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I FIRST MET FRANCIS D. (FRANNY) MOORE in 1960, when he was forty-seven years old and at the peak of his legendary career at the Peter Bent Brigham Hospital in Boston. I was thirty-four years old and had completed my surgical training only a few months before at Northwestern University (Chicago). Our common interest was experimental liver transplantation, a procedure that we had been developing in dogs independently since 1958. By 1960, our experience with the operation exceeded that of the Boston investigators, but their knowledge of potentially applicable immunosuppression was far ahead of ours. Consequently, I approached him about coming to Boston to join forces. When he indicated that this would not be feasible, we went our separate ways. Moore ultimately abandoned his efforts to make liver transplantation a clinical service, but he always took pride in his original contributions. He remained keenly interested as progress was made, and frequently discussed the subject at meetings. His comments were viewed by some as pessimistic or frankly critical, but I always considered them to be incisive and helpful.

To me, Moore was an inspirational, albeit enigmatic, figure who always seemed both close at hand and far away. From my perspective, bits of the Moore puzzle took years to assemble. In fact, some of the missing pieces may not be filled in until the twenty-second century. Moore's extensive private correspondence and personal journals were donated to Harvard University, but with the proviso that they could not be made public for a hundred years. However, the broad outlines as well as numerous details of his life were published in his 1995 autobiography, *A Miracle and a Privilege*. Drawing on his fading but still prodigious memory (he was then eighty-two years old), Moore integrated the events of his family life with a half-century of surgical and medical advances. He drew particular attention to his role in fostering connections between surgery and basic science, and wanted to be known as a "scientist-surgeon."

One of the themes that run through his autobiography is most explicitly stated on pages 123–24: "*The credit for priority in all of science should go to those who are the first, not only to perceive a discovery, but also to make public the message.*" Such a statement easily could be misconstrued. But Moore was merely explaining what his role had been in the medical revolution that took place during the twentieth century. He saw himself as more than a surgeon and more than a scientist. I agreed with his self-assessment. From my point of view, he was the consummate teacher-communicator. I found him to be learned but practical, stern but compassionate, remote but approachable, critical but constructive, and invariably stimulating. His genius as an educator required superior intelligence, a huge knowledge base, an instinct for

stagecraft, an actor's ability, and the power to lead. These qualities were cultivated from an early age.

Born in 1913 in Evanston, Illinois, Moore was the youngest of three children (boy→girl→boy) of well-to-do working parents who had deep New England roots. His father, characterized as "an achiever," was an industrial executive in the Chicago-based railroad industry. His mother was viewed by Franny as "the intellectual of the family." His early life was self-described as "serene and affluent." He remembered with particular nostalgia the time spent at a cattle ranch, purchased by his parents in Wyoming in 1929 and used as a honeymoon getaway after his marriage in 1935. However, these trips to the west were sporadic, and only added embroidery to the rich canvas of Franny's young life, which was centered from the age of five in the upscale Chicago suburb of Winnetka, Illinois. It is hard to imagine a more diversified upbringing than that described by Moore.

There were trips to New England, Europe, and Wyoming; a classical education (including Latin) at a private day school; music lessons; and extensive exposure to the theater, symphony, and other performing arts. By the time he arrived at Harvard in 1931, he could readily pass for a sophisticated upper-class New England native. At Harvard, he majored in anthropology, took premedical courses, learned German, gave piano concerts, and was president of the Harvard Lampoon and Hasty Pudding Clubs (including the theatrical division of the latter). What had emerged by the end of his undergraduate days was a twenty-two-year-old full-blown impresario, actor, and musician. His intelligence and social talents had mushroomed on such a grand scale that they could be viewed as fictional were they not so easily verifiable. In June 1935, he capped off this phase of his life by marrying his childhood sweetheart, Laura Benton Bartlett. The marriage lasted for fifty-three years until her death in a car accident, and produced five fine children (three girls and two boys).

