented in his own move away from a purely neurosurgical

⁴⁸ Cf. BROWN 1997, pp. 87–96, BURGMAYER and WEBER 2003, pp. 349–378, and STAHNISCH 2009a, pp. 41–54.

⁴⁹ See for example: COSER 1984, FEICHTINGER 1991 or MEDAWAR and PYKE 2001.

⁵⁰ GUTTMANN 1976, p. 20.

⁵¹ See in: GUTTMANN (1952–1975): Miscellaneous – Recognition (PP/GUT/A.4/1), box. 1, n.pag.

“operations approach” to the use of “physical rehabilitation”, which helped to overcome “one of the most profound of disablements and had revealed the tremendous readjustment forces in the human body”.⁵² GUTTMANN thus integrated many new assumptions from the increasingly interdisciplinary and organized field of neuroscience.⁵³ The use of sport as a rehabilitative tool emerged from seemingly different contexts. In his later career as a neurologist, GUTTMANN brought together a group of clinicians who gradually decreased the limitations of the available treatment options.⁵⁴

“The final – and, I may say, the noblest aim of sport for the disabled person is to help to restore his contact with the world around him; in other words, to facilitate and accelerate his social reintegration or integration.”⁵⁵

It has often been claimed that the attention to sports in GUTTMANN’s work was purely a clinical perception that stemmed from “therapeutic limitations” of clinical neurosurgery in the case of spinal injuries.⁵⁶ However, GUTTMANN was a very active sportsman since his early youth at the Breslau Jewish *Gymnasium*. Later, he even joined the student fraternity *Ghibellinia, KC* at Freiburg (founded in 1885 as a membership organization of the Cartel Convent of German-Jewish student fraternities), a cultural masculine association, where he developed into being a passionate fencer.⁵⁷ On similar grounds of social assimilation and integration into society at large, GUTTMANN saw the encompassing value of sport as an act of physical and social emancipation *both* in his own career as a Jewish physician during the Wilhelminian Empire and Weimar Republic as well as in his paraplegic patients and their integration into post-war British society.⁵⁸ As much as GUTTMANN’s earlier contacts with forms of community and academic sports, his later

⁵² GUTTMANN 1976, p. 179.

⁵³ STAHNISCHE 2003a.

⁵⁴ GUTTMANN 1945, pp. 318–326.

⁵⁵ GUTTMANN 1976, p. 5.

⁵⁶ SCRUTON 1998, p. 11.

⁵⁷ The GUTTMANN family’s love of sport is further exemplified through registration of their daughter Eva and son Dieter in the Jewish Swimming Club of Breslau on April 12th 1938. See in: GUTTMANN (1938/1939): Rescinding of License to Practice Medicine, Learning English, Translated Transcript of Documents (PP/GUT/A.1/2), box 2, n.pag. This registration of their children could also be interpreted as a step towards normalcy and social inclusion at a time, when the terror against Jewish citizens had markedly increased.

⁵⁸ See in: Wellcome Library for the History of Medicine: Sir Ludwig Guttmann Papers: PP/GUT/A.1/1. Education Medical Career, n.pag. London, England.

engagement with sports for the paraplegic and “the multi-disabled”⁵⁹ –, grew literally out of basic grass-roots activities.

It is interesting to note, nevertheless, that GUTTMANN’s own approach to “functional restitution” and “patient reintegration” was tied early-on to “the healthy spirit of competition” which triggered a highly competitive mindset in the patients and even risky behaviors in some of the disabled athletes as well.⁶⁰ In this context wheel chair polo stood out, as it quickly became over-competitive and even ended “in carnage” according to the observations of his secretary JOAN SCRUTON (1918–2007).⁶¹ Wheelchair polo was quickly exchanged for wheel chair forms of basketball and volleyball.⁶²

