

which supports “outstanding social entrepreneurs” worldwide.¹⁴ Later that year Rosa also won a \$50,000 Tech Museum of Innovation Award from the San Jose Tech Museum for applying technology to benefit humanity. Five winners had been chosen from 400 nominees from fifty countries.¹⁵

I sent Rosa an e-mail, asking how it felt to win.

“It was fantastic!” he wrote back. “When I was walking to receive the prize, lights in my eyes, in my mind in high velocity went the past: the grids, the transformers, the solar panels, Ennio, Ney, Bill Drayton.

“Afterward, when people were silent, it was time for me to say something. I was very nervous. I said: ‘I spent my younger days in distant areas bringing electricity to rural people in Brazil. I love technology. I believe it is the principal force to bring change to humanity. Every project I have seen at this gathering is marvelous. When we use our intelligence and knowledge to serve people, humanity has hope. We are the hope, we are the future.’”

In 2003, Rosa was still traveling ten to twenty days a month, but he planned to cut back. He wanted to spend more time with his children. At forty-two, he was also feeling his physical limitations. “I can no longer work two days nonstop without sleep,” he explained.

In 2002 he informed me that the Solar Development Group, based in Washington, D.C., had agreed to invest in The Sun Shines for All. He also had received support for the Quiron Project from the Avina Foundation and Canopus Foundation and was planning to seek financing from the World Bank’s Community Development Carbon Fund, launched in September 2002. (The fund channels private investment to development projects with an emphasis on renewable energy. Investors receive carbon “credits,” which can be traded or used to comply with environmental laws. The idea builds on a foundation that, as we will see, was initially laid by Bill Drayton when he was an assistant administrator at the EPA.)

Rosa was completing technical studies and designing the delivery and service models for both projects. He planned to have the market research completed and seventy test sites installed by August 2003. Twenty-one years after he had begun his work in Palmares, he wrote in an e-mail: “Now I see again that it will be possible to reach all groups with sustainable models and designs—I am starting again!”

4.

The Fixed Determination of an Indomitable Will

Florence Nightingale, England: Nursing

When Drayton calls someone a leading social entrepreneur, he is describing a specific and rare personality type. He doesn’t mean a businesswoman who gives jobs to homeless people or devotes a percentage of profits to the environmental movement. He doesn’t mean someone running a nonprofit organization who has developed a business to generate revenue. He means someone like Florence Nightingale.

Most people know a little about the “lady of the lamp” who tended to British soldiers during the Crimean War. But what did Florence Nightingale really do? Why are nursing students still assigned Nightingale’s 1860 book *Notes on Nursing: What It Is and What It Is Not*?¹

In *Eminent Victorians*, biographer Lytton Strachey observes that, as children in the nursery, while Florence Nightingale’s sister displayed “a healthy pleasure in tearing her dolls to pieces,” young Florence already displayed “an almost morbid one in sewing them up again.” As a girl, Nightingale was driven “to minister to the poor in their cottages, to watch by sick-beds, to put her dog’s wounded paw into elaborate splints as if it was a human being.” She imagined her family’s country home turned into a hospital “with herself as matron moving about among the beds.”²

In 1845, at the age of twenty-five, Nightingale expressed a desire to work as a nurse in Salisbury Hospital. But when her father, William, a wealthy landowner, was informed of the low moral standards then associated with nursing, he forbade his daughter to take the position. For a woman of wealth and social standing in Victorian England,

seeking work was odd enough; seeking work as a nurse was almost unimaginable. At the time a "nurse" implied "a coarse old woman, always ignorant, usually dirty, often brutal . . . in bunched-up sordid garments, tipping at the brandy bottle or indulging in worse irregularities."³

Nightingale was devastated by her family's refusal. Still, she found ways to apprentice herself. On family trips to London and European capitals, she toured hospitals, slums, schools, and workhouses. Privately, she studied the history of hospitals and convalescent homes and devoured reports from sanitary authorities and medical commissions. After a friend sent her a copy of the yearbook of the Institution of Protestant Deaconesses at Kaiserswerth, Germany, which trained girls of good character to nurse the sick, Nightingale fought with her parents for four years until she was permitted to take the training course.

