

INTERNATIONAL SOCIETY FOR THE HISTORY OF THE NEUROSCIENCES

21ST MEETING

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President's Welcome



On behalf of the International Society for the History of the Neurosciences (ISHN), it is my pleasure to welcome you to the 21st Annual Meeting in Maastricht.

Maastricht is considered, with Nijmegen, the oldest city in the Lower Countries. It developed from a settlement that in the Gallic Wars was conquered by the Romans and thus became a Roman settlement, to a religious centre, a garrison city and an early industrial town. Its name is derived from the river Mosa (Latin) or Maas (Dutch). Nowadays, it is by many regarded as one of the most beautiful cities in the Netherlands with many century-old buildings and houses and a luxurious

shopping center. The conference will be in this old city center. Maastricht University is one of the youngest in the Netherlands, but many departments are housed in the old center, including the Aula, where the conference will be held. We hope that this wonderful environment may inspire you during the meeting.

We gratefully acknowledge the support received from the Maastricht University, the Society Historia Medicinæ, and the Federation of European Neuroscience Societies. As usual, a wide variety of topics from the history of the neurosciences will be present in the conference program. Lectures will be presented in a very comfortable lecture room and, if the weather conditions permit, we will have breaks in a nice sunny court. Citizens of Maastricht are used to live outdoors, that is, there will be many opportunities for strolling through the center, have a drink or dinner on cozy squares and terraces. We will enjoy the gala-dinner in the magnificent Chateau St. Gerlach, a 5-star hotel-restaurant, just south of Maastricht.

The members of the local committee and the program committee have done their best to organize a pleasant and fruitful meeting and we hope that it meets all your expectations.

Paul Eling

President, International Society for the History of the Neurosciences

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A comparative analysis of psychiatry hospitals in Russian Empire and Germany in the early XXth century

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Russian psychiatry used German psychiatry as a model but was also influenced by Russian political context and original healthcare system for rural population (zemstvo medicine).

The aim of our presentation is to compare psychiatric hospitals in Russian Empire and in Germany. It is based on a report of a Moscow psychiatrist Dr. V.A. Nikolsky published in 1912.

The report includes Russian psychiatry hospitals of different levels. State institutions are represented by Warsaw Psychiatry Hospital for 720 beds established in 1891. The NA Alexeev Psychiatry Hospital in Moscow opened in 1894 is an example of municipal institutions. Finally, zemstvo level is illustrated by Tula zemstvo psychiatry hospital for 290 beds founded in 1900. These institutions are compared to four municipal psychiatry hospitals in Berlin.

Results. German psychiatry hospitals were better financed and less crowded than their Russian counterparts. However, the care for mentally ill in German and Russian psychiatric hospitals was similar.

Édouard Manet's tabes: from painful ataxia to phantom limb

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Édouard Manet (1832-1883) is commonly considered as the “father” of Impressionism. Moreover, Wassily Kandinsky attributed his “discovery” of abstraction to a Manet exhibition in Munich in 1910. Manet’s genius involved getting away from the classical narrative or historical topics and replacing them by the banality of daily life. Technically, he erased volumes into flat two-dimension coloured planes, and distorted conventional perspective with often gross brushstrokes intentionally giving an “unfinished” aspect to the work. It is little known that Manet had a very painful second part of his life, due to excruciating limb and chest pains which developed in parallel with proprioceptive ataxia and gait imbalance. Manet always remained discreet about his private life, and we mainly know that his future wife was his piano teacher, with whom he had a liaison already at age 17. Later, the great but platonic passion of his life was the painter Berthe Morisot, who got married with Manet’s brother. In fact, we do not know whether he had any mistress at all, although he had several elegant “flirts” in the mundane and artistic milieu. Thus, while Manet’s progressive painful ataxia from age 40 yields little doubt on its tabetic origin, how he contracted syphilis at least 15-20 years before will probably remain a mystery. It is fascinating that Manet’s daily struggle against pain and poor coordination led his art to become one of the most significant of modern times, opening the way to XXth century avant-gardes, along with another victim of syphilis, Paul Gauguin. Manet never showed any sign of General Paresis, and like his contemporary the writer Alphonse Daudet, his clinical picture remained dominated by paroxysmal pain and walking impairment. Difficult hand coordination made him quit watercolor painting, and during the last two years of his life, he had to focus on small format oil works, whose subject was nearly limited to modest bunches of fresh flowers, now often considered to be his masterpieces. Having become bedridden, he had to be amputated of one leg, which was developing gangrene. While he died shortly thereafter, we have some witness anecdotes suggesting that he experienced a phantom limb: For instance, when Claude Monet visited him and sat down on his bed, Manet violently shouted at him that he was just sitting on his (absent) leg, which provoked terrible pains. With its facts and mysteries, the subtle interaction between Manet’s illness and his work output remains one of the most intriguing story in neurology of art.

Thomas Mann's depiction of neurosyphilis

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Thomas Mann (1875-1955), a Nobel Prize recipient rightly considered one of the great novelists of the 20th century, was one of the most medically perceptive writers of recent times. His novel *The Magic Mountain* is set in a sanatorium, and cholera permeates much of *Death in Venice*. Mann's later novel, *Doctor Faustus*, takes place against the background of syphilis. In the 500-page book subtitled "*The Life of the German Composer Adrian Leverkühn as told by a Friend*", we see the theologian turned composer make a pact with the devil, "voluntarily" contracting syphilis in a series of encounters with Esmeralda, a lady of the night he met once and wants to meet again even though he knows she is infected. As a result of the pact and despite (or because of) the disease, Leverkühn starts a brilliant 24-year career, becoming the greatest German composer of his time. Eventually, however, Leverkühn experiences a "stroke" and lapses into a coma from which he recovers physically, but not mentally. He survives for another decade in a demented, childlike state, cared for by his mother. This presentation will illustrate the parallel between the disease progression and political events in Germany in the 30's and 40's. While it is widely thought that Arnold Schoenberg (1874-1951) is the model for Leverkühn, we will show that other composers of the time also inspired the fictitious musician's life and works.

The story of myelin discovery

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Myelin can be conceived as a gigantic 3-D puzzle in time and space the best scientists across the world have studied since 18th century. Each of them brought a piece to the puzzle, from van Leeuwenhoek in 1717 to Schwann in 1839 to Río-Hortega in 1921 to Geren in 1954, to cite just a few. At the dawn of neuroscience, the globular theory viewed myelin the most important element of the nervous system. After the concept of axon was established by Remak in 1836, myelin went overlooked for decades by sheer ignorance of its function. Several important structural elements were rediscovered, such as the nodes by Ranvier in 1872, illustrating the timeless rule of how and by whom findings are published. A revolution happened when saltatory conduction, the very reason of myelin existence, was discovered by Tasaki in 1939 and confirmed by Huxley and Stämpfli in 1949. After the second world war, electron microscope allowed Geren to finally discover the origin of myelin in 1954, exactly a century after Virchow coined the term of *myelin* in 1854. Geren had the genial insight that Schwann cell wraps around the axon compacted membrane into a spiral myelin. The central oligodendrocyte origin of myelin was soon provided by the Bunges in 1962. From immemorial times when the first human eye saw white matter inside the brain, myelin has been tantalizingly difficult to understand because of its tremendous structural and chemical complexity, but life as we know would not exist without it.

“Perfidious Albion”: Two Nobel Prizes which were won and lost

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One important difference between science and history is that, provided the appropriate instrumentation is available, every scientific question is potentially answerable, whereas, with history, if the documentation is lost the question cannot be answered. This presentation is a reflection on that difference.

In 1953, James Watson and Francis Crick published an astonishingly short and essentially data-free paper in *Nature* which illustrated their proposed structure of DNA; nine years later, they shared the Nobel Prize for this work with the crystallographer Maurice Wilkins. *Not* with Rosalind Franklin (and not only because she had died in the meantime). DNA is *the* molecule of memory, hence this story is at the heart of modern neuroscience.

The following year (1963) Alan Hodgkin and Andrew Huxley shared the Nobel Prize with John Eccles. All were highly-deserving laureates but, not for the first time, there was a contentious omission: the pioneer American biophysicist, KC Cole. It is the argument of this paper that Cole believed, with justification, that Hodgkin and Huxley had appropriated his work and ideas with seriously insufficient acknowledgement. Regrettably, for historians, though some relevant material has been published, allowing speculation and tentative conclusions, diaries, letters and other objective documentation seem not to survive (not least, a recording or transcript of a frank speech which Cole gave at the inaugural meeting of the Society for Neuroscience in 1981).