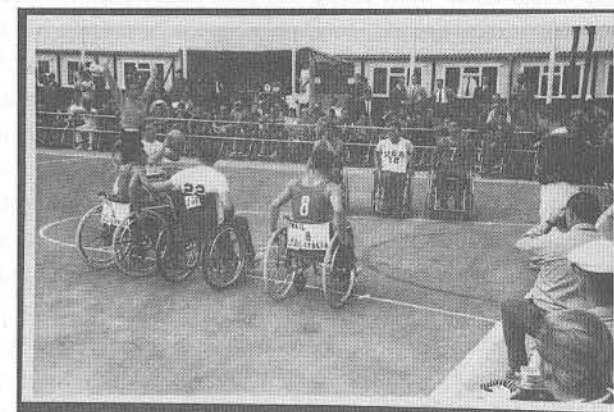


Fig. 3: The national wheel chair basketball teams of the U.S.A. and Italy face each other at the Tenth Anniversary (1958) of the Stoke Mandeville Games for the Paraplegic. Photograph courtesy of the Wellcome Library of the History of Medicine in London, and of International Wheelchair & Amputee Sports Federation (IWAS), Founders of the Original Paralympic Games), England (PP/GUT/B.8/2), box 7, photograph L0061037, n.pag.

⁵⁹ Throughout this historical article – in order to avoid anachronisms –, I have used the original wording of GUTTMANN and other contemporary physicians, therapists and researchers, well-knowing that the modern disability studies community would apply very different sets of value-neutral terminology.

⁶⁰ WHITTERIDGE 1983, pp. 235–240.

⁶¹ SCRUTON 1998, p. 11.

⁶² See in: Wellcome Library for the History of Medicine: Sir Ludwig Guttmann Papers: PP/GUT/B.8/2Photographs, n.pag. London, England.

Even though, GUTTMANN's primary concern was the therapeutic restitution of lost functions in his paraplegic patients – which was well represented in his statement that “*Life is not finished after spinal cord injury!*”⁶³ GUTTMANN realized that some areas in which a clear separation of the spheres of the “therapeutic”, “rehabilitative” and “enhancement” had become obsolete after the first games had started. At Stoke Mandeville, the problem of over-competitiveness increased with the instant popularity of “wheel chair polo”, yet often clinical areas displayed instances of “functional enhancement” as well. For example, pharmacological physostigmine therapy in patients with urogenital dysfunctions led to the increased vigilance in wheel chair ball sports, while some patients reported enlarged sexual libido while taking this parasympathomimetic drug. Another area of functional enhancement beyond normal physiological boundaries was noted in the technological devices themselves, as they were used by paraplegic athletes. Wheelchair archers, for instance, had a greater muscular stability while aiming with their bows; and when remaining seated in their wheel chairs they could even outperform able-bodied athletes during mutual sport competitions.⁶⁴

When looking at GUTTMANN's project of re-enabling the bodies of paraplegic patients for participation in sports and society, it became clear that much more was at stake at the Stoke Mandeville Games than just a reconstitution of “functional restitution” or “physical rehabilitation” in purely medical contexts.⁶⁵ This aim was realized by focusing on the abilities of all sports athletes and by further treating the paraplegic and able-bodied athletes equally. Like FOERSTER in Breslau and the holist neurologist KURT GOLDSTEIN (1878–1965) in Frankfurt with their emphasis on the war-injured,⁶⁶ GUTTMANN implicitly addressed the distinction of “functional restitution” and “enhancement” from a perspective of “wholeness”:

“I organized in Frankfurt am Main, under the administration of the government, a hospital which consisted of a ward for medical and orthopaedic treatment, a physiological and psychological laboratory for special examination of the patients and theoretical interpretation of the observed phenomena, a school for re-training on the basis of the results of this research, and finally workshops in

⁶³ LUDWIG GUTTMANN 1948, qtd. after SCHUELKE 2001, p. 306.

⁶⁴ SCRUTON 1998, p. 11.

⁶⁵ GUTTMANN 1976, p. 15.

