The Mathematician and the Mystic

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In *The Weil Conjectures* Karen Olsson presents her remarkable subjects as creatures from a fairy tale: "Once there were a brother and sister who devoted themselves to the search for truth. A brother who spent his long life solving problems. A sister who died before she could solve the problem of life." The sister was Simone Weil (pronounced "vay"), a philosopher and political activist who died in 1943 at age thirty-four and gained fame with the posthumous publication of works, assembled from her voluminous notebooks, on society, justice, and the mystical life of faith. Her elder brother André, who lived to ninety-two, was a prodigy who became one of the twentieth century's preeminent mathematicians.

Their parents were cultured, secular, thoroughly assimilated Parisian Jews. In the words of Francine du Plessix Gray, their mother, Selma, "was a genius factory of sorts, masterminding every move in her children's intellectual training": meticulously chosen tutors and *lycées*, no toys, no dolls, no sweets. An emblematic scene from Olsson of André and Simone: "He teaches her to read, delivers astronomy lectures on the bus. A know-it-all in short pants and a doll of a girl in a sailor dress, her hair in ringlets, egging him on with questions." They squabble. They compete at memorizing long passages from Corneille and Racine. In their teen years, with several ancient and modern languages under their belts, they like to joke in ancient Greek.

But the adolescent Simone, comparing herself to her brilliant brother, was overwhelmed by self-doubt. Her despair, she would later say, came not from her lack of "visible successes" but from "the idea of being excluded from that transcendent kingdom to which only the truly great have access and wherein truth abides. I preferred to die rather than live without that truth." She could go on living by coming to believe that a kind of transcendence is available to one who "longs for truth and perpetually concentrates all his attention upon its attainment."

Here Olsson finds her themes: What is a truth-seeking life like? What justifies it? What does it cost? Mathematics plays a central role. It is André's medium. For

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Simone—with her strong Platonist leanings—mathematics is both a model of thought and a bridge to the divine, somehow illuminating the fit of the mind to the universe; but it is suspect if it wanders too far into abstraction, disconnected from the study of nature. God, she says, "is a geometer—but not an algebraist." She included geometry as an essential part of the free classes she taught for manual laborers.

Compared to Simone, the pursuits of her beloved André could hardly seem more impersonal, more remote from everyday life—towers of abstraction that forged surprising connections between number theory (which is about 1, 2, 3…) and the seemingly unrelated domains of geometry and topology. The man, and his often-abrasive personality, can disappear behind his work. Simone, however, could draw no line between thought and life. "Philosophy," says one notebook entry, "is *exclusively* an affair of action and practice," a belief she lived with fierce, not to say frightening, intensity.

A third character in the book regularly takes the stage: the author herself, entering not in the self-conscious way of a postmodern trickster but as another truth-seeker. That is how Olsson, a novelist and journalist with an undergraduate degree in mathematics, understands the writer's vocation. Are she and her subjects therefore engaged in the same pursuit, or might that seem so only from a loose and unexamined use of the word "true"? The best literature, Olsson notes, is like the best mathematics in at least one way: It takes you somewhere "surprising" yet "inevitable." Simone will eventually seek not the truths of art or science but God, the ground of truth.

Olsson also acknowledges some unfinished personal business. Simone, she says, had been an "outlandish" role model for Olsson's teenage self, "uncompromising and bold and pure while I was none of those things." André pursued at its most exalted level a profession that would never be Olsson's, a fact that became clear well before she finished her degree. Her book is also a meditation about her own romance with mathematics, one that never fully cooled. Traces linger in the hope that her own writing will be as "clean and powerful" as a first-rate proof.

The book's title is a play on words. In the mathematical world, to make a conjecture is to propose something new and (allegedly) significant, and to challenge colleagues to help prove it true. In 1949, with four far-reaching, interrelated propositions known as the "Weil conjectures," André set the research agenda for the branch of mathematics known as algebraic geometry. Proving them took twenty-five years and the development, by several hands, of a vast new mathematical infrastructure.

Olsson is writing to formulate and explore her own conjectures, in the ordinary sense of speculations, *about* the Weils and the life of the mind.

