

Nancy Grahame Joy: Envisioning Our Future

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Nancy Grahame Joy was an influential leader in shaping medical illustration as an academic discipline in Canada, as chair of Art as Applied to Medicine (AAM) at the University of Toronto (U of T). Her approach to visual communication enhanced the standards of academic teaching material, and reflected the influence of her long professional relationship with anatomist John Charles Boileau Grant.

Medical artists should be “born teachers, artists by vocation and scientists by nature.” — Nancy Joy, 1974

Origins

Nancy Jean Hannah Grahame Joy was born in Toronto in 1920¹, the daughter of Ernst Grahame and Dorothy Ewart Joy (*Canadian Who's Who*, 1983). Her father, a Toronto lawyer, had been a fighter pilot during WW1 (National Archives). Her mother had studied art with the Canadian artist Mary Wrinch Reid (Allen 1983). Her maternal grandfather, Alexander Primrose, was a surgeon, anatomist and, from 1920 to 1932, Dean of the Faculty of Medicine at the University of Toronto. These strands of intrepidity, art and science would figure in Nancy Joy's subsequent career as a medical artist and as Chair of Art as Applied to Medicine (AAM) at the University of Toronto (U of T) (Figures 1 and 2).

Education and early work

From the age of 13, Joy knew she would become a medical illustrator (Joy, pers. comm., 2001). In 1939, she enrolled at the Ontario College of Art (OCA) in Toronto, where she completed a four-year diploma in drawing and painting. She had originally hoped to study medical art under Max Brödel at Johns Hopkins University after college, but Brödel retired in 1940, when Joy was only midway through her art studies. Instead, in 1942, she



Figure 1. Nancy Grahame Joy in the Department of Art as Applied to Medicine, c. 1963. Source: Archives of the Biomedical Communications Program, Faculty of Medicine, University of Toronto.



Figure 2. Nancy Grahame Joy. Source: Archives of the Biomedical Communications Program, Faculty of Medicine, University of Toronto.

As this article goes to press, Nancy Joy is celebrating her 90th birthday.

obtained special permission from Dr. J. C. B. Grant, Chair of Anatomy at the University of Toronto (U of T), to attend classes in anatomy, histology, embryology, and neuroanatomy with U of T's medical students. During this time, Grant commissioned Joy to rework some of the drawings in his recently completed book *A Method of Anatomy* (1937) and, along with Dorothy Foster Chubb, to work as a freelance illustrator on the second volume of his first edition of *An Atlas of Anatomy* (1943). This venture with Grant was the beginning of what would turn out to be the longest working relationship of Joy's career, spanning more than 30 years.

Still seeking education in medical illustration, Joy was encouraged by Maria Torrance Wishart, director of the Department of Medical Art Service at U of T, to study under Tom Jones in the Department of Medical and Dental Illustration, University of Illinois at Chicago (UIC). In 1944 Joy registered in the Illinois program, which at that time was "very informal," as she recalled in a 1973 interview (U of T Archives); after two months as a student, Joy was hired by Jones to work on his staff in the Illustration Studios at UIC. There she began to experiment with the construction of teaching models in plastics and other materials, and assisted in building exhibits for public health education at the Museum of Science and Industry with Jones's assistant Ruth Coleman (Wakerlin). In 1946, Joy returned to Toronto. Maria Wishart had by then established a three-year diploma in medical art at U of T in the newly renamed Department of Art as Applied to Medicine; Joy enrolled as a special student in this program in order to take a pathology course. Her main focus, however, was full-time freelance illustration work for Dr. J. C. B. Grant.

J. C. B. Grant and a philosophy of anatomical visualization

John Charles Boileau Grant (1886-1973) was an important figure in the history of twentieth-century anatomy. He pioneered the regional approach to anatomical instruction, in a departure from the systemic approach predominant in Europe and North America during the first half of the century (Rosse 1999). He wanted his students to develop skills in deductive reasoning based on a knowledge of anatomical relationships, rather than on memorizing lists of structures that would soon be forgotten (Grant 1958). Grant's teaching style, moreover, was highly visual. He lectured with large cards and pictures (some of which Joy would later be responsible for creating), and knew how to organize, prioritize, and abstract his visual material "to give some punch to it" (Joy, pers. comm., 2001). Dr. C.L.N. Robinson offers this summary:

Dr. Grant is remembered as a magnificent teacher... quick of thought and action. He could draw on the blackboard, using colored chalks, with either hand or sometimes both hands simultaneously. Lectures were a demonstration of anatomical art, not to be forgotten. At the end of an hour, he would have filled four blackboards with colored anatomical

drawings, more an illustrator than an orator (Robinson 1988: 204).

