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Women at the threshold of art and medicine

Key words: anatomical art, pioneer women, education, bio-medical tools

In the beginning of the 20th century faith in progress and scientific discovery had a principal influence on scientists and artists. Revolutionary discoveries appeared in the sciences and in the arts a new awareness of a deep rootedness in nature and its processes became evident (1). As a result a conviction that a scientific spirit forms part of a new synthesis emerged in various disciplines (2) including a renewed interest and re-evaluation of scientific visualization (3). Scores of scientific discoveries, radical art activities and numerous technological inventions that we take for granted today, were drafted in this period. While major scientific discoveries such as the theory of quantum physics and the theory of relativity are dating from the first decade of the twentieth century – innovation and change was felt across all domains from economics to socio-political structures - including the first wave of feminism (4). Nevertheless it took decades to press forward for equal professional opportunities for women and even today a century later major discrepancies remain in vital professions. Key medical advances originating from Canada included the world's first mobile transfusion unit developed Norman Bethune, Wilder Penfield's surgical treatment of epilepsy in Montreal and most importantly the discovery of Insulin by Nobel prize winners Frederick Banting, Charles Best, JB Clip and JJR Macleod at the University of Toronto (5). Despite the stimulating academic atmosphere in Toronto leading to these exhilarating breakthroughs and new opportunities – the first wave of feminism had only limited impact here: women were still discouraged to enter professions such as medical research or clinical medicine. Thus, Maria Wishart's initiative to establish in November 1925 the Department of Medical Art Service at the University of Toronto in Canada remains a pioneer initiative (6). For the next twenty years (1945-1965), Wishart directed the surgical and anatomical illustration work at the University. The program -in part academic and in part practical training- to which Wishart dedicated so

much of her creative energy became well known. Throughout the following decades this educational program supported the advancement of numerous women with a scientific interest. Most significantly, the program -under a different name and structure- is still operational today.

In 1945, Wishart established a three-year diploma course, under the new name of "Art as Applied to Medicine". She has insisted that all her students attend medial lectures setting a then highly unusual example. While directing the program, Wishart also continued her practice as an anatomical artist, contributing drawings of outstanding quality to medical publications. The instructive significance, the crucial role of anatomical art in medical education is often unacknowledged. These artworks changed the context anatomy was perceived and taught and yet they remain known only to a limited group of specialists. Yet the discipline remains an effective far-reaching tool for revealing interrelated features organic structures and organ systems.

Maria Wishart had studied under the famed German medical illustrator Max Brödel (7) who in the 1890s was invited by John Hopkins University from Leipzig, Germany. At John Hopkins, he founded the first North American School of Medical Illustration in 1911. It should be noted that until the Second World War every Faculty of Medicine in North America was dependent on one of two anatomical textbooks one by Werner Spalteholz's (8) the other by Johannes Sobatta (9) both first produced in Europe. While re-printed in North America in English these multivolume textbooks were developed by European anatomists and illustrators and published and financed by two German publishing houses. The onset of World War II instigated a temporary crisis in the North American medical community until 1941, when Dr. J.C.B. Grant (10) from the University of Toronto, approached the Philadelphia publisher Williams and Wilkins to initiate an alternative anatomical atlas produced and published in North America. Grant was working at the University of Toronto with a team of highly skilled, predominantly women illustrators including Maria Wishart, Dorothy Chubb, Nancy Joy and Elisabeth Blackstock who became major contributors for his Atlas. The novelty of Grant's Atlas was the way that the text and illustrations were organized depicting anatomical processes, which was distinct

from the earlier German textbooks. Grant's *Atlas* depicted the body as series of regions rather than a system, adopted English rather than Latin as the language of the captions and accentuated illustration over textual descriptions. It was the important role these illustrations played, emphasizing the excellent artwork of the anatomical artists at the University of Toronto. Grant also paid attention to size and portability that became an important pragmatic feature for the promotion and retail of the textbook. From 1943 on, Grant was the editor for the first six editions. The Atlas still is now produced under the direction of Anne Agur (11) a University of Toronto anatomist. It is worth mentioning that mostly women artists created the anatomical illustrations in the original six editions. The publication has had a worldwide impact and it remains one of the top three anatomical atlases used in the training of medical students.

Anatomical art, posited on the threshold of the arts and medical science is an atypical discipline. Science is based on factual observations and interpretations. Expert anatomical visualization, while based on factual information and scientific data, is more personal, frequently beautiful yet sometimes frightful or grotesque. The dictionary definition of the medical illustrator is as follows: "A medical illustrator is a professional artist who interprets and creates visual material to help record and disseminate medical, biological and related knowledge. Medical illustrators not only produce such material but can also function as consultants and administrators within the field of bio-communication. A Certified Medical Illustrator continues to obtain extensive training in medicine, science, and art techniques throughout his or her career (12). It is curious to note that instead of "artist", the term frequently used is "illustrator" whose task as described by the Oxford Pocket Dictionary is "to provide (a publication) with explanatory or decorative features" (13). In reality the artist, in addition to his/her scientific knowledge requires an expert eye to decide on a specific point of view and the most appropriate interpretation. This might derive from the fact, that we have only an imperfect knowledge of the inner world of our own body - thus it remains mysterious and amazing.