When a suitor made an offer of marriage, Nightingale declined. She was torn between her "passional nature" and her "moral" and "active nature." Although she found her suitor attractive and intellectually stimulating, she felt the need to remain independent to pursue her work—even though her family still opposed it. "In my thirty-first year," she wrote, "I see nothing desirable but death."⁴

In 1853, at age thirty-three, Nightingale was finally permitted to accept an unpaid position as superintendent of the Institution for the Care of Sick Gentlewomen in London, where she gained a reputation as an excellent administrator. Then, in the fall of 1854, English soldiers were dispatched to Crimea, on the north coast of the Black Sea, to fight alongside Turkish forces at war with Russia. Through the advent of war journalism, the English public began receiving reports about wounded soldiers in the Crimean campaign being left to die without basic medical attention.

In response to the public outcry, on October 15, 1854, Nightingale's friend, Sidney Herbert, secretary at war, sent her a letter asking if she would take charge of nursing in the military hospitals in Scutari, a district of Istanbul. Herbert's words were prescient: "If this succeeds . . . a prejudice will have been broken through and a precedent established which will multiply the good to all time."⁵

Nightingale had already sent a letter to Herbert offering her services; within six days she had assembled thirty-eight nurses and departed for Constantinople. When she arrived in Scutari on November 4, Nightingale encountered a catastrophe: total system collapse. The barracks and general hospitals contained almost 2,400 sick and

wounded soldiers. They lay in filthy clothes along four miles of cots. Not only were basic surgical and medical supplies unavailable, the hospital barracks were infested with rats and fleas, and the wards stank from underground sewage. Water was tightly rationed. Cholera, typhus, and dysentery were endemic, causing deaths almost at the rate of one in two—deaths that Nightingale found were not even being properly recorded in hospital registers.

The army surgeons thought it preposterous that the War Office had dispatched a boatload of civilian women to the rescue, and they promptly informed Nightingale that her nurses would not be permitted to enter the wards. However, within days, the doctors had no choice but to solicit Nightingale's assistance following the Battle of Inkerman, when more than 500 soldiers, suffering from wounds, malnutrition, exposure, dysentery and scurvy, began lining the hospital corridors on straw litters. "In all our corridor, I think we have not an average of three Limbs per man," wrote Nightingale.⁶

Immediately Nightingale set out to fix the system that was producing such a high death toll. She requisitioned 200 scrubbing brushes and saw to it that the wards were cleaned and the soldiers' clothes were taken outside for washing. She visited the army purveyor to see what could be done about the supply shortages. When he proved uncooperative, Nightingale took over his job, using the £30,000 (raised from private donations) that she had brought with her. When she discovered that supplies were being held up in Turkish customs, she persuaded the War Office to straighten out the problem. She raised additional funds from private sources in England and built a warehouse for supplies. When she received advance word of an impending battle, over the surgeons' objections she authorized the construction of a new ward.⁷

With a combination of tact, good sense, political influence, and calm authority, Nightingale reorganized the military hospitals in Scutari. She introduced meticulous record-keeping, built new kitchens and laundry rooms, and made sure that soldiers ate with sterilized cutlery, washed with fresh towels and soap, and wore clothes that had been laundered in boiled water. She made nightly rounds to comfort patients, speaking in a "soft, silvery voice."⁸ She established reading rooms, recreation rooms, classes and lectures, and even got soldiers to send remittances home, a feat the army had deemed impossible. Soldiers stopped cursing when Nightingale was in earshot. Their morale soared. They came to adore her. In February 1855 the death rate in the

British army hospitals in Scutari was 43 percent; by May it had dropped to 2 percent.⁹

"Certainly she was heroic," Strachey wrote. "Yet her heroism was not of that simple sort so dear to the readers of novels and the compilers of hagiologies—the romantic sentimental heroism with which mankind loves to invest its chosen darlings: it was made of sterner stuff. . . . It was not by gentle sweetness and womanly self-abnegation that she had brought order out of chaos in the Scutari Hospitals, that, from her own resources, she had clothed the British Army, that she had spread her dominion over the serried and reluctant powers of the official world; it was by strict method, by stern discipline, by rigid attention to detail, by ceaseless labor, by the fixed determination of an indomitable will."¹⁰

After the war, Nightingale returned to England a national heroine. But she declined all public receptions and accepted only those invitations—such as an interview with Queen Victoria—that could advance her work, which she now determined was to improve the health of the British army.