Treatment of general paralysis of the insane by malaria

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At the turn of the 19th into the 20th century, General Paralysis of the Insane (GPI), also known as Dementia Paralytica, a complication of syphilitic infection presenting with a wide range of psychiatric and neurological symptoms (Daey Ouwens *et al.*, 2015), was a worldwide problem accompanied by a 87% mortality rate (Kaplan, 2010). Since no effective treatment was known at the time, GPI diagnosis heralded death within six years in the majority of cases. The Hippocratic corpus already mentioned improvement of insanity and aggressiveness during and after intermittent fever, as malaria was then called (Freitas *et al.*, 2014). In the 1910's, the Austrian psychiatrist Wagner- von Jauregg systematically researched GPI treatment with intentionally induced malaria. In 1927 he was rewarded the Nobel Prize in Physiology or Medicine for his contribution to the development of Malaria fever therapy (MFT). MFT for GPI was introduced in the Netherlands as early as 1921 (Davis, 2008).

We investigated MFT practice in a historical cohort study, using the clinical records of 105 patients with an established diagnosis of GPI, who died during hospitalisation in the Dutch Vincent van Gogh psychiatric hospital in the period 1924-1954. In the case notes of 43 of these patients (age range 32-69 years) MFT was recorded. Although MFT related mortality of 16% (n=7) was found, overall MFT treated patients lived longer in comparison with untreated patients. Survival longer than six years after admission was found in 23% (n=10) of MFT treated patients and in 6% (n=4) of untreated patients.

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**Aphasia, agnosia, apraxia...but what about amnesia?
Amnesia in the nineteenth century in France**

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Franz Joseph Gall's (1758-128) claim that faculties are associated with specific regions of the cortex triggered a discussion on the principle of localization of function, which led to the introduction of the notion of aphasia by Armand Trousseau (1801-1687) in 1864. Heinrich Lissauer (1861-1891; 1890) described a disorder in recognizing common objects, later referred to as agnosia. And shortly thereafter, in 1900, Hugo Liepmann (1863-1925) described a disorder in performing actions which was termed apraxia. And the question arises: what happened to the concept of amnesia? I will present views on amnesia expressed in the French medical literature in the nineteenth century. The notion of amnesia was introduced by François Sauvages de Boissier (1706-1767) around 1734. Subsequently various views on amnesia will be presented as these were formulated in essays, mostly published in medical encyclopedias and dictionaries, in particular by Jean-Baptiste-Louyer Villermay (1776-1838) in 1817, Jean-Baptiste Bouillaud (1796 – 1881) in 1829, Jules Falret (1824-1902) in 1865, Theodule Ribot (1839-1916) in 1881 and Pierre Janet (1859-1947) in 1895. The descriptions varied considerably but they also showed important similarities. In particular, the well-known phenomenon of 'Ribot's law' was known in the older literature and dissociations in memory deficits, for instance memory for objects and a memory for words, were also widely accepted. Amnesia was discussed with respect to the specific form of memory disorder and the various etiologies or disorders that could produce amnesia, but there was no serious discussion on the localization of memory.

Angelo Mosso and the temperature of the brain

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Following his major studies and publications on the circulation of blood in the human brain, on the physiology of Fear and on Muscular Fatigue the Italian physiologist Angelo Mosso, known also for his ingenious instrumentation was already at the pinnacle of his international fame. Devoting the Croonian Lecture of 1892 to direct recording of the temperature of the brain in various physiological conditions was regarded as a call to renew the pioneering efforts of Moritz Schiff of introducing fine thermocouples into the brain that were stopped due to his forced exile. Mosso claimed that by the use of exceptionally accurate thin mercury thermometers he could measure minute changes in the temperature from within various parts of the brains of dogs and chimpanzees under superb experimental conditions. Here, Mosso provided, for the first time, graphic records of the effect of the emotional state, sleep or of various psychotropic drugs on the animal's brain as well of its core temperature.

Mosso did not report that about the same time he was already conducting similar (invasive) human experiments on inmates of the nearby mental asylum that he had used for his blood flow studies more than a decade previously.

In his book, of 1894, the results from the animal and human experiments were reported with an attempt to correlate them with his previous observations on the cerebral circulation.

The plausible contribution of these studies to the future field of functional neuroimaging will be discussed.

A history of the Alice-in-Wonderland syndrome

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Introduction: The Alice-in-Wonderland-Syndrome (AIWS) is a term John Todd, British psychiatrist, in 1955 applied to altered, bizarre perceptions of size and shapes of patients' bodies and illusions of changes in the forms, dimensions, and motions of objects that patients with migraine headache or epilepsy experienced. He proposed these illusions and hallucinations resemble changes in size and limbs that the character Alice experienced in Lewis Carroll's *Alice's Adventures in Wonderland*.

Search: Pub Med & Text Books

Results: Caro Lippman (1952) incorrectly claimed he was first to describe metamorphopsias associated with migraine. William Spratling (1904) noted some patients saw animals, "everything looks bigger" before their seizure. William Gowers (1907) noted some epileptic patients experienced aura with objects looking "...twice

the size". Oppenheim (1913) wrote that his patient experienced a detachment of the trunk or limbs with dizziness during migraine. Todd coined AIWS to describe metamorphopsias associated with migraine and seizures. We cite evidence from personal diary entries that Charles Dodgson, aka Lewis Carroll, probably described to Alice Liddell illusions suffered during his migraine headaches.

We found metamorphopsias occur during complex partial seizures, migraine headaches, viral infections with encephalopathy, and intoxications. We discuss evidence for spreading inhibition as a cause of metamorphopsias. We mention our patients who experienced illusions during migraine, seizure or possible autoimmune episodes and treatments. We will relate the odd behavior of the "Mad Hatter" character to chronic mercury poisoning.

Conclusions: Illusions associated with migraine or seizures were described before Lippman or Todd and have multiple etiologies.

Franz Joseph Gall's "working libraries"

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Franz Joseph Gall was a keen observer of behavioral traits of humans and animals. After he associated learning verbal material with flaring eyes in his schoolmates, he focused on finding other such correlations, not in the face or bodily expressions like the physiognomists, but between skull features and specific behaviors. He collected skulls, life and death masks, busts, and portraits from people and animals in this endeavor. These items became Gall's working libraries, allowing him to study the extremes of society: i.e., criminals, lunatics, and geniuses. Although he had little trouble inspecting the brains and collecting the skulls of criminals and lunatics, he found it very hard to do the same with highly accomplished people and had to rely largely on casts.

When Gall left Vienna in 1805, he left most of his collection behind, other than some specimens for demonstration purposes. He later gave these remaining human skulls and casts (175 items) to his friend, Austrian naturalist (Anton Rollett) for his museum, whereas the animal material went to a veterinary hospital museum, also in Baden (near Vienna). Gall built a much larger working library in Paris. After he died in 1828, about 650 pieces were bought by the French government for their *Musée National d'Histoire Naturelle*.

Gall's drive to obtain brains, skulls, and casts will be presented in the contexts of his methods and goals, wonder cabinets for research purposes, preservation techniques, and the limitations imposed by societal norms during his lifetime.

**Motor reactions in normal and spastic children.
The Magnus-Rademaker film collection (1908 – 1941)**

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Several years ago, a historical neurological film collection has been recovered, containing films recorded by Rudolf Magnus (1874-1927) and Gijsbertus Rademaker (1887-1957). Last year we presented the cerebellum films. Another series from the collection is about spastic children ('idiots'). During our research of Rademaker's work, we came across a thesis including film stills from Rademaker's films, depicting these 'idiots'. It was entitled: "About body posture and motor skills regulating reactions in 'low level oligophrenics'", written by Nicolaas Verwey, under Rademaker's supervision. Verwey (1901-1977) trained in Leiden (with Abraham Gans) and worked as a neuropsychiatrist. In his thesis he describes the normal motor development of infants, which is also shown in the films in a healthy infant at the age of 6, 9, and 11 months. Then, he describes the motor reactions of six oligophrenics, most of whom are also shown in the films. The patients were cared for at an institution for mentally disabled children in Oegstgeest (near Leiden), where Verwey worked. Amongst others, the tonic labyrinth- and neck reflexes are described. These reflexes were first observed in decerebrated experimental animals (Magnus) and were soon to be observed in 'idiots', neurological patients and healthy infants (temporarily present). Verwey demonstrates absence or presence of the various reflexes, determining the degree of 'decerebration'. The films and the thesis are a logical part of the research program on tonic labyrinth- and neck reflexes, started by Magnus in the 1910s. We will show several film clips and explain what can be seen.