Grant's *Method of Anatomy* was illustrated entirely with line drawings. In the preface to the first edition (reprinted in subsequent editions), Grant articulates the philosophy behind this approach to visual education:

Illustrations to be of value must be simple, accurate, and convey a definite idea. It is for these reasons that [the illustrations in the Method] consist entirely of line drawings. Their simplicity encourages the student to reproduce them... though diagrammatic in nature they are based on measurements and observations of a great deal of carefully dissected material. Their accuracy therefore, in those details they are intended to illuminate, has been the object of very considerable work. (Grant 1958: xii)

In other words, "accuracy" for Grant did not necessarily equal photographic realism; rather, it was a matter of truth to the holistic anatomical relationships being depicted. Many of Joy's diagrammatic drawings were based on concepts that Grant used in his blackboard drawings. Figure 3 demonstrates Joy's use of Grant's approach to illustrate the three parts of the axillary artery and its branches. Joy recalls that she would constantly rework each drawing until the number of lines used to convey an idea was absolutely minimal (Joy, pers. comm., 2001).

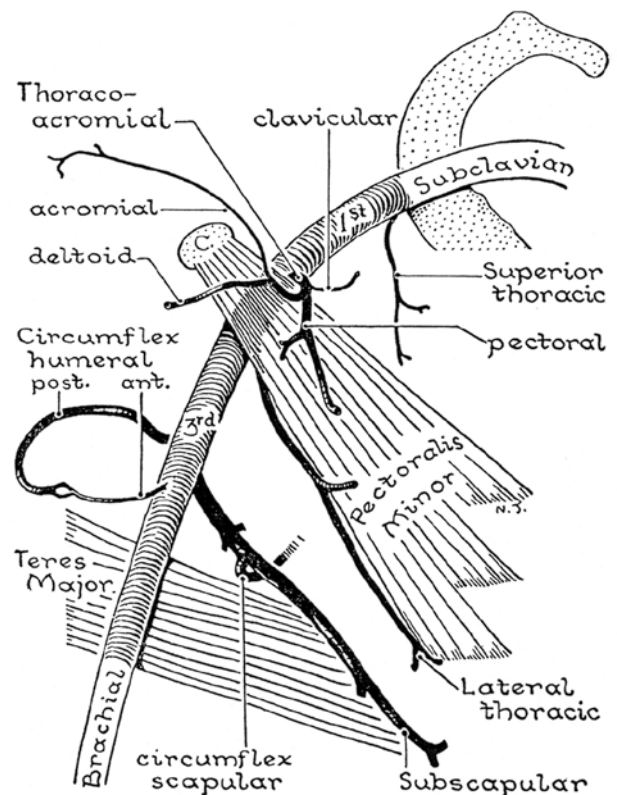


Figure 3. The three parts of the axillary artery and its branches. Illustration by Nancy Joy. Source: Grant, J. C. B. 1958. *A Method of Anatomy*, 6th ed. Baltimore: Williams and Wilkins.