Because of poor sanitation, ventilation, and food in army barracks, mortality rates among soldiers in England were nearly double those for civilians. "[Allowing such a high mortality rate] is as criminal . . . as it would be to take 1,100 men per annum out upon Salisbury Plain and shoot them," Nightingale wrote.¹¹ The weapon she wielded in this battle was not a lamp, but an extensive collection of health statistics.

As a young woman, Nightingale had pleaded with her father to teach her mathematics. She was deeply influenced by the development in her day of the theory of probability, particularly the work of the Belgian statistician Adolphe Quételet, who is regarded as one of the founders of modern social statistics. Nightingale believed that statistics were a means of discerning the will of God.

After returning from Turkey, she worked with the leading statistician in England, William Farr, and produced and printed at her own expense an 800-page book entitled *Notes on Matters Affecting the Health, Efficiency and Hospital Administration of the British Army* (1858), which featured an extensive statistical analysis of the causes of sickness and death in the army. Nightingale was a pioneer in the use of graphical tools (such as polar-area or "pie" charts), which she employed to dramatize the need for change. She went so far as to frame her statistical charts and present them to officials in the army medical department and War Office.¹²

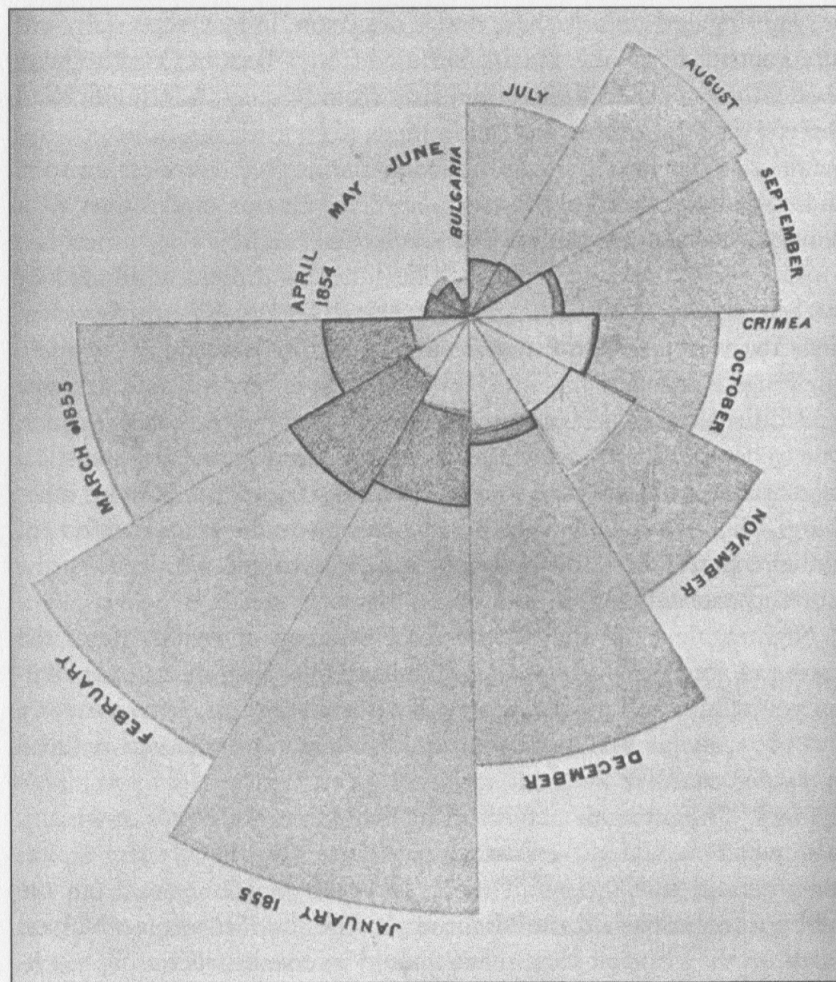
Nightingale didn't do these things in person. In fact, she rarely ventured outside her home. Having suffered from a bout of Crimean fever during the war, she suffered thereafter from frequent fainting fits and chronic physical exhaustion, and remained bedridden much of the remainder of her life. Yet from her sofa, she greeted countless visitors, and issued an unending stream of orders, memos, and letters to a group of devotees.

