Introduction

The year 2014 marks the 500th anniversary of the birth of Andreas Vesalius, the founder of modern, empirically and experimentally oriented anatomy. Indeed, Vesalius’ magnum opus De Humani Corporis Fabrica (The Fabric of the Human Body) marks not only the beginnings of the new anatomy, but also of modern medicine and science.\(^1\)\(^-\)\(^4\) The enormity of his work, however, overshadowed the valuable contributions to anatomy of some of his contemporaries. One of the best examples of this is an Italian scholar Giambattista Canano [Figure 1] who gave seminal contributions to anatomy, specifically to the study of skeletal muscles.\(^5\) It appears, however, that Canano himself was taken aback, rather than stimulated by Vesalius’ work and never published his planned volumes on myology. In this paper I give an account on the life and career of Canano with a special reference to his work on muscles.

The Making of an Anatomist

Canano’s career had numerous parallels with that of Vesalius. Canano, just like Vesalius, came from a family of medical men which included university professors and court physicians. Also like Vesalius, Canano made a remarkable career in academia and as a clinician, due in part to talent and hard work, but also as a consequence of good social connections.

Canano was born in 1515 in Ferrara.\(^6\)-\(^8\) At the Studium (University) of Ferrara he completed his medical studies. While at the university, he developed an interest in anatomy, mainly through the influence of a family member, Antonio Maria Canano who was teaching the subject at the time. Antonio studied in Padua under Marcantonio della Torre, at a time when this anatomist was collaborating with Leonardo da Vinci. In Ferrara, Antonio made significant improvements in the teaching of anatomy and significantly raised the profile of the discipline.

ABSTRACT

Giambattista Canano was a sixteenth century Italian anatomist and physician. He was educated at the University of Ferrara where, upon graduation, he was appointed professor of anatomy. While at the university, Canano carried out a pioneering study of skeletal muscles. This study was to be published in a multi-volumed book entitled Musculorum Humani Corporis Picturata Dissectio. However, only the section on the muscles of the upper limb was published, as Canano stopped the printing of his book. It is hypothesized that he met Vesalius at the time and saw the proofs of his Fabrica which he assessed as far superior and, consequently, decided to abort his project. The preserved copies of the Dissectio, however, show that the standards of Canano’s work surpassed most of the anatomical studies published up to that time. Canano subsequently left the academic position and made a notable career as a physician. His appointments included prestigious positions of physician to the Pope and protomedicus of the House of Este in Ferrara.

KEY WORDS: Giambattista Canano, history of anatomy, myology

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Figure 1: Giambattista Canano (1515-1579)
Canano’s academic progress, just like that of Vesalius, was rapid. His academic pursuits were undoubtedly facilitated by the family library, one of the most renowned book collections of the day. Soon after graduation Canano was recruited to teach at Ferrara, succeeding Antonio Canano as the chair of anatomy in 1541. Described as a cultured and amiable person, and a dedicated and modest scholar, Giambattista was in contact and exchanged ideas with some of the most renowned intellectuals of the day.

Myology

Canano’s university years were marked by intense interest and research into the skeletal muscles. The field of interest is perhaps the outcome of the then current state of anatomical research and teaching. Muscles generally did not catch much attention of the medieval anatomists, who focused mainly on viscera and the brain. However, muscles gained more attention in the early renaissance with the demands of artists interested in the realistic representation of the human body, and also with the appearance of new translations of Galen’s works in which myology had a prominent place. The best sign of this change of focus was Vesalius’s Fabrica. The Book II, dedicated to muscles and joints, is the longest part of this eminent publication and, as Siraisi[9] noted, represents the heart of the Fabrica.

Canano’s study of muscles was, therefore, timely and part of the wider trend and changing attitudes in anatomy and medicine. His method was based in dissection of human cadavers and thus also in line with changes happening in anatomy and science in general. Canano carried out all dissections himself in a specially prepared room in his home. He was often joined by a number of Ferrara scholars and students.