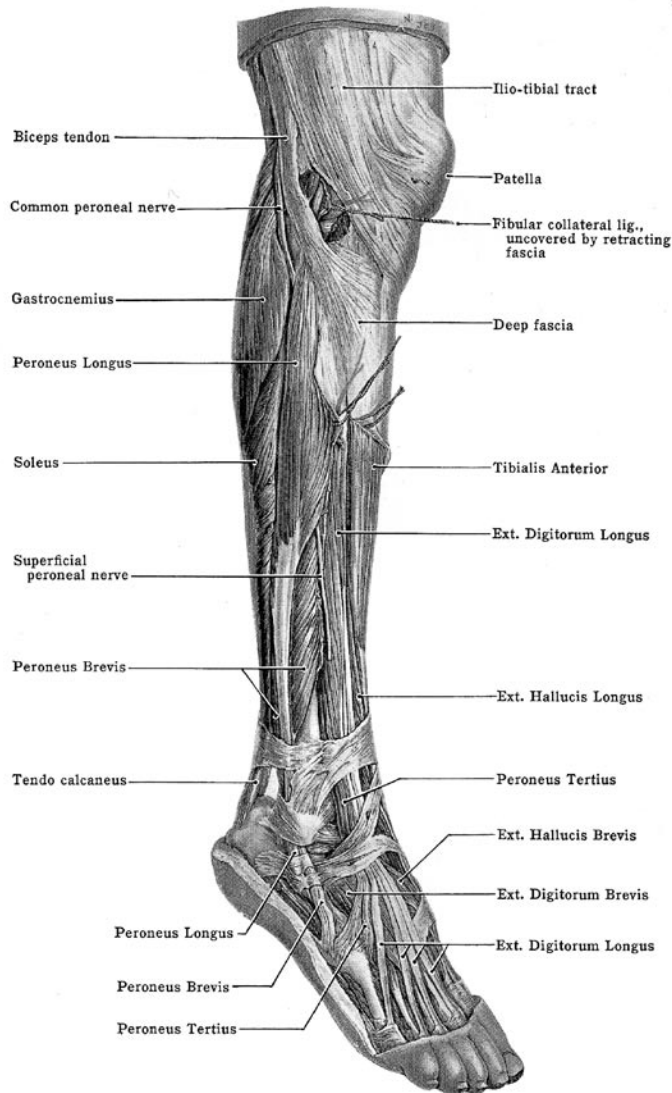


Figure 4. Muscles of the leg and foot. Illustration by Nancy Joy.
Source: Grant, J. C. B. 1962. *An Atlas of Anatomy*, 5th ed. Baltimore: Williams and Wilkins.

Grant's *Atlas of Anatomy* was first published in 1943, and contained a wider variety of illustrative techniques than his *Method of Anatomy*. Grant's objective in developing the Atlas was to produce a dissecting-room companion based on the specimens that students studied from in the Anatomy Museum at U of T. The date of publication is significant: before WWII, German anatomical atlases such as those by Carl Tolddt, Johannes Sobotta, and Werner Spalteholz anchored medical curricula in North America as well as in Europe (Rosse 1999). The supply of German anatomical atlases on this continent was compromised by the war; the time was ripe for an indigenous publication. Grant's *Atlas* both supplied this need and initiated a new approach to anatomical visualization based on realistic depictions of individual specimens (Figure 4), rather than on the idealized anatomy characteristic of the German atlases (Figure 5).

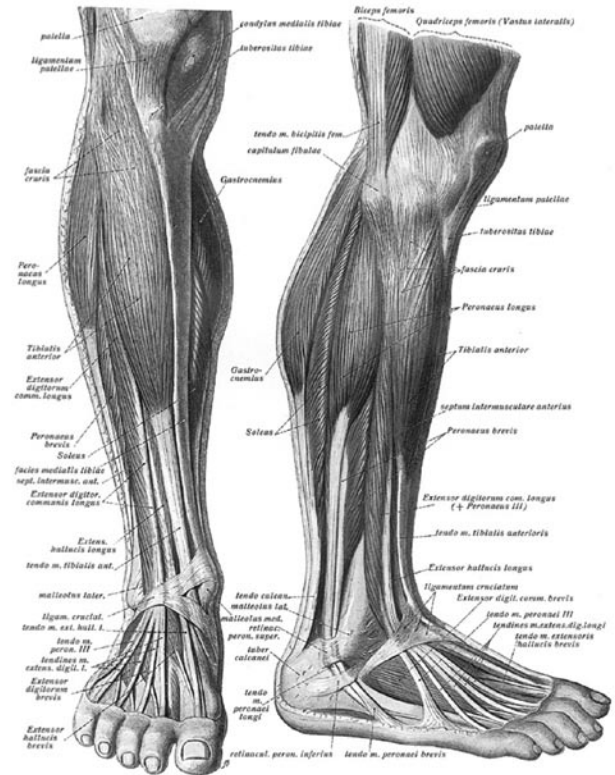


Figure 5. Muscles of the leg and foot. Source: Sobotta, J. 1933. *Atlas of Human Anatomy*, 3rd rev. ed. Vol. 1. J. Playfair McMurrich, ed. NY: G.E. Steichert & Co.

