

Summary and conclusion

The anaesthetist 1890-1960

A historical comparative study between Britain and Germany

‘Anaesthetists, to be or not to be. That was the question.’

Medical specialization is one of the most prominent medical developments in the second half of the 19th century in the Western world. Up to that time there had been only physicians, surgeons and obstetricians. From the 1850s on special branches sprouted from the family tree of medicine. Most of them still exist today and provide the medical world with internists, ophthalmologists, paediatricians, psychiatrists, ear, nose and throat specialists, radiologists and many more. Each specialty has its own story.

Britain was, around 1885, the first western European country that had doctors that made the administration of anaesthetics their livelihood and called themselves anaesthetists. In 1953 Germany was one of the last. That remarkable contrast, unknown in other specialties, was the starting point of this historical research. Contrary to the existing historiography on this subject the question would not primarily be why anaesthetic specialization was delayed in Germany but why it was begun in Britain. To answer this question a 360-degree view of circumstances was taken into account. These circumstances included the relations in the operating theatres and the hospitals, the anaesthetic industry, knowledge development with regard to anaesthetic techniques, economic and political influences, regulations and finally warfare. Because medical historians specialized in specialization like Rosen and Weisz have emphasized that medical specialization evolves in

phases, the author of this book has defined three cumulative phases. The first phase is the phase of the individual specialist who is interested in a particular area of medicine. The second phase is the phase of grouping of individual specialists in scientific societies and journal editorial staffs; it is the transitional phase from specialist to specialty. The third phase is marked by training programmes, examinations, certifications and eventually by an exclusive domain within medicine.

The first phase of anaesthetic specialization

To understand why some British doctors at the end of the 19th century called themselves 'anaesthetists' at that moment, in that place, one has to imagine the surgical and hospital world in Britain. At that time British surgery was a world apart. British surgery had not merged with medicine in the 18th century as it had done on the European continent. Surgeons did not call themselves 'doctors' but prized their original title, 'Mister'. Surgeons were at the top of the medical pecking order. Surgeons were highly respected and fit the mechanical approach to the human body that was taken in Britain as a consequence of the industrial revolution. Surgeons embodied the manipulability of the human machine. The surgeons had their own Royal College of Surgeons, like the physicians had their Royal College of Physicians. Because the surgeons considered anything beyond the cutting, cauterizing and stitching they did to be below their standards, they were not committed to administering anaesthetics themselves; that would be a task for somebody else. At a time when most surgery was performed at the patient's or surgeon's house, usually the patient's general practitioner or (even lower in the medical pecking order) a dentist was charged with the administration of anaesthetics.

Toward the end of the 19th century surgery changed. Its complexity increased due to antisepsis, anaesthesia and perioperative care; anaesthesia was no longer a luxury but became indispensable to modern surgery. Hygienic conditions, sterilizers and compressed gases for anaesthesia became necessary to perform surgery. Surgical and anaesthetic equipment became less portable. This change moved surgery to modern hospitals with operating theatres and nursing wards. Here the division of labour between surgery and anaesthesia could in principle be continued because British hospitals were a melting pot of the private practices of general practitioners, physicians and surgeons. These doctors and specialists worked separately from the hospital and from

each other. Most hospitals were open markets, where every doctor could enter and perform his task. British hospitals were based on charity, church and private enterprise; university hospitals were scarce. Britain, geographically separate from Europe, had known freedom and a sense of individual responsibility going back to the Magna Carta. The government was restrained and only meant to wage wars to protect the economic interests of its subjects. Science and healthcare were not governmental tasks.

In large cities, especially in London with its surplus of patients, surgeons, doctors and hospitals, the concentration of surgical patients made it feasible for some general practitioners to make the administration of anaesthetics their livelihood. In order to distinguish themselves from the average administrator they called themselves 'anaesthetists'. In fact they started a *de novo* specialty out of general practice. Their sphere was practice, not science. Beginning in 1890 these professional anaesthetists were appointed to hospitals and started to publish similar compact anaesthetic textbooks for students and general practitioners. In the process of specialization these professional anaesthetists should be considered the individual specialists of the first phase. This backdrop of hospitalization and specialization in large cities is in line with Rosen's theory that urbanization and a concentration of patients in hospitals is one of the prerequisites for medical specialization. The professional anaesthetists did not want to make the practical administration of anaesthetics their exclusive medical specialty. They wanted to be teachers, writers of anaesthetic books and inventors of anaesthetic apparatus bearing their names. They wanted to be special anaesthetists for special surgeons, special hospitals and special patients at special prices. The routine administration of anaesthetics by day and by night was done by general practitioners and, due to a lack of regulation, a motley collection of other people.