⁶⁶ STAHNISCH and HOFFMANN 2010, p. 17.

which the patient's aptitude for special occupations was tested and he was taught an occupation suited to his ability.”⁶⁷

At the heart of both GOLDSTEIN's earlier and GUTTMANN's later rehabilitation approaches lay the complete “functional re-integration” of the multi-disabled into modern post-war societies – while accepting the *social work norms as the same ones* for able-bodied and handicapped members, i.e. mastery of working tasks and social functions; and acceptance of high-performance ethics based on social competition. Although GUTTMANN himself did not explicitly mention an inclusion of the Paralympic athletes in the Olympic Games,⁶⁸ as the ultimate ideal the complete re-integration of the multi-disabled into society.⁶⁹

“There are certain sports and games where the disabled are capable of competing with the able-bodied, [...] which create a better understanding between the disabled and the able-bodied and help the disabled in their social reintegration through the medium of sport.”⁷⁰

This analysis of GUTTMANN's vision suggests that he personally believed that many athletes with disabilities could perform on the same level as able-bodied athletes and that social integration was the primary purpose for participation of people with disabilities in sports.

5. The Development of the Paralympics until Today – Re-Integration of the “Paraplegic” and “Multi-Disabled” in a GUTTMANNian Spirit

Following the growth of the Stoke Mandeville Games in England during the 1950s, GUTTMANN contacted the International Olympic Committee (IOC) with the hope of organizing the Games in Rome (1960) at the same time when the Summer Olympic Games were held. The IOC leadership eventually accepted this suggestion, so that wheelchair events for four hundred athletes from twenty-three countries could take place in this founding event of the Paralympic Games.⁷¹ The Summer Paralympics rather grew

⁶⁷ GOLDSTEIN 1971, p. 3.

⁶⁸ WOLBRING 2011, pp. 317–319.

⁶⁹ GUTTMANN 1976, p. 13.

⁷⁰ Ibid., pp. 13–14.

⁷¹ LEGG et al. 2009, pp. 30–35.

from these few hundred athletes in 1960 to over 3900 participants from hundred forty-six countries in 2008. These numbers evidently show that the Paralympic movement became important in the lives of people with disabilities. Only thirty years ago – in 1980 –, the Paralympic Games had to be organized as far away as the Netherlands, because the Soviet government which hosted the Moscow Olympic Games did not have reliable organizations that could provide sport opportunities for people with disabilities.⁷² Interestingly, Russia finished eighth in the medal tally of the 2008 Summer Paralympic Games and later the Russian team dominated the 2010 Winter Paralympic Games in Vancouver.⁷³

When considering the earlier views held by GUTTMANN about “clinical remedial sport” that was created with the intent to foster medical rehabilitation and social inclusion of the “most severely clinically handicapped patients”, it becomes evident how encompassing his ideas on the use of active gymnastics and competitive sports have become:

“The immense value of sport in the physical, psychological and social rehabilitation of these most severely physically handicapped patients was recognized and became the incentive to many of them to carry on with their sporting activities after discharge from hospital and to become true sportsmen and sportswomen in their own right. Clinical sport is now widely used and has gained a secure place in the field of sport.”⁷⁴

Much as in GUTTMANN’s historical experience, when the Paralympic movement further developed throughout the 1980s and 1990s, so too did discussions about physical and social rehabilitation. Dr. ROBERT STEADWARD (b. 1946), President of the International Paralympic Committee (IPC) – between 1989 and 2001 –, described the process of reintegration of disabled athletes as one of the most “discussed, debated and contentious issues facing disability sport and the Paralympic Movement”.⁷⁵ As noted above, GUTTMANN had introduced sport as an early form of neurorehabilitation, while becoming subsequently saluted by POPE JOHN XXIII (1881–1963) for this achievement and also the broader movement of a complete re-integration of the multi-disabled in modern societies:

“You have given a great example, which WE would like to emphasize, because it can be a lead to all: you have shown what an energetic soul can achieve, in spite of apparently insurmountable obstacles imposed by the body.”⁷⁶

