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Nikolay Ivanovich Pirogov and his contribution to medicine in 19th Century Imperial Russia

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Chapter 9

Summary and concluding remarks

During my training at the University of Leiden to obtain a master degree in Slavic Languages and Literature, I was pointed to the physician N.I. Pirogov during a summer course in Odesa in Ukraine. The University of Odessa was named after this doctor and scientist. Therefore, I was surprised that almost nothing was known about this scholar outside the Russian-speaking area, because it appeared that Pirogov had built up a great name in the nineteenth century. The Dutch physician and Leiden scholar Herman Boerhaave, who lived in the eighteenth century, on the other hand, has acquired a reputation and world fame.

The central question of this thesis is therefore: how can it be explained that the fame of scholars in medicine can differ so much, while both have made great contributions to the improvement of the Western and Russian medical school.

The medical worlds of Russia and the Netherlands seem quite different, but the opposite appears true. The second chapter describes a brief history of Medicine and medical education in Russia. An in-depth investigation shows that from the sixteenth-seventeenth century onwards, Dutch and in particular doctors with a doctorate from Leiden university had a strong influence on the development of the medical curriculum and the organisation of Medicine in Russia. This influence lasted until the end of the eighteenth century. Empress Catherine the Great (reign:1762-1796) was able to reap her predecessors' benefits during her reign. We have seen that the first Russian medical professors (some trained at Leiden University) were direct or indirect Nikolay Ivanovich Pirogov's teachers. Continuing this tradition, he wrote that he considered himself not equal to Boerhaave, nor Sydenham or Paré. Great renown men of world medicine who preceded him in medical history. Was he right, or was he failing himself with this?

In chapters three, four and five, we explore Pirogov's role as an anatomist, surgeon and anaesthesiologist. Characteristic of his approach to the development of Medicine is research based on literature and observations (empirical research). He conducted animal experiments and sometimes also applied experiments on himself and volunteers (students and colleagues). He analysed and described his findings very carefully before using his results and techniques to patients on a large scale. Under his leadership, the profession of surgeon changed from craftsmanship to science.

In anatomy, the development of applied anatomy by Pirogov has always been instrumental in increasing the surgeon's knowledge. He developed several atlases including a four-part three-dimensional atlas with black and white plates, but others with colour plates, which he provided with meticulous descriptions.

He devised several surgical procedures, of which the eponymous osteoplastic foot amputation is the best known. Several anatomical structures are named after him,

including the Pirogov angle, the junction of the internal jugular veins and the subclavian veins, the Pirogov aponeurosis, and the Pirogov triangle, an area between the mylohyoid muscle the intermediate tendon of the digastric muscle and the hypoglossal nerve.

He was also one of the first to experiment with the use of ether. He applied his acquired knowledge of anaesthesia in normal circumstances and on a large scale in war situations, for example, during the Caucasian (1847) and Crimean War (1853-1856).

In chapters 6 and 7, Nikolay I. Pirogov is described as a doctor and medical researcher and as a manager/organiser in times of crisis. He played an essential role during the Crimean War by acting as head of the medical forces and applying the triage system to provide as much help as possible to victims and the sick. He had access to Russian and foreign doctors and a large group of well-trained female nurses. Supported by Grand Duchess Elena Pavlovna Romanova, sister-in-law of Tsar Nicholas, Pirogov trained (civil) female volunteers for deployment to the Crimea front. His fellow doctors continued the training in civilian and military hospitals when he was already present in Crimea, where he continued to train them. It should be noted that the medical care concerned not only the Russian victims but also the wounded of the counterparties. After the Crimean War, these trained nurses found a place in civil and military hospitals. Also many nursing organisations and training courses for nurses were created.

Nikolay Pirogov has described his vision on the organisation of war surgery in a renowned book, *Kriegschirurgie*. His vision and this book have led to Pirogov being known worldwide only as a war surgeon. His experiences during the Caucasus and Crimean War and the constant opposition he received as an innovator eventually caused him to resign from his post as professor and chief surgeon of the Imperial Medico-Surgical Academy in St. Petersburg in 1860.

Pirogov's vision and efforts, along with his domestic and foreign staff and including the Russian female nurse's work, have not gone unnoticed. Henri Dunant, journalist and philanthropist, had a traumatic experience at the Battle of Solferino. Dunant also wrote a book, but to make the world aware of the atrocities of war. He wanted to set up a citizens' initiative of volunteers. Dunant met with Grand Duchess Elena Pavlovna Romanova on several occasions and eventually led to the International Red Cross's founding.

Because of his knowledge of the organisation of medical assistance during military conflicts, Pirogov was asked at an old age by the (International) Red Cross to make reports and recommendations as Inspector General not only on the battlefields of Alsace-Lorraine but also on other hearths of war. He died in 1881 on his estate in Vishnya, now Ukraine.

After examining Nikolay Pirogov's scientific contribution to Medicine, it became possible in Chapter 8 to answer whether Pirogov and Boerhaave were comparable in their contribution to science. We were also able to investigate whether and how their fame was maintained after death. Using publication series, it was possible to show that both were remembered in a considerable number of publications. In contrast to many English and Latin publications by and about Boerhaave, the publications by and about Pirogov are mainly in Russian, reaching a smaller international audience. Biographers and other researchers who publish in an international scientific language (then Latin, now English) have a decisive influence on this or any other scholar's fame.

Pirogov enjoyed great fame and respect from his worldwide colleagues towards the end of his life. Minutes of the Fifth International Medical World Congress in 1897, held in Moscow and St. Petersburg, show that Pirogov was honoured for his contributions to various disciplines. During the same Congress, on August 3, 1897, a statue in his memory was unveiled in front of the main building of Moscow University. Not only had thousands of colleagues from around the world contributed financially to this, but they were also present at the unveiling.

Nikolay Ivanovich Pirogov deserves a place in world medical history in the line of renown names such as Boerhaave, Sydenham and Paré because of his many scientific and organisational contributions.