Canano planned to publish his research in a treatise entitled Musculorum Humanorum Corporis Picturata Dissectio.[5] However, only the first part of this book was actually published (of five that seemed to have been originally envisaged). Even this volume came out in only several copies as the author himself halted the printing. The reason for this is still not completely clear. The most plausible hypothesis is that this was a result of Canano’s meeting with Andreas Vesalius.[7,8] Before going to Basel where he would oversee the production of the Fabrica and Epitome, Vesalius left Padua for a short visit to Ferrara, where his brother Francis was one of Canano’s assistants. This visit took place by the end of 1542. While in Ferrara, Vesalius almost certainly showed the proofs of his Fabrica to Canano. It is hypothesized that Canano, upon seeing the work of Vesalius which seemed to be considerably superior to his, decided to destroy all of his own work. A modest and unpretentious individual, Canano, it would appear, decided to withdraw his publication before the more accomplished book was to appear. Indeed, Streeter noted that Canano’s decision not to publish his work was the first homage to Vesalius.[7] Only a few copies of the Dissectio emerged from the printer’s and came into the possession of Canano’s friends. Of these, only 11 copies are known to have survived to the present day.[7]

The published, first part of Dissectio, however, is a remarkable scholarly treatise, which by far surpasses most of the anatomical works of the time.[7,8] The date of the publication is not certain as it does not appear in the book; most probably it was 1542. It is a small volume that presents the muscles of the upper limb. In its approach, the book showed the level of emancipation from Galen similar to that found in Vesalius’ Fabrica. In production of the book, Canano collaborated with the painter and decorator Girolama da Carpi who authored all illustrations. The Dissectio consists of 40 pages containing 27 superbly executed illustrations, accompanied by a rather meager text. The illustrations presented muscles of the upper limb with an unprecedented accuracy and clarity. Choulant noticed that the only weaknesses of these illustrations were that the difference between bones and muscles were not always delineated clearly enough and that the bellies of muscles in some images appeared unnatural.[3]

The illustrations in Dissectio provided a good representation of some of the intrinsic muscles of the hand. Indeed, Canano was the first to describe the palmaris brevis muscle.[10] The discovery of the small muscle that moves the skin of the hypothenar eminence would soon be surrounded by some controversy. In 1548, Canano spoke of his discovery to Gabriele Falloppio and possibly demonstrated the muscle on a cadaver. Fallopio would later promote this discovery and Canano as the person behind it. The existence of the muscle was at first questioned by both Galenists and the followers of Vesalius (palmaris brevis is not mentioned in the Fabrica). However, another of Canano’s prominent contemporaries — anatomist Realdo Colombo, years after the publication of the Dissectio, put out the claim that he was the one who discovered the muscle. Such a controversy over primacy was not unusual in the sixteenth century. At the time, anatomy was a discipline in ascendency and attracted talented and ambitious scholars. However, at the same time, copyright issues and publication policies were still quite unregulated and plagiarism and fights over primacy occurred frequently.[11]

While muscles were Canano’s main focus he investigated and produced valuable contributions in other areas. He is also credited of being the first to describe venous valves — another anatomical structure which provoked fierce debates on the primacy in their discovery.[12]

The Physician

Shortly after the aborted publication of his study on muscles, Canano, again just like Vesalius, left his academic career to pursue a new one, equally distinguished, as a clinician.[7,8] Due to lack of historical data it is difficult to track Canano’s movements in the years before and just after his resignation. It would appear, however, that he left his position at the university in 1545. In 1548 the chair of anatomy was taken by the young Falloppio, who was advised and mentored by Canano.

In 1552, Canano took a prestigious position of the physician to the Pope Julius III, succeeding his Ferrara professor, renowned medical expert Antonio Musa Bravasola. While at Rome he was in contact with many prominent artists and scholars, a company in which a multifaceted and cultured scholar such as Canano must have felt at home. Upon the death of the Pope’s in 1555,
Canano returned to Ferrara. He was appointed the protomedicus (head physician) of the House of Este, by Alfonso II, Duke of Ferrara. As a protomedicus he introduced many enhancements in the area of public health, significantly improving the living conditions and the quality of life of the local population. Canano passed away in Ferrara in 1579.

**Conclusion**

Canano’s work on muscles and the cancelled publication of his book on myology are among the most perplexing episodes in the history of anatomy. They show the complexity of scholarly endeavor and the powerful influence of personal idiosyncrasies, relationships within the community of scholars and chance occurrences in the process of scientific discovery and its presentation. Giambattista Canano, who potentially could have been one of the most prominent figures in the history of anatomy, still remains a hidden and obscure figure while references to his work have been as rare as the copies of his *Dissectio*.

**References**


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