She operated principally through her friend and political ally Sidney Herbert, who pushed for the establishment of a series of Royal Commissions to investigate health in the military and in society. As a woman, Nightingale was not permitted to sit on these commissions, but she guided their recommendations and ensured that they were carried out. Due to her efforts, the army established a medical school and statistical department and remodeled barracks across the country. Among other things, Nightingale taught the British army about the salutary effects of sunlight, pure water, and clean kitchens. In two and a half years, the mortality rate among troops in England was cut in half.¹³

Nightingale later applied the same strategy in India, where the death rate for British troops was *six* times higher than the rate for civilian young men in England. Through sanitary reforms, between 1863 and 1873, the annual mortality rate of soldiers in India was reduced by 75 percent.¹⁴

In 1859 Nightingale published the first edition of *Notes on Hospitals*, which would go on to revolutionize the theory of hospital construction. In 1860, with the support of contributions from the public, she established the Nightingale Training School for Nurses, based on the principle that nurses should receive instruction in teaching hospitals while residing in homes that formed moral character. In so doing, Nightingale began the process that transformed nursing into a modern, respectable profession. Over the next four decades the number of nurses in Britain increased from 28,000 to 64,000. Perhaps more telling, by the end of the nineteenth century, nursing had been reclassified in the British Census from the list of occupations headed "Domestics" to the list headed "Medicine."¹⁵

Nightingale never recovered from the Crimean fever she suffered while in her thirties. For five and a half decades after her return to England until her death in 1910, she continued to experience fainting fits and often was too weak to stand. Nevertheless, during her life, she authored an estimated 12,000 letters and 200 books, reports, and monographs.



Polar-area diagram used by Florence Nightingale to dramatize death rates in British military hospitals during the Crimean War

In accordance with her wishes, Nightingale did not receive a national funeral and was not buried in Westminster Abbey.

"The first thought I can remember, and the last," she wrote, "was nursing work."¹⁶

As a child, I imagined Florence Nightingale to be sweet and gentle, which she was not. I certainly never thought of her as an administrator, statistician, or lobbyist. I still can't get used to thinking of her as an "entrepreneur," although she certainly fits the original definition,

having increased the "productivity" or "yield" of healthcare resources by many orders of magnitude. In addition to blazing a trail for nurses, Nightingale established standards for sanitation and hospital management that have shaped norms worldwide.

Given the march of medical science over the past 150 years, one might imagine that these changes would have occurred with or without her. That is impossible to say. What we can say is that the existence of knowledge and the widespread application of knowledge are very different things. If knowledge alone were enough, millions of children would not still be dying each year of dehydration due to diarrhea. (Stopping these preventable deaths was the obsession of James P. Grant, whose work is detailed in Chapter 19.)

Changing a system means changing attitudes, expectations, and behaviors. It means overcoming disbelief, prejudice, and fear. Old systems do not readily embrace new ideas or information; defenders of the status quo can be stubbornly impervious to common sense, as Nightingale's many battles with British army officers can attest. In his classic analysis of politics and power, *The Prince*, Niccolò Machiavelli observed: "[T]here is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order."¹⁷

This may be one reason why society needs ethically driven social entrepreneurs like Florence Nightingale to break out of negative patterns and to initiate new orders of things. It takes concentrated focus, practical creativity, and a long-term source of energy to advance a system change and to ensure that the change becomes well rooted in institutions and cultures. Certain people, because of the quality of their motivation—their inexplicable obsessions, their action and growth orientation, their unwavering belief in the rightness of their ideas—seem particularly well suited to lead this process.