Brains on television: Facts might be facts, but fiction is more entertaining

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As I have argued in previous research, although audience members view films and television series for entertainment, they often believe information presented in these media as factual or partly factual. People remember information they receive in public communications, but often forget the source of the information, according to research by social psychologists. Thus, viewers of the recent film *Lucy* and the television series *Limitless* will remember the oft-quoted “rule” of how human beings only use 10% of their brains without remembering that they heard about it, not in a scientific article, but rather in a form written for mass entertainment. Of course, the writers of such media are perpetuating a myth that they may have heard somewhere by repeating it as true without determining if the information is actually factual.

In this particular paper I will continue my research into the ways in which psychology, neurology, and neuroscience are presented in popular culture sources, specifically in television. I will examine several series set in the 21st century as well as series set in the distant future. My purpose will be to show how writers present information purported to be scientifically and medically valid to the viewing public. I will compare that to ways in which writers of science fiction speculate about the future of medical knowledge and how that knowledge will be utilized for both basic research and practical purposes. I propose to examine two television series set in the 21st century: *Don Matteo*, an Italian series and *iZombie*, an American series, both of which can be labeled as comedic crime dramas. Series set in the future will include *Farscape*, an American-British-Australian science fiction adventure, and *Firefly*, an American science fiction space western.

The Vienna Medical School`s research on the pituitary gland at the beginning of the 20th century

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Focusing on the multidisciplinary of research on the pituitary gland within the Vienna Medical School A. Fröhlich, assistant of the neurologist L. von Frankl-Hochwart, at first described adiposogenital syndrome as a consequence of a pituitary gland tumor in 1901, followed by H. Schloffer, a surgeon from Innsbruck, who for the first time removed a pituitary gland tumor by using a trans-sphenoidal approach in 1907. The Viennese surgeons A. von Eiselsberg and Julius von Hochenegg some months later modified Schloffer`s method, both achieving symptom regression.

Neurosurgeons essentially cooperated with neurologists (e. g. Frankl-Hochwart) and neuroradiologists (e.g. A. Schüller) to secure diagnosis.

The laryngo-rhinologist O. Hirsch developed a new endo-nasal surgical pathway to the pituitary gland, executing it for the first time in 1909. In 1912 O. von Chiari successfully carried out an additional modification of Schloffer`s operation.

The pathologist J. Erdheim described craniopharygeoma and nanosomia pituitaria. Meanwhile, the pharmacologist E. P. Pick investigated the effect of pituitary gland extracts, the endocrinologist A. Biedl dealt with pituitary gland pathophysiology and M. Sgalitzer became a pioneer of pituitary gland radiotherapy.

Additionally, it has to be noticed that the majority of the above mentioned persons were driven out in 1938 (Fröhlich, Hirsch, Pick, Schüller, Sgalitzer).

**Alfred (Fredy) Quadfasel (1902 – 1981). NS-opponent, physician émigré
and his impact on American neurology**

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The physician and psychologist Dr. Fredy Quadfasel, born in East Prussia, was trained in neuropsychiatry by Kurt Goldstein in Frankfurt/Main and by Karl Bonhoeffer in the Berlin Charité. After detention by the Gestapo due to political opposition – probably by denunciation for offending the so-called “Heimtücke-Gesetz” (“malice law”) from March 1933 – and imprisonment for 2 to 3 months 1934/35 he emigrated via England and Canada into the United States of America, where he initially ran a neuropsychiatric office in New York, but also very soon he could take the academic post of an instructor of neurology. After his military service 1944 to 1947 at the Cushing General Hospital in Framingham near Boston he was appointed head of the neurological department, later moving to the Boston Veterans Administration Hospital. His academic function consisted of „Instructor in Neurology at Harvard Medical School“ and Associate Professor at the Boston University School of Medicine. His impact on neurology was considerable, especially on the locally arising discipline of neuropsychology, represented by Harold Goodglass and Norman Geschwind. In spite of missing personal recordings of Quadfasel a reconstruction of his life and work was possible due to many archive documents, tracing the contour of a highly esteemed neurologist in Germany and USA.

Poliomyelitis and the Vaccination Policy in the Netherlands in the 1950's and 1960's

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In the 1950's the international debate on the disease poliomyelitis reached a new stage after the presentation of the first positive results of the use of the Salk vaccine. After initial hesitation the public health authorities and the medical establishment in the Netherlands decided in 1957 to start a national vaccination campaign with the Salk vaccine. Politically, socially and technologically the implementation and the further development of this campaign

differed from campaigns in the US and other countries in Europe. First, the realisation of the vaccination campaign became the responsibility of the private, pillarised by the so-called cross organizations, welfare societies which offered a network of easy accessible public health facilities since the 1930's. The Salk vaccine could easily be added to the already existing cocktail of the DKT vaccine. Second, in 1960 the National Institute of Public Health started to produce the Salk vaccine, after which the import of vaccines was no longer needed. Both factors are responsible for the fact that during the Salk Sabin debate in the 1960's the Dutch public health authorities stucked with the Salk vaccine, unlike the health professionals in the United States and other countries.

Senescence and cognitive decline of Marshal Phillippe Pétain

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Phillippe Pétain (PP) was aloof, punctual, and cautious in interpersonal communication. He spoke little but could express himself sharply. He had a sober life style and did not smoke. For his life saving strategies in World War I, he was rewarded with the title marshal. In the 'twenties' he wrote a book about 'the soldier', which he did not publish. In the 'thirties', his prestige in France was extraordinarily high. His views about the national defence of France were now based mainly on experience, rather than on thorough knowledge of new weapons, as in 1914. He thought erroneously that the German army could not cross the Ardennes. In 1940, at 84 years of age, he was appointed head of state and government. He tired easily and complained of memory weakness but was otherwise physically well. In the November crisis of 1942, he remained passive and failed to lead. He was replaced as head of government. From 1943 on, he was increasingly apathetic. At the start of his process in High Court in 1945, he read a declaration aloud, without any problem. In 1945/6 he had difficulty finding words in conversations. In 1947 he was visited in his jail on Yeu Island by a parliamentary committee, which concluded that he was senile. His cognitive abilities decreased thereafter.

In conclusion: the head of state of France in World War II was suffering a process of cognitive decline, leading to dementia. Aged, leading, public figures should be examined for their cognitive functioning.

Research on epilepsy in Nazi Germany (1933-1945)

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National socialistic ideology was based on eugenic thinking and the implementation of eugenic policies was a major political state objective. An immediate effect of this policy was the passing of the “Law for the Prevention of Genetically Diseased Offspring” (Gesetz zur Verhütung erbkranken Nachwuchses) in 1933. According to this law “hereditary epilepsy” along with various other neurological and psychiatric disorders was regarded as a mandatory indication for forced sterilization. Subsequently, funding of epilepsy research was generously increased and extended, e.g. in Munich and Bonn. A main focus was put on idiopathic forms of the disease which were a priori considered as hereditary. At the annual meetings of the German Society for Neurology and Psychiatry (“Gesellschaft deutscher Neurologen und Psychiater”), lectures and debates on epilepsy repeatedly constituted a key topic. Participants of the meetings on the one hand opted for a broad interpretation of “endogeneity” and thus favored an extension of the practice of sterilization, on the other hand others advocated a more differentiated and restricted attitude. Several neurological researchers showed a penchant for self-mobilization in the sense of the new government.

Limburg neuropsychiatrist J. de Jong. Discoverer of Hereditary Neuropathy with liability to Pressure Palsies (HNPP)

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Joop de Jong settled as neuropsychiatrist in Maastricht in 1936 and moved to Heerlen, an flourishing city in the mining area of the Southern Netherlands, in 1941. In 1947 he published on a large family with, what was called by the local people 'potato grubbing disease', a hereditary disposition of the occurrence of neuritis. De Jong's Dutch publication has been referred to since then as the first description of HNPP (Hereditary Neuropathy with liability to Pressure Palsies). We recently found a new case from this family and were able to confirm the diagnosis by DNA analysis.

With the help of Friedrich Lewey, De Jong made a study tour to the United States (1949), visiting neurological centres on the east coast, including Boston, New Haven, Baltimore, New York, and Washington. He met several well-known persons, including Stanley Cobb at the Massachusetts General Hospital and John Fulton at Yale University in New Haven. He also visited the department of Ladislav Meduna (Chicago) and upon his return started treating neurotic patients with 30% CO₂/70% O₂ (Meduna's mixture). He considered it a lighter form of 'shock cures', in view of the insuline, cardiazol and electroshock treatments introduced in the 1920s and 1930s. He believed that treatment-refractory cases were now amenable for recovery.