The illustrations were painstakingly drawn from Grant's dissections, and checked against other specimens to ensure accuracy (Joy, pers. comm., 2001). The following excerpt from the preface to the first edition of the *Atlas* describes the process that Grant directed his artists to use:

...each specimen was posed and photographed; from the negative film so obtained an enlarged positive film was made; with the aid of a viewing box the outlines of the structures on the enlarged film were traced on tracing paper and these outlines were scrutinized against the original specimen, in order to ensure that the shapes, positions and relative proportions of the various structures were correct. The outline tracing was then presented to the artist who transferred it to suitable paper and, having the original dissection beside her, proceeded to work up a plastic drawing in which the important features were brought out. Thus, little, if any, liberty has been taken with the anatomy; that is to say, the illustrations profess a considerable accuracy of detail. (Grant 1943: vii)

Thus, in the case of the *Atlas*, "accuracy" did mean something approaching photographic truth. Joy was responsible for most of the line drawings in the *Atlas of Anatomy*. Her pen and ink illustration of the rib cage (Figure 6) illuminates her mastery of this medium, through her gestural strokes and varying line weights. Although both Joy and Dorothy Foster Chubb contributed

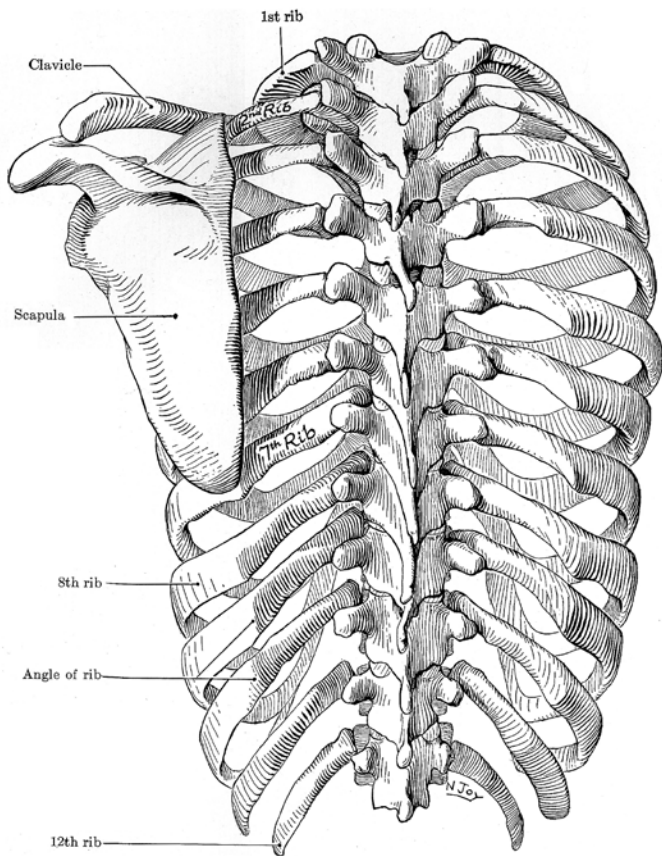


Figure 7. Front (anterior) view of the scapular muscles. Illustration by Nancy Joy. Source: Morris' *Human anatomy: A Complete Systematic Treatise*, 11th ed., Ed. J. Parsons Schaeffer. New York: Blakiston Company.

to the tonal illustrations, most of the tonal work was done by Chubb (Grant 1947).

Grant's views on medical art profoundly shaped the way that Joy approached her own work and, later, the teaching of medical illustration, as she acknowledges in an endnote to an editorial written for the *Annals of Surgery* in 1962. In this short article, she outlines a three-part taxonomy of illustration, consisting of diagrams, schemes, and lifelike approximations:

Diagrams are the stylization, or the simplification of actual material. Important features are emphasized but are not distorted.... Schemes are allied to theories. They are interpretations of physical facts or of conditions.... Lifelike approximation represents the original model as faithfully and truthfully as human limitations and the difference in medium allow. (Joy 1962: 511)

In the description of the diagram, we recognize the principle guiding some of Joy's illustrations for Grant's *Method*. In that of lifelike approximation, we see the principle guiding the illustrations for Grant's *Atlas*.