Throughout many centuries -despite the difficulties and complexities of visualization- the human body has been represented in various ways, yet partly due to moral and religious

concerns, this representation has an uneven and little known history. This texts evokes the work and professional context of those women artists in Toronto who pioneered the program using pen and ink drawings, wash, carbon dust etc., How tools are chosen? How the artist, the illustrator while looking at a dissected dead human body creates a factual yet aesthetic interpretation? How and why did these artists involve themselves in this – frequently- life long hardly recognized labour? Due to lack of proper documentation, it is practically impossible to answer today these questions. The magnificent and precise drawings remain a testimony the devotion of the artists.

My own focused interest on the collection of anatomical art housed at the University of Toronto began in 1999, while researching historical materials for *Digitized Bodies, Virtual Spectacles* (14), a project focused on the changing perceptions of the human body, I discovered this amazing collection of medical illustrations stored at the University. The *Digitized* Bodies project examined the relationship between art and biotechnology exploring the shifting notions surrounding body perceptions, material realities, and current forms of visualization. In my curatorial practice with art & science projects, one of my main concerns is to provide a historical context for contemporary art. I then began negotiations with Prof. Nick Woolridge an illustrator and current head of the Division of Biomedical Communications, for a loan to exhibit, for the first time ever, a selection of these illustrations.

Pioneers of Canadian Medical Illustration, served as an introductory scientific benchmark to the Intimate Perception show. These original scientific representations from the first part of this century, elegantly complimented the contemporary reflections on the human body as revealed in the exhibited artworks and all of the online and onsite events of *The Digitized Bodies-Virtual Spectacles Touring Project*. The works of these artists are beautiful and especially remarkable. They employed a variety of techniques, such as pen and ink, wash and carbon dust – a medium essentially unknown outside of medical illustration.

Recently, an interdisciplinary group of us received a Canadian Social Sciences and

Humanities Research grant to work with this collection of images at the University of Toronto. Within our research we are investigating a series of questions. Who were the illustrators who worked on the Atlas? What was their background? What techniques did they use in the production of the drawing for the atlas, and why? What can we learn by studying both originals and mass reproduced copies? What can be learned of the role of the medical illustration and medical illustrator through a close examination of this particular textbook and these original drawings?

The drawings we are studying are magnificent. The history of medical illustration is closely connected to anatomical museums and medical publications. Some of these museums date back to the 16th & 17th century. In the Anatomisches Museum of Basel for example a human skeleton donated in 1543 by Andreas Vesalius is still exhibited (15). These museums typically displayed wax models, specimens in jars, freaks of nature (both human and animal), and ethnological curiosities. Originally established for educational purposes for physicians and scientists, they ultimately catered to the general public. Today a vast network of such museums exists covering the globe from North America to South Africa. In Italy alone we find at least twenty renowned institutions including the world famous "Luigi Cattaneo" Anatomical Museum in Bologna (16).

The need for increased communication in health sciences prompted in the last decades additional training in photography, computer aided studies, medical models, and exhibit production. In addition a major shift occurred from analog to digital representations that facilitated not only the digital production and storage of illustrations, but also served as an additional educational tool in the field of anatomy. These constituents necessitated increasing educational programs at various academic institutions to offer advanced degrees in Medical and Biological Illustration. These pieces – commented Professor Nick Woolridge of the University of Toronto - encapsulate a time when the medical view of the body, and of health and disease, was mostly macroscopic in nature, dealing with the exigencies of bodily structure and repair. They also provide a glimpse of a time when the opportunities for women in medical study and practice were severely restricted. Some

women were able to find a home in a profession that allowed them to visually express their fascination with the mechanics of life.

Wishart's pioneer educational initiative continued unbroken and today the Biomedical Communication Department of the University of Toronto (17) is a direct descendant of her idea. It offers an interdisciplinary graduate program in the design and evaluation of visual media in medicine and science and drawing on the rich heritage of women medical artists from the last century, it continues to bridge the disciplines of art, science, medicine and communication. Since the advent of the digital revolution and the emergence of novel visualization technologies the character of anatomical art and medical illustration has changed considerable. Consequently the collection and the history of these marvelous art works housed at the University of Toronto constitute an irreplaceable exceptional treasure.

In conclusion the complexity of the human body will always require a method of scientific selection and aesthetic interpretation. The scientific discipline of anatomy is depended on a system of visual illustrations, but it needs art to realize the intricate process of providing knowledge of the human body's interior. Thus anatomical illustration forms a significant part of instructional literature in medical education bridging the gap between art, science and technology.

Notes:

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