Assuming that this was the process by which the first professional anaesthetists emerged in Britain makes it challenging to explain why it did not happen in Germany at the same time. It is even more challenging because this study has shown that at around the turn of the century most technical developments in the administration of anaesthetics were the same in both countries. The oft-cited chloroform-ether difference between Britain and Germany has even been shown to be false. Two circumstances however were basically different and were decisive in the contrast in anaesthetic specialization between Britain and Germany.

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First, German surgeons were indeed different from British surgeons. German surgeons became academic specialists beginning in the 18th century. Contrary to Britain German surgery and medicine had merged in the 18th century. The German universities, like all continental universities a heritage of the Holy Roman Empire, housed all medical specialties, including surgery, in their medical faculties. This role of the universities is in line with Weisz's theory that continental universities played an important role in the development of medical specialization. German surgeons, like all the other specialists, formed departments within university hospitals. Rooted deeply in a culture of primal and humoral medicine, German medicine and surgery took a holistic view of the human body. The patient could not be divided into a surgical part and a medical part. When anaesthesia entered this scene halfway through the 19th century it was given a place in the surgical department. In that way, from its introduction, the administration of anaesthetics was a part of the surgical specialty. Every German textbook of surgery contained complete chapters on the administration of anaesthetics. Every surgical resident, trainee or student was expected to be able to administer anaesthetics. In that sense anaesthesia was a general medical competence as it was in Britain, but under the wing of surgery, unlike in Britain where anaesthesia was born as a foundling.

Second, German hospitals were different from British hospitals. German hospitals, in accordance with the strict organization of German society and its ubiquitous government, were structured like the university hospitals with medical departments arranged by specialty, including doctors and specialists, in a hierarchical military structure. The difference can be clearly seen in the operation registers. In the London Hospital the operation registers were assigned to individual surgeons; at the Charité Krankenhaus they were assigned to surgical departments. In that structure anaesthesia was under the control of the surgeons. An administrator of anaesthetics detached from surgery was not necessary and was in fact unwanted. The patient could not be divided into a surgical object and an anaesthetic object. The application of 'Rauschnarkose', flush anaesthesia, and the extensive use of local anaesthesia were typical manifestations of the commitment of German surgeons to anaesthesia. The surgeon weighed the pros and cons for the individual patient and the particular procedure needed, resulting in tailor-made anaesthesia. In this sense the wider use of local anaesthesia in Germany was a deliberate and positive choice by the surgeons and not imposed by the lack

of anaesthetists. Notwithstanding the obvious relationship, the explanation 'no anaesthetists hence local anaesthesia' is not supported by this study. From the operation registers it is clear that local anaesthesia was used even when general anaesthesia, of every variety, was also on hand.

The second phase of anaesthetic specialization

In Britain the highly competitive wilderness of anaesthesia forced professional anaesthetists from the very beginning to distinguish themselves from occasional administrators. They had to make themselves recognizable. In order to do so they had begun organizing in 1893 with the founding of the Society of Anaesthetists, an exclusive group of professional anaesthetists who were limited in number. Illustrative of the disorder in the field around them was the campaign for legislation by Frederic Hewitt, one of the founders of the society, from 1908 to 1911. Meant to ensure that by law only trained medical personnel could administer anaesthetics, it failed because of well-organized opposition by a group of occasional administrators of anaesthetics.