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**On trembling eels, slaves and paralysis.
Maastricht physician Philip Fermin's stay in Surinam
(1754-62)**

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A number of years ago we published a paper on 'The "Eels of South-America": Mid-18th-Century Dutch contributions to the theory of animal electricity' (*J Hist Biol* 2009;42:235-251). A short section in the paper was devoted to the Philip Fermin (1730-1813), who spent most of his life in Maastricht. In the present paper, I will describe who Fermin was, what he published and discuss more in detail his writings on the trembling eel, slaves and a particular kind of paralysis.

Son of French immigrants in Berlin, Fermin studied medicine and stayed in Surinam for 8 years, describing its nature, culture and medicine. In his *Traité des maladies les plus fréquentes à Surinam* (1764) he described, among other things, patients suffering from *Beillac*, a kind of *Colica Pictonum*, followed by paralysis. In his *Description générale, historique, géographique et physique de la colonie de Surinam avec figures et cartes* (1769; with Dutch edition in 1770), he reported on his investigations of the trembling eel. He was critical on slavery and devoted a book to the issue in 1770, *Dissertation sur la question: s'il est permis d'avoir en sa possession des esclaves et de s'en servir comme tels dans les colonies de l' Amérique*, advocating better treatment. Following his return to Europe, he settled in Maastricht, where he held several official functions, including judge at the *tribuna civile* during French rule.

Brain pathology and euthanasia in the Third Reich and the aftermath

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In the time between WW1 and WW2 neuropathology did not yet exist as an independent section in the German university hospitals. However intensive brain research in human autopsy materials was carried out in the two existing Kaiser Wilhelm Institutes of Brain Research in Berlin-Buch and of Psychiatry in Munich. These institutes had contracts with the pathology sections of huge mental hospitals of the region. This collaboration guaranteed a reliable supply of brain materials to the KWIs and a responsible and professional post mortem diagnosis for the clinicians. This practice existed for 50 years also during the Nazi period. However it took till the late 1980s and another generation of neuroscientists to discover that in the brain and histology collections of several institutes, materials from victims of Nazi crimes were stored. Academic institutions and Max Planck Institutes decided in the 1990s to renounce any scientific or educational use of the materials and instead inter what had remained from the victims of capital punishment or euthanasia. As the chief managing director of Max Planck Institute in Munich it was my obligation to lead this ceremony and give the funeral speech. I will report on this event and also on some of the reactions by the scientific community and the public.

The Vesalian landscape is more fragmented than previously supposed

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The iconic “muscle-men” in *De humani corporis fabrica* (1543, 1555) by Andreas Vesalius (1514-1564) have been the principal benchmark for myology and for anatomical atlases over nearly five centuries. Several authors, including first Jakschath (1903) and later Cushing (1943) and Cavanaugh (1983), recognized that the backgrounds of combinations of these musclemen can be linked to form panoramic landscapes. Cushing (1943) created two dissection sequences: an anterior “eight-series” of musclemen with sequential stages of dissection seen from right to left (in woodcut order 8-7-6-5-4-3-1-2, although woodcut 2 is actually a lateral view), and a similar posterior “six-series” (in woodcut order 14-13-12-11-10-9). Cavanaugh (1983) later reversed these, explaining that the counterintuitive right-to-left arrangement was a result of the process of relief printing from woodblocks; he also suggested that Vesalius had likely changed the presentation order of woodcuts 1 and 2 after the woodcuts had been made.

Detailed scans were examined from several different copies of the “Fabrica.” Photo editing software (Aperture3, Photoshop CS6, NIK) was used to optimize contrast and image detail, to align and stitch the images, and to examine closely the purported correspondence of the published sequences in the foreground, middle ground, and background. This analysis confirmed the previously suggested posterior sequence, but establishes a more fragmented landscape for the anterior dissection sequence: 1, 2, 3-4-5-6, and 7-8. The previously supposed correspondence of plates 2-1, 1-3, and 6-7 is spurious. For example, for plates 2-1 walls and foliage do not correspond, even by staggering the images, and the arched ruins are at different distances and perspectives from the observer. For plates 1-3 the foreground-to-background distance does not quite correspond, and the background features are dissimilar. For plates 6-7 there is no correspondence and a wall edge is entirely missing. In conclusion, the Vesalian landscape is more fragmented than previously supposed.

The American Physiological Society

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The American Physiological Society was founded in 1887 with the objective, according to its constitution, to “promote the advance of Physiology and to facilitate personal intercourse between American physiologists” (Howell and Greene, 1937, p. 5; Anonymous, 1913). The constitution virtually defined who a physiologist was by its membership criteria: “Any person who has conducted and published an original research in Physiology or Histology, (including Pathology, Pharmacology, Experimental Therapeutics, and Hygiene) or who has promoted and encouraged physiological research, and who is a resident of North America, shall be eligible for election as an ordinary member of the Society” (Howell and Greene, 1937 p. 56). About half of the papers read at their first Conference in 1888 were neurophysiological. At one time or another, all but a few of the original members did a neurophysiological study.

The founding of the Society was organized and particularly encouraged by John Call Dalton (1825-1889), Silas Weir Mitchell (1829-1914), Henry Pickering Bowditch (1840-1911), and Henry Newell Martin (1848-1896). There were 28 original members, all of whom were active experimentalists doing and publishing original physiological research. The Philadelphia area of Mitchell contributed the largest number of members followed by students of Bowditch at Harvard and of Martin at Hopkins. Most had academic jobs, like Russell Henry Chittenden (1856-1943), Professor of Physiological Chemistry, at Yale, Warren Plimpton Lombard (1855-1939), Assistant Professor of Physiology, at Physicians & Surgeons at Columbia, and Henry Sewall (1855-1936), Professor of Physiology, at Michigan. Some, like Henry Herbert Donaldson (1857-1938) and William Henry Howell (1860-1945), were fellows or otherwise associated with the university that granted their degree. Mitchell and Isaac Ott (1847-1916) were in private practice with an impressive research record.

**Between research and abuse:
Neuroscience and medical experiments in Nazi Germany**

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Although issues relating to Euthanasia killings of mentally ill, medical research conducted on collected body parts and living victims under National Socialism are among the best-known medical abuses, there have been no statistics on the extent and numbers of victims and perpetrators, and their identities in terms of age, nationality, and gender.

Thus, the Wellcome Trust-funded research project “Victims of Unethical Human Experiments and Coerced Research under National Socialism” based at Oxford Brookes University has established an evidence-based documentation of overall victim and perpetrator numbers through record linkage of evidence from the period of National Socialism, and from post-WW2 trials and other records.

This presentation will examine the unethical medical procedures relating to neuroscience; information regarding the victims including their age, gender and nationality; and details regarding perpetrators/Nazi physicians including their post-war activities and potential court trials they stood.

Understanding Vocal Cord Movement Disorders

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Spasmodic dysphonia (SD) is currently described as a movement disorder of the vocal cords. The reference that is given priority for this modern diagnostic category is an 1871 publication by Ludwig Traube (1818-1876). Traube's original German report of a spastic form of nervous hoarseness has been located and translated in to English. Upon examination, it appears that Traube's case exhibited many features that do not conform to our current definition of SD.

Contemporaneous work by Morell Mackenzie (1837-1892) (1868) includes observations of spasms of adductor muscles of the larynx confirmed by laryngoscopic examination that do fit our current clinical picture. However, his work has not been historically credited. We will consider the social-cultural issues that may have contributed to the propagation of Traube's work but the loss of Mackenzie's.

Our objective is to understand how Traube's case came to serve as the foundation of understanding laryngeal movement disorders. Bibliographical and bibliometric methods are used to determine the citation history of this original source over the past 140 years. An analysis of citation patterns indicates the source of Traube's priority is the American publications of Godfrey Arnold and Richard Luchsinger, mid-20th century ENT clinicians. We discuss how this case gained emblematic status through the widespread practice of employing secondary citations. This appears to have led to misrepresentation and conceptual misunderstandings of the disorder. These became embedded and perpetuated across time, and have had diagnostic and treatment implications.