Starting in 1989, the newly founded IPC intended to build upon the 1984 experiences and raise the level for social rehabilitation, when advocating for the full inclusion of athletes with disabilities through the newly created “Commission for the Inclusion of Athletes with Disabilities” (CIAD).⁷⁷ In July 2004, however, just weeks before the start of the Athens Summer Games, the athletes competing in two wheelchair events were told that the events would remain on an “exhibition status” only. The decision resembled a clear break with the visions that GUTTMANN had laid out in his speeches and well-received “Textbook of Sports for the Disabled” (1976) earlier on. Responding to this historical deviation, PATRICK JARVIS (b. 1959), the President of the CPC, wrote a public letter (on July 20th, 2004) to IOC President JACQUES ROGGE (b. 1942). In the letter, JARVIS noted Canada’s strong disappointment with the recent developments and questioned whether the Paralympic events could continue to serve their purpose to engage handicapped athletes in true sportive competitions.⁷⁸

Comparing this situation with the earlier context of the Stoke Mandeville Games,⁷⁹ the question of full inclusion of the multi-disabled grew primarily out of a medical context. With the introduction of early rehabilitation approaches, GUTTMANN and his mentor FOERSTER – had been influential pioneers at that time. The focus on rehabilitation, largely introduced by Swiss physician HEINRICH S. FRENKEL (1860–1931), with whom FOERSTER also published together,⁸⁰ became increasingly refined at the new clinical neuroscience centres in Breslau and Frankfurt. The approaches in the German clinical neuroscience centres could draw on related contemporary developments, such as the emergence of “Psychotechnics”, as advocated by WILLIAM STERN (1871–1938) and FRIEDRICH GIESE (1870–1944).⁸¹

⁷² WOLBRING et al. 2011, pp. 85–86.

⁷³ Ibid.

⁷⁴ GUTTMANN 1976, p. 3.

⁷⁵ WOLBRING et al. 2010, p. 86.

⁷⁶ POPE JOHN XXIII 1960, qtd. after GUTTMANN 1976, p. iii.

⁷⁷ LEGG et al. 2009, pp. 32–34.

⁷⁸ LEGG et al. 2009, pp. 33–34.

⁷⁹ GOODMAN 1986, pp. 11–42.

⁸⁰ See, for example, in: FOERSTER and FRENKEL 1899, pp. 822–826.

⁸¹ HARRINGTON 1999, pp. 96–98.

Textbook of Sport for the Disabled

Professor Sir Ludwig Guttmann CBE FRS

MD FRCP FRCS Hon FRCP(C) Hon DSc Hon DChir Hon LLD

Founder and former Director, National Spinal Injuries Centre, Stoke Mandeville Hospital, Aylesbury, Bucks; Director, Stoke Mandeville Sports Stadium for the Paralyzed and other Disabled; Founder-President, International Stoke Mandeville Games Federation; Founder-President, British Sports Association for the Multi-Disabled; President, International Sports Organisation of the Disabled.



HM+M Publishers

Fig. 4: Frontispiece of Guttmann, L. (1976): Textbook of Sport for the Disabled. HM + M Publishers, Aylesbury. Courtesy of the MacKimmie Library of the University of Calgary, Alberta, Canada.

GUTTMANN furthermore, cited the respective publications of the Frankfurt physician and rehabilitation specialist GOLDSTEIN frequently, being intrigued by the latter's physiological research and clinical concept of the "catastrophic reaction".⁸² It came so close to GUTTMANN's own understanding of "loss of function" through neurological injuries and FOERSTER's idea of "vicarious functions" in the CNS as genuinely compensatory mechanisms.⁸³ Hence, one could also look at GUTTMANN from the very angle of the philosophical distinction between the normal and the pathological which the French philosopher GEORGES CANGUILHEM (1904–1995) had so cunningly analyzed:

⁸² Cf. STAHNISCH and HOFFMANN (2010), esp. pp. 295–300.