Temporarily stagnated by the First World War, the second phase of specialization unfolded into the interwar years. Its manifestations were the *British Journal of Anaesthesia*, founded in 1923 as a scientific forum and eventually the Association of Anaesthetists founded in 1932 as an interest organization. All of these initiatives were meant to keep the administration of anaesthetics a medical occupation and to improve the status of the professional anaesthetists. After all, they were still not equal to the only specialties recognized in Britain, surgery and internal medicine. Their drive for recognition was enabled by the further mechanization of the administration of anaesthetics. The flourishing anaesthetic industry in the interwar years in Britain, with the abundant availability of rubber, played a leading role in this mechanization. Of these innovations the rubber endotracheal tube became the most easily identifiable trademark of the anaesthetist.

In Germany a second phase of anaesthetic specialization would be only temporarily in effect in the interwar years. The reason was that from the beginning anaesthesia was in safe hands inside the academic surgical specialty. Some surgeons demonstrated a special interest in anaesthesia. Individual surgeons designed anaesthetic apparatus and gave their name to them. In a

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way these surgeons functioned as first-phase specialists in anaesthesia. In contrast to the British anaesthetists their sphere was science, not practice. Gurlt, editor of *Archiv für Klinische Chirurgie* that had begun publication in 1861, performed the first multi-centre long-term study on anaesthetic mortality in the 1890s. The Kuhn tube, the Roth-Dräger anaesthetic apparatus and especially Sauerbruch's underpressure cabinet were thorough experiments based on applied physiology. After the First World War pharmacological innovations like intravenous barbiturates originated in the German-speaking world. In the interwar years a group of German surgeons, pharmacologists and physiologists would draw attention to anaesthesia as a separate field of interest. Their scientific approach to anaesthesia led to a German congress on anaesthesia in 1928 and the first anaesthetic journal in the German-speaking world. The journal *Schmerz Narkose-Anästhesie* first appeared in 1929 and had a multidisciplinary and internationally composed editorial board; it was a brief glimpse of the second phase of specialization.

However, for German practice the embedment of anaesthesia in surgery had from the beginning offered an important advantage over specialization: maximum flexibility. That had meant that the demands on the German army medical services during the First World War, with a number of casualties that surpassed the imagination, could be met by allowing more doctors, medical students and eventually non-medical personnel to administer anaesthetics under the authority of the surgeon in the army and at home. At home the widespread employment of 'Narkoseschwestern' was acceptable within the hierarchical structure of surgical departments. The price the German surgeons had to pay for this flexibility was simplicity. In the interbellum period this was not a significant problem because industrial support for the mechanized administration of anaesthetics had failed in Germany. The interwar financial and economic crisis hit German industry hard. In particular the banning of Germany from the rubber market caused a serious disadvantage for it. Eventually the Second World War would be a replay of the First World War. Simplicity, versatility and flexibility were the keywords for anaesthesia. The pleas for anaesthetic specialization were silenced and anaesthesia returned to a first phase specialty within an existing specialty, surgery.

The third phase of anaesthetic specialization

In Britain the transition to the third phase of specialization was marked by the advent of the Diploma in Anaesthetics in 1935. Although the diploma was created by the newly formed Association of Anaesthetists it was not meant to create more professional anaesthetists or to create an exclusive specialty. The goal was to offer recognition to occasional administrators of anaesthetics, especially to general practitioners. The Association of Anaesthetists itself was to remain a select club of anaesthetists, who had to have the Diploma in Anaesthetics, but who also had a teaching appointment to one or more hospitals. This balance between professional anaesthetists and occasional anaesthetists was disturbed by the run up to the Second World War. After the intense bombing of Guernica, Spain, in 1937 and considering the growing aggression of Nazi Germany the British government realized that the outdated structure of British hospitals, which lacked an organized medical staff, would be unable to manage the mass casualties associated with air attacks on Britain. The answer was the creation of the Emergency Medical Service in 1939, taking specialists and anaesthetists into regular service. The possession of a Diploma in Anaesthetics was a recommendation for such an appointment. During the war the Emergency Medical Service and the Royal Army Medical Corps would provide attractive jobs for anaesthetists. These anaesthetists not only taught the administration of anaesthetics, they administered anaesthetics themselves.