Moore matriculated at Harvard Medical College in September 1935, and settled down to "real work." In *A Miracle and a Privilege*, he listed his favorite (and for the most part famous) medical school faculty members and described a research project (not published) on a suspect placental hormone. He took field trips to Civil War battle sites and tried to reconstruct the policies of military medicine during that era. In common with the reaction of medical students throughout the ages, Moore recalled being shocked by the sight of cadavers in the anatomy class. Sixty years later, he wrote in his autobiography that ". . . human anatomy [is] the structure that serves as a dwelling place [for the brain]. Injury and disease can so destroy that warm dwelling place that it is no longer habitable and the dweller—energy, mind, and soul—had best be permitted to depart. . . . Our job would be to keep the dwelling places suitable

for habitation." Elsewhere in this book, Moore devoted ten pages to support of the concept, if not the practice, of euthanasia. On page 335, he stated that ". . . *[it] is my credo that assisting people to leave the dwelling place of their body when it is no longer habitable is becoming an obligation of the medical profession. It is part of the doctor's job.*"

These were Moore's reflections in the twilight of his life. It is hard to believe that this happy and gifted young student actually spent much time thinking about thanatology. In fact, his medical school years (1935–39) were not out of the ordinary except for his being married (there were only 2 examples in a class of 120, all men). Nor was there anything unusual about the two-year surgical internship that Moore now began at the Massachusetts General Hospital (MGH) on 1 July 1939. World War II broke out two months later, but Moore's career development was not interrupted since his affliction with asthma disqualified him for military service. After completing his internship in July 1941, he devoted his third post–medical school year to laboratory studies of radioisotopes, under the tutelage of the nuclear medicine pioneer, Dr. Joseph Aub, at the nearby Huntington Hospital. He returned to patient care duties at the MGH in July 1942.

Five months later, on 28 November 1942, while on emergency room call, Moore was confronted with the arrival at MGH of 114 burn victims from the catastrophic Cocoanut Grove nightclub fire. A similar group of patients was sent to Boston City Hospital, where tannic acid was applied to the burn sites. This had been a generally accepted standard of optimal burn care. The purpose of the tannic acid was to create a "protective crust" over the injured skin. In contrast, the senior surgeon at the MGH, Dr. Oliver Cope, covered the burned areas with a light petroleum-jelly gauze. The results at the MGH were spectacularly better. Moore had witnessed, and participated in, the overthrow of a long-standing therapeutic dogma and its replacement with a revolutionary improvement in burn management. The experience, combined with the immediately preceding acquisition of radioisotope technology in Aub's laboratory, became the turning point of Moore's life. There was, however, a need to finish his training.

The duration of hands-on patient care in the MGH surgical residency normally was four to six years. Due to the exigencies of the war, this period had been dramatically truncated, and in Moore's case consisted of only fifteen months beyond the two-year internship: i.e., July 1942 through October 1943. Having finished his formal training on 1 November 1943, he was uneasy about the extent of his preparation, and still uncertain of his career goals. Further clinical experience was acquired as the assistant of Leland McKittrick, one of the most accomplished private surgeons at the MGH. In addition, he received an appointment as

an instructor on the Harvard Medical School faculty and was given full access to Oliver Cope's research laboratory. The laboratory was fully outfitted with the biophysical equipment needed by Moore to expand and exploit the radioisotope technology to which he had been exposed under Dr. Aub's guidance in 1941–42. The first objective (with Cope) was to study the physiologic changes caused by burns. These investigations remained active for five years, and strongly influenced armed services casualty care.

Although Moore had published only a single medical article by the end of 1942, fifteen additional reports were produced during the next five years, on a range of subjects. Studies of water and other body components with the emerging radioisotope technology were of seminal importance, and established his reputation as an "academic surgeon." Effective 1 July 1948, at the age of thirty-four and only nine years after graduating from medical school, he was appointed surgeon-in-chief at the Peter Bent Brigham Hospital and Moseley Professor of Surgery at Harvard Medical School. Using a military career as a comparator, he had gone from the status of an enlisted private to that of a five-star general with barely enough time to process the paperwork at any rank in between. And what a general he was. Born to govern, he occupied his two new positions with distinction for the next twenty-eight years.