Grant's books are still some of the most widely used texts in anatomy, and Joy's contribution to these important works is

immense. Her work was highly respected by Grant, who in the preface to the sixth edition of *A Method of Anatomy* pays tribute to "the cheerful, painstaking and talented services of Miss Nancy Grahame Joy" (Grant 1958). Most of Joy's original artwork from Grant's publications now resides in the archives of the Biomedical Communications program at U of T.

Other freelance work, and entry into academia

Joy worked briefly with Dr. C. G. Smith, a colleague of Grant's who contributed a chapter to Morris' *Human Anatomy*, 11th edition (1953). Figure 7 shows the dynamic approach that Joy took to illustrating the scapular muscles for this publication, and demonstrates her mastery of tonal watercolor illustration, which she perfected after being inspired by the work of Tom Jones. From 1952 to 1954, Joy freelanced in England and Scotland, including illustrations for *Clinical Anatomy of the Heart* (1978), which she considers to be particularly noteworthy (Figure 8) (Joy, pers. comm., 2001). In 1954, Joy returned to Toronto to continue her work with Grant. Two years later, in 1956, she accepted a position as a medical artist at the University of Manitoba in Winnipeg. (J.C.B. Grant had been Chair of Anatomy at the University of Winnipeg from 1919 to 1930; perhaps Joy's decision to relocate there also reflects Grant's influence.) Joy contributed to many publications during her time in Winnipeg, and was promoted there to her first academic position as Assistant Professor in the Department of Surgery. She considers this appointment the most important step in furthering her career in academia, since her status changed from non-academic to academic (Wilson-Pauwels 1993).

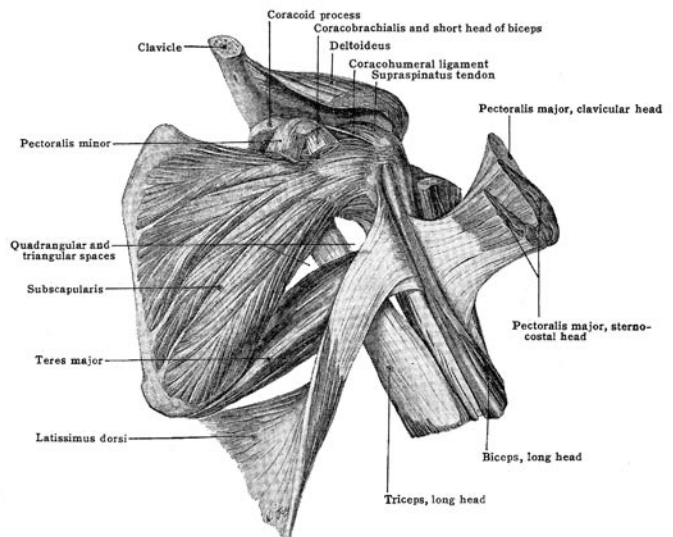


Figure 6. The bony thorax, posterior aspect. Illustration by Nancy Joy. Source: Grant, J. C. B. 1962. *An Atlas of Anatomy*, 5th ed. Baltimore: Williams and Wilkins.