The anaesthetists were an undisputed success in the services. Their tasks extended to perioperative care, including circulatory homeostasis. Directly after the war their success grew further with the introduction of intravenous muscular relaxants like curare. The patient would no longer press out his bowels, blocking the surgeon's view of the anatomy. But even simple procedures like fracture repositionings were facilitated by muscular relaxants in an unprecedented way. From that moment on, every patient had to have muscle relaxants, every patient had to have an anaesthetist. Muscle relaxation also had a remarkable impact on the administration of anaesthetics itself. In fact it brought all of the innovations of the last 20 years together. Muscle relaxants were intravenous agents, therefore intravenous access was needed. Muscle relaxants paralysed the respiration, hence endotracheal intubation and artificial mechanic ventilation were needed. All these interventions had more impact on the circulation, hence a careful control over the circulation

was needed. Anaesthesia with muscle relaxation became a special anaesthesia and not only for special surgery. The administration of anaesthetics itself was now special enough to become a medical specialty. Textbooks were no longer written for students and general practitioners. The compact textbooks vanished and were replaced by new series of comprehensive books by Lee and Evans, written for anaesthetists.

The ultimate catalyst for the third phase of anaesthetic specialization in Britain was the advent of the National Health Service in 1948, which was shaped after the Emergency Medical Service. It meant a revolutionary reform of the medical staff in public hospitals and led to hospital departments with consultants, registrars, residents and trainees. These departments had a hierarchical structure, as in the army and in Germany. Anaesthesia too became organized in hospital departments. The anaesthetists, strongly encouraged, enabled and in fact even compelled by the British Royal College of Surgeons through its president Webb-Johnson, entered the ranks of specialists under the wings of the Faculty of Anaesthetists of the Royal College of Surgeons. The anaesthetist should be the physiologist of the operating theatre. Their training was upgraded to a five-year period. From that moment on the select and limited group of professional anaesthetists in Britain was surpassed by its own success. The Association of Anaesthetists changed from an exclusive club into an interest organization for a growing number of anaesthetists. It would take until 1992 for the anaesthetists to be granted their own Royal College of Anaesthetists, at a time when most specialties acquired their own college. The hegemony of the Royal College of Surgeons had ended.

In Germany, from 1949, a new generation of young doctors from surgical clinics saw the hole in the market and travelled abroad to study modern anaesthesia. In Britain they witnessed the comfortable position of the anaesthetists within the National Health Service. On their return to Germany they mastered endotracheal intubation, muscle relaxation and circulatory management. But they had also decided to start an anaesthetic specialty in Germany. The surgeons interested in anaesthesia, the first-phase specialists in anaesthesia, were replaced by a new generation of professional anaesthetists who were appointed to teaching posts. The year 1953 marked the second phase of anaesthetic specialization with the establishment of a society and a journal, now with only anaesthetists on the boards. The first certification for anaesthesia was given in the same year. By then, anaesthesia and its supporting

industry had exploded in Germany, like a long-compressed spring. The supporting industry revived in the 'Wirtschaftswunder' with, among other things, plastic devices especially for intravenous access. At first the traditional surgeons tried to keep everything under one roof but in 1955 the president of the 'Deutsche Gesellschaft für Chirurgie' Bauer, reluctantly acknowledged the division of labour between surgery and anaesthesia. Like Webb-Johnson in Britain in 1947 he spoke about the anaesthetists as vital function managers. He had no choice: the internationalization of anaesthesia became a fact with the establishment of the World Federation of Societies of Anaesthesiologists in the same year in Scheveningen, the Netherlands, during the first World Congress of Anaesthesiologists.

In the absence of a radical change in remuneration like the National Health Service, the third phase of specialization deployed more slowly in Germany than it had in Britain. The actual detachment from surgery and the dispersion of modern anaesthetists did not take place until the anaesthetic staff was positioned and remunerated at the same level as the surgical staff. This did not happen until the anaesthetists' interest organization was founded in 1961 and the equality of surgeons and anaesthetists was agreed upon in 1964.