⁸³ See also: STAHNISCH 2003a, pp. 429–430.

“The foundational difference between the normal and the pathological is always born out of an explicit specific decision. [...] If in a specific environment a fair amount of life forms are possible, then the seemingly natural norm which gets finally accepted, because of a long-lasting tradition, is always the result of a decision. [...] And this decision between the normal and the pathological is in itself also an ethical decision.”⁸⁴

This certainly held true for the applied definitions of “therapeutic functioning” and “functional enhancement” as they had been discussed by GUTTMANN.⁸⁵ Quite undisturbed from medical opportunities of his time, he avoided drawing a strict line between pathological, normal and enhanced neurological functions. In line with his contemporaries FOERSTER and GOLDSTEIN, GUTTMANN also addressed the distinction from a pragmatic perspective of wholeness: the re-integrating of people with disabilities for complete societal acceptance – while also acknowledging *functional differences on all levels in sport and society*.

6. Conclusion

In concluding this article, our attention shall be drawn back to GUTTMANN's recognition of the value of active gymnastics and sports in the war-injured soldiers of WWI as well as his later patients treated at Stoke Mandeville. Until the end of his career, he promoted active sports not only for immediate neurological healing purposes, but also as a means for gaining self-respect and social recognition. Unlike many other exiled neurologists and psychiatrists, who faced seemingly more difficulties in re-licensure processes and the continuation of their medical practice, GUTTMANN's exile offered him ample opportunities, when he tried to regain access to clinical medicine and contribute to the National Health Service in Britain. He, nevertheless, managed to turn a disadvantage into an advantage, when developing new areas of neurological therapy, physical rehabilitation and Paralympic sports. Without GUTTMANN's impact, these areas would probably never have advanced to later stages, if at all. His work, which was based on physical activation, physiological rehabilitation and social participation, even allowed for the

⁸⁴ CANGUILHEM 1963, p. 32; transl. FWS.

⁸⁵ GUTTMANN 1976, esp. pp. 1–10.

distinct comparison between the Olympic and Paralympic movements, representing the great societal impact that his ideas and visions had.

GUTTMANN's example shows that despite the many practical and social difficulties, which émigré-neurologists and psychiatrists faced, they had not succumbed to the expectations of the clinical research landscape of their new host countries. Through their own acculturation process émigré-neurologists and psychiatrists also managed to significantly transform and enrich their new working and life contexts. Nevertheless – and GUTTMANN's example shows this quite clearly –, the process of forced-migration remained often a dialectic one: On the one hand, his example is one of an incredible success – culminating in the Royal Knighthood of SIR LUDWIG, in 1966, by QUEEN ELIZABETH II (b. 1926). On the other hand, – although he returned for many visits to Germany, Poland and Austria –,⁸⁶ GUTTMANN had to leave his Breslau research program and many co-workers behind, and needed to exchange his early promising career as a neurosurgeon to become a neurorehabilitation specialist in Cambridge and Aylesbury. Thus – for better or for worse – his forced exile proved to be “a journey of no return”.⁸⁷

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⁸⁶ The impact of these significant personal changes can be intriguingly found in GUTTMANN's handwritten answers to the likewise counterfactual questions raised in a “Federal Compensation Law” form on March 24th, 1955: “How had the usual career of the claimant unfolded as a civil servant, employee or worker without any damnification until May 8th, 1945: 1. *Chief of a Neurological and Neurosurgical Service*. 2. *Full Professor of Neurology*.” (transl. FWS). In: GUTTMANN 1955, in: Wellcome Library of the History of Medicine PP/GUT/A.3/2, box 1: Application for Reparations, p. 2.

⁸⁷ GUTTMANN and ZUCKMAYER knew each other personally through the latter's work in the *Notgemeinschaft Deutscher Wissenschaftler im Ausland*, which ZUCKMAYER had founded during his first stage of exile in Zurich together with GOLDSTEIN and other Zurich-based German émigrés.

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