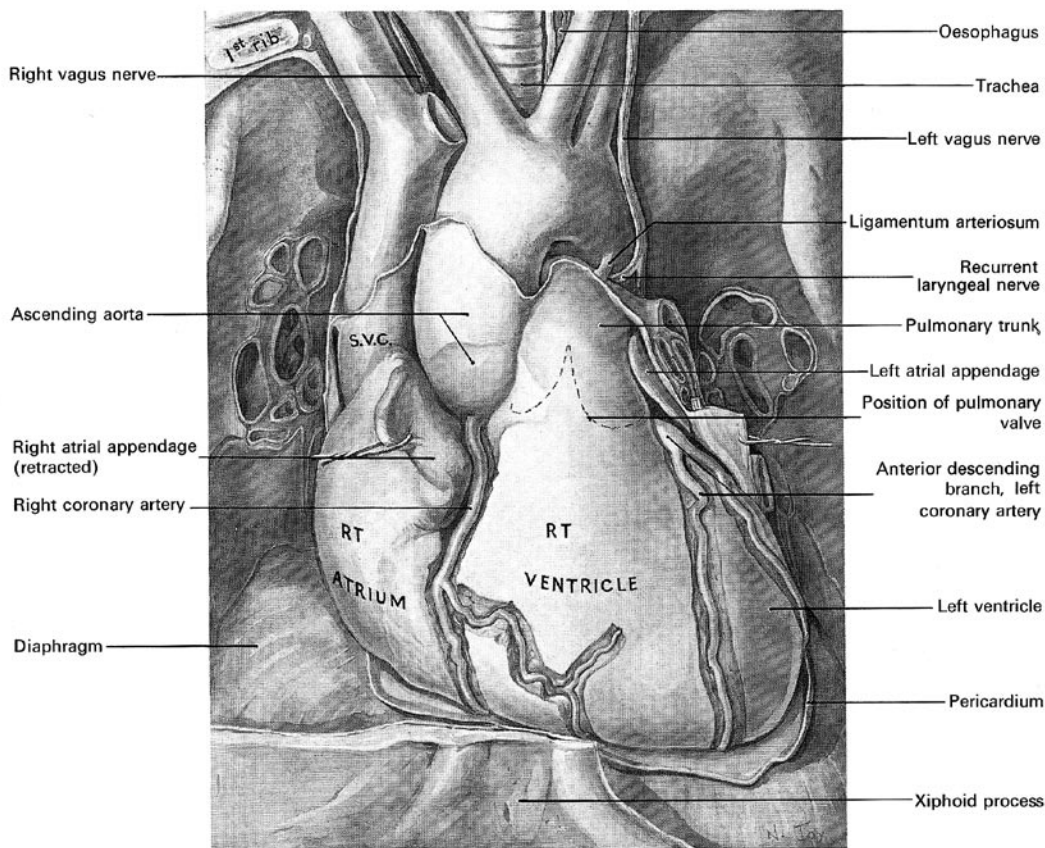


Figure 8. *The heart in situ.* Illustration by Nancy Joy. Source: Walmsley, R. and H. Watson. 1978. *Clinical Anatomy of the Heart.* London: Churchill Livingstone.

Chair of Art as Applied to Medicine (AAM)

In 1962, Maria Wishart (1893-1983) retired as director of the Art as Applied to Medicine (AAM) program at U of T, and Joy succeeded her as head of the department at the rank of associate professor. Wishart's and Joy's paths had long overlapped. The Wishart family and the Primroses, Joy's maternal grandparents, were fellow parishioners at St. Andrew's Presbyterian Church in downtown Toronto; Joy recalls visiting Maria Wishart as a teenager to seek advice about pursuing a career in medical art (Joy, interview, 1973, U of T Archives). It was Joy's grandfather Alexander Primrose, during his tenure as Dean of the Faculty of Medicine at the University of Toronto, who had approved Maria Wishart's appointment as the university's first professionally trained medical artist in 1925 (Gilbert et al., 1995).

Wishart had studied medical art under Max Brödel at Johns Hopkins Medical School from 1922 to 1925. In Toronto, she worked with other Hopkins-trained artists as her assistants and apprentices, including Dorothy Foster Chubb and Eila Hopper Ross. The three-year diploma course that she inaugurated in 1945 combined elements of apprenticeship and academic study;

19 students graduated from the program under Wishart's leadership (U of T Archives).

When Joy took over the program, the number of graduates each year was dwindling: only two Art as Applied to Medicine (AAM) diplomas were awarded between 1959 and 1964 (Gilbert et al., 1995). Joy knew that the AAM diploma program must be elevated to degree-granting status in order to survive (Joy, pers. comm. 2001). In 1965, she sat on an advisory committee to review the program; it was determined that "a diploma was not an adequate incentive or reward for the long years of training," as she wrote in a retrospective summary to the Faculty of Medicine's associate dean in 1973 (U of T Archives). Accordingly, in 1967, the AAM program was elevated to a three-year undergraduate Bachelor of Science in Art as Applied to Medicine (BScAAM)

degree. Enrolment increased dramatically: by the time Joy retired in 1986, 76 students had received their BScAAM (Gilbert et al., 1995).