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The historical development of transcranial electrical stimulation

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The first clinical experience with electric fish, and a four century-long history of electrotherapeutic techniques current, has led to the modern use of transcranial direct current stimulation (tDCS). This history includes various degrees of success and the therapeutic value of electricity in the treatment of mental disorders followed a cyclical course throughout the centuries. Clinicians approached transcranial electric stimulation with great enthusiasm in the 18th century. Among the illnesses treated were neurasthenia, melancholia, mania, hysteria, but also hallucinations, migraine and dementia. There were in this phase plenty of excesses and exaggerations, typically found in the early stages of the application of a new therapeutic technique, which sometimes led to an excess of zeal by clinicians. Transcranial electric stimulation was abandoned at the end of the 19th century, when they failed to produce consistent results, raising doubts about the efficacy of electrotherapy.

In the 20th century, several experimental studies clearly demonstrated using motor evoked potentials that tDCS resulted in changes in motor-cortical excitability. Today, tDCS is a recognized as an effective technique in the application of direct current to the scalp, usually delivered by a small battery-driven stimulator, by attaching

electrodes of different polarities to the skin and emitting a constant current. The ability of tDCS to treat a number of clinical conditions such as affective disorders, chronic pain conditions and post-lesional cognitive disorders has been demonstrated.

**Frank Henry Netter (1906-1991):
Neuroanatomical and neuropathological iconography**

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25 years ago Frank Henry Netter died. He was born in Manhattan in 1906, he graduated at New York University in 1931 and practiced medicine. Soon he started a collaboration with CIBA Pharmaceuticals (1936): at that time the advertising of Swiss company was expanding, due to the development of periodicals. CIBA Zeitschrift was printed in 2 editions and it would have been translated in many other languages: english (2 editions), french, spanish (2 editions), czech, japanese, dutch, swedish, danish, portuguese (2 editions), italian. Another pillar of such a work was represented by anatomical and pathological iconography. In that field, Frank Henry Netter reached the highest point, so that he was named the "Michelangelo" of medicine, and his model of anatomical and pathological iconography became a standard during all the second

half of XXth century. His anatomical illustrations are still well known and worldwide popularized. Netter started with leaflets illustrating pathological findings in different apparatuses and organs (not regarding CNS). Soon after the WWII, in 1948, such leaflets were merged to a volume (*CIBA Collection of Medical Illustrations*), which confirmed Netter's popularity among the medical community. But his first systematic engagement was represented by neuroanatomical and neuropathological iconography. That engagement coincided with the starting of a new CIBA periodical: the *Clinical Symposia*. The first volume (1948-1949) was mainly devoted to *the central nervous system anatomic plates. Because the interest in Dr. Netter's interpretation of neurologic anatomy seems to be so general*, his work continued and in 1953 the volume of neuropathological and neuroanatomical illustrations started a renewed series of *CIBA Collection of Medical Illustrations*. Netter's illustrations were Clinical Symposia trademark and he dealt with all the aspects regarding neurosciences.

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“Non-convulsive” cranial electrotherapy for the depressed: Did we need the seizure?

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On April 20 1938, Ugo Cerletti (1877-1963) and colleagues were the first to generate seizures by means of an electric current applied to the head of a schizophrenic patient. The efficacy of electroconvulsive therapy (ECT) has commonly been attributed to the seizure rather than the electrical stimulus. However, the need of seizures for the antidepressant effect of ECT is currently being debated; Regenold *et al.* recently demonstrated a striking efficacy of sub-convulsive electrical stimulation in depressed patients, whereas seizure-inducing currents do not necessarily lead to clinical improvement. Discarding the need for seizures in ECT would mean that we have “been barking up the wrong tree since the 1930s” (Sackeim, 2015).

The English surgeon John Birch (1745-1815) pioneered cranial electrotherapy for the depressed in 1799, closely followed by Aldini (1803) and Gale (1803); a practice that terminated with the advent of ECT in 1938. By evaluating the available resources between 1799 and 1938, this research project primarily aims to establish the historical evidence for antidepressant effects of “non-convulsive” cranial electrotherapy in depression. Following the discovery of ECT, much research was conducted on the antidepressant properties of electroconvulsive procedure. A second goal of the project is, therefore, to evaluate the presence of “non-convulsive” antidepressant effects in the early ECT literature (1938-1990). Study results could contribute to the current debate surrounding the role of the electric stimulus in ECTs antidepressant efficacy.

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Glass brains, plexi-brains, blue Brains: imaginaries of “brain building” in mid-twentieth century brain models

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This presentation charts the construction and circulation of the first illuminated, coloured, glass brain model produced for the Vienna Museum of Natural History in 1931, as well as the subsequent adaptation of this model into the illuminated 'Plexihirn' made of Plexiglas at the same museum in 1952. By tracing the routes of these models between scientists, technicians, exhibition makers, patent descriptions, international newspaper articles, advertisements, fairs and education films, I argue that the production of these brain models reveals a particularly distributed and discursive dimension of what Elizabeth Hallam has termed 'anatomopoeia', the junction of materialities and metaphors in anatomical model making (Hallam 2014). While these brain models built upon long-standing aesthetic conventions in model making (transparency, luminescence, pushbuttons, magnification) my examples demonstrate how a specific discourse and significance of 'building a brain' was framed through popular mediations of the models in photographs, newspaper articles and an educational film. In the case of glass brain model, this trope of 'brain building' was part of the model's signboard function for the discipline of neurology at the first International Neurological Congress in Bern, Switzerland in 1931. Emphasis on the construction process, I argue, lent a particular authority to the practice of neurology, as well as offering a successful narrative device in popular texts to negotiate between the image of a complex science and the possibility of scientists to intervene and tinker with brains. Moreover, the emphasis on constructing a brain with particular novel materials - curved illuminated glass tubes or luminescent acrylic plastic - allowed for a rhetorical balance between the models' proposed educational and entertaining, impressing functions. Accounts of the models' creation carefully framed their spectacular dimension, and distinguished between what I call, following one popular newspaper article, the 'laymen's glow' and the 'expert's illumination'. In the final part of this paper, I point to the persistence of images of 'brain building' in popular contemporary accounts of artificial brain projects (such as the Blue Brain project) where the aesthetics of glow and illumination are used to draw imaginative connections between anatomical images of the cerebral cortex and imaginaries of an artificial, human-made brain.

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Neurology in Genoa – A tour of neuroscience in Europe

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In 1593, the Magistrate of hospitals for the incurable in Genoa decided to allocate two beds for “mente capti seu furiosi pauperese et miserabilis”, later the number of beds increased reaching the number of 50 in 1627. In 17th century in Genoa the alienated were considered patients and admitted in a small ward. In 1841, after the French revolution was inaugurated the mental institution with the application of rational criteria for the admission of patients affected by neuro-psychiatric diseases.

In Genoa, the separation between Psychiatry and Neurology was realized by neuro-psychiatrist Enrico Morselli (1852-1929). He contributed for the foundation of the Italian Society of Neurology in 1907 and he was one of the first Presidents from 1909 to 1911. He promoted the building of the Neurology Clinic that was inaugurated in 1933 by Ugo Cerletti (1877-1963) that was appointed chair of the clinic. He is famous for the invention of the electroshock. He began his experiment in electricity and created different activities of research. When Cerletti moved to Rome Lionello De Lisi (1885-1957) succeeded as head of the Neurology department. He was a multifaceted man with interest in neurology and art. He gave important contributions on aphasia, Wilson’s disease and progressive muscular atrophy. In 1949, he founded the journal “Sistema Nervoso” (“Nervous System”), that ceased the publication in 1970. After the death of De Lisi became head of the clinic Cornelio Fazio (1910-1997), that permitted the creation of the Neuroscience department, focusing on neurophysiology. Fazio moved to Rome and was appointed Chair of Neurology Carlo Walter Loeb (1921-2005) who

promoted the study on dementia and vascular disease. He stimulated the study in neurophysiology describing the “alpha coma”.

The story of Neuroscience in Genoa is part of a project promoted by Federation of European Neuroscience Societies (FENS) for the development and census of libraries, archives, museum in Europe entitled European Brain Museum (EBM).

The aim is to preserve of European Neuroscience by making available to the wide public electronic materials on European neuroscientists or important historical events.