Epilogue

We have seen the evolution of the administration of anaesthetics into a medical specialty in two different ways. The contrast is deeply rooted in differing surgical and hospital traditions in Britain and Germany. British surgeons considered the administration of anaesthetics to be beneath their station. German surgeons considered the patient as a whole that could not be divided into a surgical and an anaesthetic part. Therefore in Britain, anaesthesia was embedded in general practice from the beginning; in Germany anaesthesia was embedded in the surgical specialty. In both countries there had always been an undercurrent of anaesthetic specialization. In Britain this movement was formed by a small and select group of professional anaesthetists. In Germany interested surgeons led the debate. Knowledge developments and new technologies, like the application of compressed gases, the mechanized administration of anaesthetics, intravenous anaesthesia, endotracheal intubation and muscle relaxation boosted this current from time to time

but were never decisive factors in creating a real third-phase anaesthetic specialty. External circumstances like warfare, financial and raw material crises from time to time attenuated the debate. Knowledge, technology and industrial support in Britain and Germany were quite comparable apart from a period before and during the Second World War.

The moment of the irreversible transition towards a recognized medical specialty, equal to the traditional specialties, was closer in each case than expected. In fact in Britain it was in 1948 with the establishment of the Faculty of Anaesthetists of the Royal College of Surgeons. In Germany anaesthetic specialization evolved more gradually between 1953 and 1964. In Britain the decisive cause was a revolution outside the circle of anaesthetists; the National Health Service with specialists in regular service made it happen. In Germany a revolution of young doctors inside the surgical establishment was necessary to boost the anaesthetic specialty. After the example of Britain and in the sphere of the westernization of West German society these young surgeons saw the hole in the market and profited from the new techniques of muscle relaxation and endotracheal intubation. In both countries the acknowledgment by the surgeons of the expedience of a vital function manager or operation theatre physiologist and the attribution of this capacity to the anaesthetist at the head of the table was needed to confirm the anaesthetic specialty. This almost simultaneous definition of the content of the new specialty made the anaesthetist's tasks similar in both countries and in fact around the world.

Was anaesthesia ready in 1960? In fact it was. Its domain had been defined: to keep the patient comfortable during and after the surgical procedure, in other words to form a bridge over troubled water. Worldwide the new specialty was highly successful; its number of practitioners exceeded the numbers of traditional specialties. Not only the number of anaesthetists expanded: the specialty itself evolved further in the second half of the 20th century. New kinds of surgery involving very young to very old patients and involving hugely reconstructive to minimally invasive procedures would lead to new challenges for the administrator of anaesthetics. New techniques like electronic monitoring and long-term artificial ventilation, as well as a thorough understanding of pharmacology, intensive care and pain management would be developed or adopted by the specialty. At the turn of the 20th century, the extent of the domain of anaesthesia approached a critical point where new (sub)specialties begin to emerge. At this point the old

question of whether a patient and his care can be divided even further
surfaces once again. In the end history repeats itself.



Curriculum vitae of the author

Johan Sebastian Pöll was born September 28th 1952 in The Hague, The Netherlands. He attended primary school at the Da Costa School, The Hague, and gymnasium at the Christelijk Lyceum de Populierstraat, also in The Hague. He studied medicine at the Rijks Universiteit in Leiden and received his medical degree in 1977. After his military service as a medical officer in the Alexanderkazerne in The Hague he became assistant general practitioner to Th. van Stockum in 1979 and house officer in the Respiratory Care Unit in the Academic Hospital in Leiden in 1980 under Johan van Zanten. From 1981 to 1984 he was trained in anaesthetics in the same hospital under Prof. Joh. Spierdijk. From 1985 to 1989 he was an anaesthetist at the Juliana Children's Hospital and the Bethlehem Hospital in The Hague. Since 1989 he has worked as an anaesthetist in the Westeinde Hospital in the Hague, after the merger with Sint Antoniushove in Leidschendam in 1998 renamed the Medical Centre Haaglanden. Since 2003 he has been the teacher of anaesthetics at this hospital.

Since 1994 he has been a member of the Central Disciplinary Court of Healthcare. From 1995 to 1998 he was president of the Netherlands Society of Anaesthesiologists. Since 2004 he has been honorary secretary to the Concilium Anaesthesiologicum. Since his military service he has been a reserve Lieutenant-Colonel and served in Afghanistan and Kosovo. Since 1996 he has participated in voluntary Interplast missions, providing reconstructive surgery in Vietnam, Uganda and Rwanda.

He is married to Clementine Pauline Ernestine (Climmy) Tjepkema; they have three children and two grandsons.