Joy fought continually to maintain the department in the face of the university's mounting financial pressures. She worked to further the program by promoting to other faculties the value of visual communication as a scholarly endeavor. In a speech to the Institute of Biomedical Engineering, for example, she declared:

It is my experience that a great many scholars who have decision-making authority in this university are completely verbally biased. There is a ubiquitous habit throughout this and other Canadian universities to regard pictures used in teachings as teaching aids rather than as innovative teaching in their own right; and to regard pieces of art as objects for discussion and research, rather than as research itself or at certain times, as a better means to reveal scholarship, than words would be. (Joy 1984)

She had struck a similar note in a departmental position paper in 1980, when she called for "AAM's integration into all levels of the university" by "seeking formal academic recognition that to transmit information pictorially at a graduate level can be as

significant an intellectual achievement as to do so in writing” (U of T Archives). Then, as now, medical artists had to fight for recognition of their discipline-specific knowledge base.

As an educator, Joy kept ahead of the times in terms of technology. In 1971, for example, she completed a certificate extension course in Television Studio Production at the Ryerson Polytechnical Institute in Toronto and, that same year, helped to organize a Health Science Film Festival Workshop at U of T to promote awareness of the value of medical teaching films (U of T Archives). In 1982, she introduced a new course in the design of computer-aided learning for medical education, and obtained Telidon technology for the AAM program. The Telidon computer had 64K of memory, and could produce basic graphic shapes in eight colors. With this cutting-edge technology the students were able to create an interactive program for medical students to learn the pathways of spinal nerves (Lax, pers. comm., 2001).

Advocacy

Joy produced work as a freelance artist for most of her career, including her work for Grant. Neither Joy nor Chubb own any rights to their work in Grant’s publications, and Joy’s experience with various publishers led her to become a strong advocate for re-use fees (Joy, pers. comm., 2001). She introduced a course on business management to her students in AAM, and tried to educate other artists and authors through a 1964 article in *Medical and Biological Illustration* where she states that “copyright notice is especially necessary in the medical literature which is frequently abused by blatant plagiarism” (Joy 1964: 92). In a series of letters exchanged with a representative of U of T’s Scientific Development Committee in 1962, she had sought policy to define and protect the intellectual property rights of service and teaching staff and students in Art as Applied to Medicine (U of T Archives).

Professional associations

Joy joined the Association of Medical Illustrators (AMI) as an elected member in 1950. She served on the AMI’s Bibliography Committee as a member and later as chair, was an Associate Editor for the *Journal of the Association of Medical Illustrators* (1957-1963), sat on the AMI’s Board of Governors (1960-1965), and participated in the AMI’s Council on Education (1964 onward). Joy was also a charter member of the Canadian Academy of Medical Illustrators (1965-1981) and was awarded an Honorary Fellowship from the Ontario College of Art in 1984 for her contribution to the arts (BMC Archives). The AMI honored both Joy and Dorothy Foster Chubb at their annual meeting in 1998 in Toronto, when the publishers of Grant’s *Atlas* presented the original artwork used in the book to the Department of Anatomy and the Division of Biomedical Communications in the Department of Surgery.

Legacy

Joy stepped down as Chair of Art as Applied to Medicine in 1985, and retired from U of T one year later. Challenging times for the program still lay ahead—challenges that have been met by program directors Linda Wilson-Pauwels (1986 to 2008) and Nicholas Woolridge (2008 to the present). Under the leadership of Wilson-Pauwels, the program was renamed Biomedical Communications in 1990, to reflect its expanding academic and technological scope, and was elevated to the graduate level in 1993, so that graduates now receive a Master of Science in Biomedical Communications (MScBMC). Nancy Joy’s work in promoting Art as Applied to Medicine and elevating it to degree-granting status in 1968 contributed to the program’s growth. To this day, Joy is admired as a strong, independent visionary and consummate medical artist by the faculty, students, and alumni of this distinguished program.

Authors

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