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www.FENS/Outreach/HistoryofEuropeanNeuroscience

Culture and science in times of conflict and crisis: Considerations on their importance and limits, as emerging from some episodes of Nazism history

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Through a series of unexpected circumstances in the last few years my historical interest has turned in the direction of history of the last world war and particularly of the massacres perpetrated by Nazis in Tuscany. The sad fact that soldiers belonging to Germany, one of the nations that during the centuries has contributed much to western culture, could barbarously kill way helpless civilians, has lead me to study and reflect on the relation between culture and barbarism in relation with Nazism (and Fascism). Among the victims were many women and children (and even newborns as in Sant'Anna di Stazzema where Anna Pardini, the youngest of the victims, was only 20 days old) following which the soldiers celebrated with music and songs. My reflections have developed particularly when I discovered that the pillaging of books and scientific instruments in Pisa were ordered by German scientific societies and directed by professional scientists. What has been for me more sad and amazing is to realize that the interplay of culture with Nazi ideology appeared not only the endeavour of opportunistic intellectuals but also in people who distanced themselves from Nazism. For instance, despite his opposition to Nazism (which cost him his life), the great theologian Dietrich Bonhoeffer held a partially anti-Semitic attitude based on his arguments derived on the great tradition of German theology and history. This has created a general intellectual pessimism in a person like myself, endowed with the naive attitude that culture and science are in some way antidotes again barbarism. In this perspective, and taking into account that modern times are confronted with a decline of some fundamental values in the relations between people of different countries, cultures and religions, I think that we should consider what we could do to avoid that culture and science could in future foster barbarism instead of humanity. Besides our personal efforts, it can be argued that international scientific societies, like ISHN and FENS, could act in a way to promote collaboration and mutual understanding between people and thus avoid the possible deviations of culture and science.

Nazi scientists as expert consultants for books and scientific instruments pillaging at the University of Pisa in 1944: Hans Nothdurft and Guido Dessauer, a physiologist from Heidelberg, and a grand-bourgeois physicist from a family of Bavaria industrialists

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Nazi attitudes to books varied from a systematic destruction of volumes considered as subversive or anti-Nazi (in the form of *Bücherverbrennungen*, i.e. book burning, to other methods of destruction), or to pillaging for the use in research related to the scopes of the Third Reich. In this last respect the pillaging of Jewish books organized by Alfred Rosenberg for the library of the *Institut zur Erforschung der Judenfrage* is well documented: Nazi scholars were performing research aimed at a "scientific" solution of the so-called "Jewish question". These forms of plundering were organized under the "scientific advice" of experts like Johannes Pohl His presence is documented in various parts of Europe, from Rome to Thessaloniki and Vilnius. Less well known was the pillaging of scientific books (and instruments). This also involved experts, and was carried out by Nazis often following the request of German scientific societies or universities strongly "Nazified". An example can be found at Heidelberg University, where research was almost totally coherent with Nazi ideology. On the basis of a rich documentation existing in the archives of Pisa University, I was able to reconstruct in some detail the pillaging of scientific books (and instruments) at the institutes of Physiology and of Physics in Pisa during the summer of 1944. The first one was carried out under the supervision of Hans Nothdurft, a Heidelberg physiologist, and the second by Guido Dessauer, a member of the German grand-bourgeoisie (and the brother of John-Hans the founder of Rank-Xerox, not himself involved in Nazism). Nothdurft and his associates could rob the physiological library, one of the richest in Europe, without difficulty but, during the pillaging of the physical institute Nazi officers were confronted by a courageous lady, Prof Mariannina Ciccone, who "precipitated on the soldiers with a fury such as an enraged tigress would defend her offspring" and thus succeeded in saving many books and instruments. In the case of the physiological institute the stolen books, journals and scientific instruments could not be saved or recovered. However, after the war, thanks to Prof Giuseppe Moruzzi, the institute became one of the most important research centres in neurophysiology and also the library flourished again with modern and old books and complete collections of classical journals of physiology and neurosciences.

**From baboons to automata:
Some historical approaches to musical performance and embodied cognition**

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The eighteenth-century was the heyday of automata construction, a number of which were musical androids, capable of playing a number of pieces on instruments ranging from flutes to harpsichords. While musical automata have received considerable scholarly attention in recent years from within the field of musicology as well the history of science, the philosophical prehistory of the musical androids has not yet come under scrutiny. The following essay contextualizes these machines within earlier philosophical writings on automatic musical performance. I begin by surveying the appeal to animal and insect behavior, sleep-walking, and machines within theories of seventeenth century philosophers tackling the problem of embodied cognition (i.e. complex behaviors that cannot be attributed to a mind understood as a disembodied entity located solely within the brain). Taking historical philosophical interpretations of musical performance into account, I argue that the act of instrumental playing was regarded as paradigmatic of the authority of body over mind. Finally, I show how tropes that arise around seventeenth-century philosophical discussions of musical performance migrate from lutes to harpsichords to pianos across the following two centuries, informing a range of debates in philosophy, psychology, and mesmerism.

Musical glasses, metal reeds, and broken hearts: Two cases of melancholia treated by new musical instruments

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Music has long been known to affect the passions, and has also been employed in treating various illnesses since ancient times. In 1761, American natural philosopher and diplomat Benjamin Franklin invented a new instrument utilizing rotating glass bowls of different sizes that could be touched with both hands. Franklin not only played his glass armonica for pleasure, but also used it to change moods and to treat melancholia in a heartbroken Polish princess. The aeolodicon, a wind instrument utilizing metal free reeds (a proto-harmonium), was invented half a century later. In the early 1830s, Peter Joseph Schneider described using it to treat a young lady suffering from melancholia and hysteria in the aftermath of a tragic love affair. These fascinating early instances of therapeutics with musical instruments have much in common. Their features are examined here, along with some thoughts about why Franklin and Schneider might have selected these unusual instruments to treat melancholia.

Descriptions of apoplexy by Joseph Frank in the beginning of the XIXth century in Vilnius, Lithuania

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The aim of this study was to investigate descriptions of apoplexy, to assess the importance of described risk factors, causes and treatment methods of apoplexy the beginning of the XIXth century in Vilnius, Lithuania.

Case reports of patients with apoplexy, presented by Joseph Frank (professor of clinical medicine in Imperial University of Vilnius) in *Mémoires Biographiques* (1804 – 1823), descriptions of apoplexy in his textbook *Praxeos medicae universae praecepta* (1818) were analyzed.

Symptoms and signs of apoplexy in 5 vivid clinical cases described in *Mémoires Biographiques* were thought to be caused by psychological stress, overwork, mourning, experienced horrors of Napoleonic wars and other. J. Frank in his textbook describes apoplexy as a sudden weakening, interruption or extinction of sensation and the soul ability to cause movements. Male gender, obesity, luxurious living, sedentary lifestyle, worries, low atmospheric pressure, cold, equinox, summer heats are mentioned as main predisposing factors of apoplexy, as well as going to bed after meals, hot baths, satiety, alcohol intoxication, drugs (opium, nicotine), joy, horror, anger, resentment, cutting of polish plait (*resectio plicae*) – as promotional factors. However, the direct causes of apoplexy were recognized as brain compression of venous or arterial blood, obstruction of carotid arteries and others. Writing about apoplexy prophylaxis, J. Frank emphasizes „recreation and moderation“ principle, recommends treatment with periodic bloodletting or purgatives.

In conclusion, apoplexy was mainly thought to be a result of experienced psychological stress, overwork and lack of healthy lifestyle in the XIXth century in Vilnius, Lithuania.

Richard Bright's accounts of inflammatory diseases of the brain in the light of early 19th century concepts of inflammation

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Richard Bright maintained that the principal causes of diseases of the brain may be ascribed to inflammation, interrupted function and irritation and he divided his cases of brain disease accordingly. Bright recognized that these factors frequently co-existed in various proportions but he considered this arrangement to be a practical way to determine the dominant pathological condition in each case which he believed would aid in devising the most appropriate treatment. The cases included in this section are of a diverse nature. Bright admitted that in some instances the symptomatology and autopsy was not consistent with inflammation.

The rationale for Bright's selection of cases for this section is puzzling unless theories of inflammation that were current in the early decades of the 19th century are taken into account. The medical doctrines prevalent in Bright's time were "made up of a heterogeneous compound of humoral, chemical, mechanical and mathematical notions". The dominant theory that was prevalent at Bright's time and which rested almost exclusively upon mechanical principles originated with Boerhaave". The modifications that followed adhered to his notion that inflammation was predicated on an alteration of blood flow in the capillaries.

Bright's section on inflammatory brain diseases contains cases that would not currently be considered to be caused by inflammation, which does not detract from the reality that many of his observations contributed to the foundations of scientific medicine developed later in that century.