The impact of these appointments on the Harvard medical establishment was profound. By moving from the MGH to the Brigham, Moore became the successor to Elliott Cutler, a pioneer heart surgeon, who in turn had succeeded Harvey Cushing, the father of neurosurgery. It was not usual in the 1940s for a surgeon who had strong links with one of these two Harvard hospitals to assume a leadership position at the other. Although both were minions of the Harvard medical school system, each hospital had its separate heritage, governance, and autonomy. They competed for resources and, most of all, they competed for glory. Those who trained at the MGH prided themselves above all on their ability to care for patients at the very highest level of surgical operating room competence. The image they projected was in part a product of the large size of the hospital (nearly a thousand beds), the volume and variety of the patients seen there, and its long and distinguished history.

In contrast, the smaller Brigham (284 beds) was only thirty-five years old when Moore arrived in 1948. Those who worked there in surgery were scholars who with justification saw themselves as working beyond the envelope of conventional care. Moore fit this mold perfectly. For the first dozen years, he studied the water, minerals, and other components of the human body and determined how these constituents were affected by injuries, operations, diseases, and endocrine factors. Between 1952 and 1963, he wrote three books on the subject. The one published in 1959

(*Metabolic Care of the Surgical Patient*) became one of the most popular medical texts of all time. However, Moore did not pursue narrow interests. After recruiting new chiefs for various surgical specialties at the Brigham, he frequently collaborated with them on important studies, or even took over the leadership if progress was flagging. The boundaries of the various surgical services were relatively clear, but the principles of metabolic care were shared by all. This common ground provided the means by which Moore firmly governed the otherwise loose confederacy of Brigham specialists.

Organ transplantation was generally viewed in the 1940s and even in the 1950s as a fantasy. Some of the men who were destined to be major players in this field were already at the Brigham when Moore arrived in July 1948: George Thorn (chairman of medicine), John Merrill (chief of nephrology), David Hume (a junior faculty surgeon), Joseph Murray (a surgical resident, just returning from military duty), and J. Hartwell Harrison (chief of urology). The young surgical star, David Hume, had graduated from the University of Chicago Medical School and had come to the Brigham in January 1944, to be trained in surgery during the next four and a half years. One of the other five men in Hume's surgical intern class was Joseph E. Murray, whose contributions to kidney transplantation would lead him to Stockholm as the recipient of a Nobel Prize in December 1990. Thorn, a renowned endocrinologist and renal specialist, was the leader of the multidisciplinary team that proved to be Moore's greatest asset. Both at the time and long after his retirement, Moore would extol and promote the achievements of the group and its individuals, fiercely defending all those who worked in transplantation at his adopted hospital.

Moore offered his unqualified personal support to the group, and presided over the historical Brigham trials of kidney transplantation of the 1950s and early 1960s, while abstaining from authorship on any of the seminal reports. His deep interest in transplantation was reflected in his book *Give and Take*, written in 1963 for a professional as well as a lay audience, and published in 1964. It was a remarkable summary of the field, with particular emphasis on the contributions to renal transplantation of his Brigham colleagues, and on his own work in liver transplantation. In a cover story in the 3 May 1963 issue of *Time* magazine, the advances already made in surgery since World War II were recounted, as well as those that were projected for the immediate future. The stage for the story was provided by the Peter Bent Brigham Hospital. Franny Moore, whose picture adorned the magazine's front cover, was the principal hospital spokesman. He was featured as the prototype surgeon of the new era.

The development that was most emphasized by Moore was kidney

transplantation. However, he also pointed out the potential application of the same management strategies for liver and other kinds of organ transplantation. Moore may have been uncomfortable with the celebrity status conferred upon him by the *Time* article and by the optimistic tone projected by the journalist. Seven attempts to transplant the human liver in 1963 in Denver, Boston, and Paris all resulted in patient death within twenty-two days. Successful liver replacement finally was achieved in 1967 in Denver, followed six months later by the first successful human heart transplantation in Capetown, South Africa. However, the efficient use of these procedures awaited the development of better immunosuppression. That did not occur until the 1980s. Only then could it be appreciated how prophetic Moore's vision had been. Although he had long since discontinued activity in transplantation, it was easy to see how much his early participation in the struggle had shaped the course of events.

By the mid-1960s, Moore had turned his primary attention to broader issues of medical education, universal health care, the support of science, and ethical concerns. He was a faithful servant of the nation throughout his professional career. At various times, he served as a consultant for the surgeon general, the National Institutes of Health, the National Aeronautics and Space Administration, and the Committee on Life Sciences for the Uniformed Services. He was on the original board of regents of the United States Uniformed Services University of the Health Sciences. Moore received numerous prizes, honorary fellowships and doctorates, and other distinctions. However, a listing of professional accomplishments, recognitions, and titles comes woefully short of defining his pervasive influence on his profession and society. He was a profoundly effective teacher, in part perhaps because of self-doubts about whether he deserved so much acclaim. His sometimes fierce demeanor and criticisms could not hide a gentility that made him particularly empathetic to students, house officers, and colleagues seeking their own path.

After Moore's wife died in 1988, he married Katharyn Watson Saltonstall (1990), who was with him until the moment of his death. Katharyn came with him to the meetings of the American Philosophical Society. Moore particularly cherished his membership in the Society, and the opportunity there for regular reunions with old friends, especially Jonathan Rhoads. He was not a passive member. Just as he had been in countless medical and surgical conferences at an earlier age, Moore was quick to ask penetrating questions, or to provide learned discussions of Society papers. Even at the age of eighty-eight years, there seemingly was no subject about which he was not well informed. The only thing he could not abide was to be ignored. He had planned to come to the November 2001 meeting, but had to cancel at the last minute because of

a downturn in his health. He telephoned one of the members of our Society's staff and explained his absence. On 24 November 2001, two days after Thanksgiving, he had breakfast with Mrs. Moore and then went into his office at home, closed the door, and died by his own hand.

When I was informed of this by phone, I also learned that he had dictated three final letters, the last of which was to me. The terminal letter did not arrive until after the funeral. It was short, typical of many written by Franny. It concerned a manuscript I had sent to him describing the mechanisms of acquired tolerance, with suggestions of how these could be exploited to achieve a drug-free state in organ transplant recipients. The therapeutic objective had been of interest to Moore for the better part of a half-century. His response, transcribed by his secretary (sml) on 26 November, was as follows. "Dear Tom: Thanks for your note of November 7, and especially your article on tolerance. Still convalescent from a long illness, I am not in a 'cognitive' position to comment on its content. However, its appearance in NATURE: Reviews Immunology will add materially to understanding of tolerance immunology. Thanks again and all best to you. Very truly yours. FDM."

I was saddened indescribably by these events and did not understand his letter until much later when I reread Moore's views in *A Miracle and a Privilege*: "When the dwelling place (the body) is no longer habitable by the soul (the mind or brain), it is best to let the brain depart." Franny Moore was never that passive. The decision about the appropriate time to depart, or rather to release his brain while he still was in control of it, was not one that he was willing to delegate to a third person or parties. He made a decision, whether we agree with it or not, and took action without a hint of depression, self-pity, anger, or recrimination.

We will long remember Franny Moore. He was a figure of remarkable grace, whose knowledge of surgery, biology, and a range of other matters was so overwhelming as to intimidate anyone who disagreed with him or even appeared on the same platform. Whether he was before an audience of thousands, a discussant from the audience, or a dining companion in a small group, he always seemed to be the only person in the room. He directed traffic, dominated conversations, and formulated consensus opinions with a determination and skill like no other person I have known. His emanations from the grave have been almost as strong as when he was alive.

Elected 1998

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List of Publications

1. F. D. Moore and M. R. Ball. *The Metabolic Response to Surgery.* Springfield, Ill.: Charles C. Thomas, 1952.
2. F. D. Moore. *Metabolic Care of the Surgical Patient.* Philadelphia: W. B. Saunders Co., 1959.
3. ———. *Give and Take, The Development of Tissue Transplantation.* Philadelphia: W. B. Saunders Co., 1964.
4. ———. *A Miracle and a Privilege: Recounting a Half-Century of Surgical Advance.* Washington, D.C.: Joseph Henry Press, 1995.