Origin of the term *decussatio pyramidum*

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There is no consensus regarding the origin of the term *decussatio pyramidum*. Hyrtl's famous „Onomatologia anatomica“ (1880) does not present an entry *decussatio*, and Barcia-Goyanes (1980) does not date the term in his „Onomatologia anatomica nova“. Various anatomists of the past are honored by modern scholars, f. e. Vieussens (Marcovecchio 1993), Reil (Swanson 2015), and Collins (online source FMC Thesaurus). However, contralateral effects of brain lesions were already mentioned in Hippocratic treatises. The Greek physicians Aretaeus of Cappadocia and Cassius Iatrosophista assumed that the anatomical reason for this phenomenon is the interchange of the nerves; Aretaeus called it *chiasmus*. This opinion was discussed in modern times and although anatomists did not always agree with it, they used the term *decussatio nervorum* (e. g. Vesalius 1543, Bartholin 1661). At the same time the term *pyramis* appeared in anatomical discussions (Willis 1664). The authorship of the first demonstration of *decussatio pyramidum* is frequently given to Mistichelli (1709) and Petit (1710), but they have published in vernacular language and neither the term *decussatio* nor any of its national forms are present in their work. A milestone in the history of the term is the „Mémoire“ of Gall and Spurzheim presented to the Institute de France 1808 as well as reviews of this publication in the following years. In the French printed form of the „Mémoire“ (1809) the word combination *décussation des pyramides* was used for the first time in anatomical literature. The English equivalent *decussation of pyramids* appeared in Spurzheim's book *The Physiognomical system of Drs. Gall and Spurzheim* (1815). BNA, the first unified anatomical nomenclature, finally used the expression *decussatio pyramidum* (1895). In the last version, the Terminologia Anatomica (1998), this term occurs in unchanged form.

The political reorganization of "Grossforschungsanstrengungen" in Nazi-dominated neurosciences: The examples of Strasburg and Leipzig, 1933-1945

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The status of the medical profession in Germany during the National Socialist Era has been the subject of much research with scholarly consensus being reached on many grounds – regarding, for example, the central issues of racial anthropology, public health, or the murderous activities by Nazi physicians. The intensive scholarship has resulted in an encompassing picture of the changes in academic societies along with the development of basic research practices.

The institutional reconfigurations are likewise important to be assessed during the successive political changes in Germany between 1910 and 1945. The University of Strasburg offers a compelling first case for institutional observations regarding the neurosciences during the National Socialist period, when describing an exceptional geopolitical position. When Alsace and Lorraine were occupied again by the German *Wehrmacht* – following the defeat of the French army on June 22, 1940 –, the new chief of the Nazi civil government Robert Wagner (1895–1946) promoted a marginalization of the “French cultural influence of the interwar period.” This process had considerable consequences on the science and medical administrations

Similarly illustrative for the development of the brain sciences during the times of the Third Reich, is also the situation at the University of Leipzig. The social deterioration of the early Leipzig brain sciences landscape with the advent of the National Socialist period is instructively reflected in a report, which the neuropathologist Richard Arwed Pfeifer was ordered to draft for the Soviet Military Administration on May 7, 1946, one year after WWII had ended. It suffices to say that the advent of the Nazis’ ever tightening grip on all institutional and social life aspects of the Third Reich led to an oblique system of nepotism, obscurity, and arbitrariness, where often enough personal intrigues, blackmailing, and political traps brought university professors in contact with the GeStapo.

Kenny versus the medical establishment in the management of infantile paralysis

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When “Sister” Elizabeth Kenny (1880-1952) sailed into San Francisco harbour in 1940 the American Press eagerly awaited her arrival. The American public immediately embraced her; Roosevelt befriended and supported her. The Sister Kenny Institute was established in 1942 to continue and promote her work and to train nurses in her techniques. In 1946 she became the subject of a Hollywood movie, her part played by Rosalind Russell and in 1952, she was voted the most admirable woman in the United States. Yet the medical establishment were dismissive of her claims that poliomyelitis should be treated with mobility and not immobility.

Elizabeth Kenny was born in an Australian country town and without formal training became a ‘bush nurse’. From here she developed her ideas about the treatment of the most feared often-debilitating infantile paralysis. But her ideas were contrary to those held by the orthopaedic establishment. Not deterred by the controversies and adverse outcomes of the official reports, she was able to establish Government supported Kenny clinics that employed her techniques.

A long forgotten, unlabelled out patient record of some 200 patients (1935-37) was found in the archives of the Royal North Shore Hospital of Sydney. Most had a diagnosis of infantile paralysis; many were recorded as cerebral diplegia, and a small number of other neurological conditions. Further investigation identified a Kenny Clinic had been established at the hospital and had been the subject of a report to the Parliament of New South Wales.

This study will look at this clinic and some of the politics behind this remarkable controversy in the history of poliomyelitis.

Dictante dolore: Alphonse Daudet's journey through tabes dorsalis

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Alphonse Daudet (1840-1897) is a classic francophone writer. His famous texts, such as *Les Lettres de mon moulin*, *Le Petit Chose* or *Les aventures de Tartarin de Tarascon*, are marked by naturalism and a certain meridional spirit. Daudet suffered from early syphilis that followed the carrier, eventually extending into a disabling and severely painful tabes dorsalis. His disease diary, a posthumous work called *La Doulou* (*The pain*) gives us a unique account of pain, semiology and the treatment of tabes dorsalis. *La Doulou* deals not only with Daudet's chronic and severe pain but also with gait disturbances and loss of sense of posture. These cardinal signs of tabes are described by Daudet in an original way. *La Doulou* revealed a few hints suggesting disorders of higher functions. Such disturbances may have been partially induced by the morphine he took. Because of the disease, Daudet finally lost the ability to write by hand. This rare condition in writers also concerned Blaise Cendrars (1887-1961) who was amputated during the Great War. In Daudet's time, tabes dorsalis was a mysterious fluctuating disease whose etiology remained unknown. It was first described by Moritz Romberg (1795-1873) and later named "progressive locomotor ataxia" by Jean-Martin Charcot (1825-1893). Jean-Alfred Fournier (1832-1914) in 1875 proposed the hypothesis that the etiology of tabes dorsalis was syphilitic infection. Both Charcot and Fournier, as many other famous doctors, supervised Daudet's care, none of whom were able to help him. Nevertheless, Daudet's diary provides interesting details about the treatment of tabes dorsalis at that time. Charcot, who became one of Daudet's friends, tried the barbaric and useless treatment called Seyres's suspension. Daudet frequented thermal establishments, especially Lamalou-les-Bains. Although published after Daudet's death, *La Doulou* was the last account of the classical era of tabes dorsalis before the great discoveries of 1905-1906. This period was also marked by specific medical works such as Arthur Conan Doyle's thesis on vasomotor changes in tabes (1885) or Jules Sotta's thesis concerning syphilitic spinal paralyses (1894).

Giacomini and the double Rolandic sulcus a tale of masters, students and neuroanatomy

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Carlo Giacomini (1840-1898) was professor of anatomy at the University of Turin, Italy and director of the Luigi Rolando Museum of Human Anatomy. His research focused heavily on neurophysiology, at that time in its infancy, but also on neuroanatomy, especially the uncus and gyrus parahippocampalis. He is most famous for the discovery of the "band of Giacomini", as it was coined by Gustav Retzius, the visible part of the dentate gyrus on the posterior part of the uncus.

Giacomini's interest in neuroanatomy was so great that he instructed his students and collaborators to dissect his body, and preserve his skeleton and brain upon his death. This was carried out on July 7th, 1898 by Giuseppe Sperino, Varaglia and Bovero. The great anatomist died from a intracerebral haemorrhage. His brain exhibited a double Rolandic groove and a band of Giacomini. Other interesting facts were also revealed by the anatomical dissection.

His skeleton and brain are on display in a cabinet in the museum which he ran and which carried the name of his role model, Luigi Rolando (1773-1831), in such a manner that the two anatomical giants face each other for eternity, a testament and legacy to the beginnings of neuroanatomy, brain function, localization and neurophysiology.

**The centennial (1916-2016) of the seminal publication by
Georges Guillain, Jean-Alexandre Barré and André Strohl:
“Sur un syndrome de radiculo-névrite avec hyperalbuminose du liquide
céphalo-rachidien sans réaction cellulaire. Remarques sur les caractères
cliniques et graphiques des réflexes tendineux”.**
The dawn of modern clinical neurology.

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The report published in 1916 included a superb longitudinal clinical observations of progressive flaccid paralysis in 2 French soldiers, the unique laboratory findings from a still novel technique of lumbar puncture (introduced by Quincke in 1891) and neuromuscular electrophysiological studies. The classic observation of the cytoalbuminemic dissociation in the spinal fluid, is still, 100 years later, one of the most important laboratory findings used by clinicians to confirm the suspected diagnosis of the Acquired Inflammatory Demyelinating Polyneuropathy, also eponymously known as Guillain Barré Syndrome (GBS). The contribution of Strohl, who reported the electrophysiological abnormalities observed in their patients, has led to eventual widespread use of nerve conduction studies and later needle electromyography in bedside diagnosis of neuromuscular conditions. Since 1916 the clinicopathological spectrum of GBS has been continuously expanding, with better understanding of the etiology, pathology and electrodiagnostic findings. However, the seminal observations and most of the conclusions presented by Guillain, Barré and Strohl have withstood the test of time. Their publication has become a landmark and standard of excellence in the history of clinical neurology. Deservedly, the “GBS” is one of the most recognized medical eponyms around the world.

British neuroscience in a European context

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It is difficult to divine the origins of neuroscience generally, let alone the national institutions supporting its activities. This applies to each of the 33 national societies that make up the Federation of European Neuroscience Societies (FENS). One of these (the British Neuroscience Association - BNA) celebrated its half centenary in 2015 and so it is instructive to examine its history. Several strands were interwoven prior to the foundation of the BNA, most notably the Black Horse Group in London (Steven Rose, John Lagnado, Robert Balázs and John Dobbing) and the Brain Research Association (Derek Richter and Donald MacKay). Neuroscience as we now know it was practiced long before these groups coalesced. Accordingly, I will examine a range of possible origins of British neuroscience in terms of perceptual portraits. The areas and those who practiced them include brain anatomy (Thomas Willis), microanatomy (Robert Hooke), studies of the senses (Isaac Newton, Thomas Young), electrical activity of nerves (John Walsh), electrical stimulation of the brain (David Ferrier), recording from the brain (Richard Caton), brain surgery (William Macewan), brain injury from gunshot wounds (George Riddoch), a law of nerve activity (Charles Bell), the study of reflexes (Marshall Hall), a medical text (Thomas Sydenham), foundation of medical schools (Alexander Pitcairne, William Hunter), medical societies (John Hunter), founding a *Brain* journal (John Hughlings-Jackson), a *Mind* journal (Alexander Bain), or award of a Nobel Prize (Charles Sherrington, Edgar Adrian, Alan Hodgkin, Andrew Huxley, John O'Keefe). Despite the focus on developments in Britain, neuroscience was and remains an international enterprise.

Fred Plum, AB Baker, Ritchie Russell
The forgotten pioneers of ventilatory management of poliomyelitis

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Care of poliomyelitis was rarely a responsibility of neurologists, who delegated management to anesthesiologists, orthopedic surgeons, pediatricians and physical therapists. The contribution of three neurologists (Fred Plum, AB Baker and Ritchie Russell) in the respiratory management of poliomyelitis in the 1950's epidemics has not been recognized in medical historical reviews. Plum recognized the effect of hypoxemia and hypercapnia but also observations on measurements of vital capacity and techniques to minimize trauma with suctioning after tracheostomy. His clinical and pathologic study found that central respiratory failure in poliomyelitis was medullary in origin. Permanent damage to chemoreceptive neurons in the respiratory center could explain low CO₂ responsiveness after poliomyelitis.

AB Baker's contribution was to emphasize that delay in performing a tracheostomy would subject the patient to severe hypoxemia and increasing danger of pulmonary edema. The appearance of laryngeal stridor and dyspnea were indicators of severe obstruction of the airway requiring emergency intubation or tracheostomy. A. B. Baker also described the essential involvement of the 10th nerve with impairment of swallowing and faulty innervation to the larynx leading to obstruction of the airway. Russell advised treatment that varied from continuing postural drainage to aspiration of secretions and developed Oxford respiratory pump for poliomyelitis. He pioneered, together with technicians and anesthesiologists, an intimate and positive pressure respiration facility that was also later used for other conditions. If critical care neurology is loosely defined by airway ventilator management by neurologists, Fred Plum, AB Baker and Ritchie Russell may be one of the first known 'neurointensivists'.

**Mercy killing for neurological disease in film:
Revisiting *Ich Klage an* and *An Act of Murder***

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The history of Neurocinema includes neuroethics and this theme was first used in two films released in 1940's in Germany and the US. *Ich Klage An* (I Accuse) is about 'terminal' multiple sclerosis in a young female and emphasizes the decision to determine one's own fate. She anticipates becoming "deaf, blind, and idiotic" and asks her husband to administer a toxic drug dose—which he does. The film suggests that the diagnosis of multiple sclerosis is tantamount to a death sentence. Party leadership agreed that the film has made a deep impression. *Ich Klage An* does not have any references to National Socialism, but the judges have Nazi emblems on their robes and the jury chamber has a bust of Hitler.

An Act of Murder involves another young female who hears from her neurologist, that her symptoms of weakness and headaches are related to an inoperable brain tumor. When her condition worsens during a trip he drugs her and he deliberately crashes the car, killing her while surviving himself. A subsequent trial finds that she died from an overdose rather than the crash. The trial judge dismisses the murder charge and claims he is 'morally innocent'. The film argues the morals of mercy killing.

I revisit both films within a wider context. The films came out during the Nazi euthanasia program and founding of the Euthanasia Society of America in 1938. The choice of neurologic disease by filmmakers and scriptwriters to defend voluntary and active euthanasia is remarkable.

Insanity in writers and General Paresis of the insane

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Neurosyphilis is a serious complication of syphilis that can develop at any time in the course of the disease, but prevailing during the tertiary stage and affecting about 5% of syphilitics. This grave social scourge is all the more distressing when it strikes down men in their fourth or the fifth decades at the peak of a successful career in the arts or sciences. After listing some writers overwhelmed by the “general paresis of the insane” (GPI), I select from this band of talented unfortunates three examples where the diagnosis of neurosyphilis would seem, in retrospect, accepted. I compare the evolution of the disease by Jules de Goncourt (1830-1870) and Guy de Maupassant (1850-1893) and their artistic creativity, building a parallel with the physician Georges Gilles de la Tourette (1857-1904) and his publications.

The “*Le Journal des Goncourt - Goncourt diary*”, a gossipy record of Paris’s social and literary life in the second half of the 1800s, contains a vivid account of the Jules de Goncourt’s fulminating illness, written by the elder brother Edmond de Goncourt (1822-1896), testifying indeed of two lives devoted to the exclusive literature’s love. Indeed, they invent a new kind of novel, describing a new vision of the world, in which the very element of sight is decomposed. *Madame Gervaisais* is the last one written by Jules. Edmond express: “He never gave himself so completely over to this effort of style as in the last novel he was to write, in *Madame Gervaisais*, in which, perhaps, the disease that was to kill him gave him at times, I believe, almost the intoxication of religious ecstasy”.

Taking his cue from Honoré de Balzac (1799-1850), Guy de Maupassant writes comfortably in both the high-realist (“*Bel-Ami*”) and fantastic modes (“*La Horla*”). The supernatural in Maupassant, however, is often implicitly a symptom of the protagonists’ troubled minds. Indeed, he is fascinated by the burgeoning discipline of alienism, and attends the public lectures of Jean-Martin Charcot (1825-1893) in 1886. Always preoccupied by physical prowess, especially in the amatory field, he contracts syphilis in early adulthood. Collecting mistress as an inveterate womaniser, this bistrot’s boaster claims that he can attain a physical climax twenty times in an evening or only in sexually imaginative thinking. With an amount of awareness, he writes “*there are whole days on which I feel I am done for, finished, blind, my brain used up and yet still alive. I have no idea that is consecutive to the one before it, and my hallucinations and my pains tear me to pieces*”. After an abortive suicide’s attempt, his physician Georges

Daremborg (1850-1907) signs his confinement, the 7 January 1892, to the mental clinic of the Dr Emile Blanche (1820-1893), in Passy, a Paris' quarter.

Georges Gilles de la Tourette (1857-1904), a neurologist, co-founder of La Nouvelle Iconographie de la Salpêtrière and prolific medical writer at the end of the 19th century, is now known for the disease which bears his name, but his activities in the management of hysterics and in hypnotism, which gained him most of his lifetime reputation, have been largely forgotten. As one of the closest followers of Jean-Martin Charcot, he always remained faithful to his mentor's views, notably he always refutes the GPI's syphilitic origins, the disease of which he died after spending three years in a Swiss mental institution. I present some extracts from his writings illustrating his state of delusions of grandeur and megalomania.

I will conclude by questioning why, for each of these three examples, the true diagnosis stays hidden at the time. Effectively, the only one evoked is that the death occurred following a long illness due to overwork and fatigue.