The thoroughly charming result is not a conventional narrative. Short biographical scenes are interleaved with autobiography, anecdote, and digressions on the romance of mathematics, its alluring combination of mystery and certainty. Olsson has an eye for entertaining detail. For example, Hindu mathematicians, pioneers of algebra, stated problems in verse; they denominated a single unknown value as "the unknown" and, when needing more values, named them after colors: black, blue, and so forth. Characteristically, she frets that such magpie accumulations of fact are showy and fun but not deep.

The biographical passages include, along with documentable events and citations from the Weils' letters and other writings, episodes of avowed historical fiction. Olsson imagines, for example, how André might have seduced, while she was married to another mathematician, the woman who became his wife: Having decided that "a second-rate mind like de Possel doesn't deserve her," he lures her, one night, to a lake "ritzy with starlight, and he tells her this and he tells her that, how much brighter the stars are in India, let's say, and then next thing they know they've entered the water."

André's elegant memoir, *The Apprenticeship of a Mathematician*, is reticent about that courtship. Published in 1991, at age eighty-five, it is a prolonged *Bildungsroman* that covers his first four decades, ending as he finally obtains a secure academic post at the University of Chicago. (From there he would move to his permanent home, the Institute for Advanced Study in Princeton.) The memoir gives much less space to his mathematical work than to art, music, books, and travel—especially an early fascination with India that lasted all his life. He learned Sanskrit in order to read Indian epic poetry and became a devoted student of the Bhagavad Gita. At age twenty-four he leapt at the offer of a university appointment in India and spent two years immersed in the life of the country. He seems to have traveled nearly everywhere and met nearly everyone, including many leaders of the independence movement. He took tea with Gandhi and joined him on his daily constitutional, taken at a pace that left some in the Mahatma's entourage gasping for breath.

The teachings of Gandhi and the Gita underlay the great crisis of André's life. He absented himself from France as World War II approached and when it broke out did not return to report for duty. He was eventually arrested for draft evasion. During three months in prison, awaiting trial, he produced an important paper on "integration in groups." Conviction, a foregone conclusion, resulted in a five-year

sentence that was suspended when he agreed to join a combat squad. Through an improbable sequence of events (and an eye for the main chance), he saw no combat and finagled a discharge and a U.S. visa.

Much of his memoir is devoted to this episode, justifying his actions on the grounds that his *dharma*, his purpose in life, was to be a scholar and mathematician, not a soldier in that war. Olsson accepts that as an expression of deep commitment, not a rationalization. Others may disagree. André simply notes that "my recent past, and the gossip to which it had given rise, resulted in a rather cool reception" from some of his new American colleagues.

While André was imprisoned, Simone wrote to ask "what exactly is the interest and significance of your work?" She loved him and felt sure that any work of his must be worthwhile, but needed to know. What is the point of a truth that ordinary people can't understand? He said that it was impossible to explain his work to non-specialists; one can't explain a symphony to someone who's deaf. And metaphors are useless. In the end you would have only "a kind of poem, good or bad, unrelated to the thing it pretends to describe."

Olsson, too, wants an answer. She begins to watch, but later abandons, YouTube videos of a Harvard lecture course on abstract algebra—lovely stuff, but why pursue it? She has previously quoted André's descrip-

tion of a moment of discovery, "the state of lucid exaltation in which one thought succeeds another as if miraculously," and asked where the value of his work would lie. In the content of those thoughts? In that exaltation? She recalls the closest she ever came to such a moment, hitting on a clever idea to solve a difficult homework problem. Not quite trusting herself, she showed her solution to another student, a talented immigrant from Hungary. "Nice, he said, nodding," the high point of her career. (Understatement is part of mathematical cool; "nontrivial" is a term of praise.)

Nearly all of the little that Simone published during her life appeared in small-circulation radical journals; the rest she committed to notebooks. She wrote, unsystematically, on many subjects, but at the center of her concerns lay an inseparably linked understanding of ethics, politics, and, eventually, the divine.

The appeal of her thought can, I hope, be seen from a telegraphic précis of one strand pursued throughout her life: Any division between intellectual and physical labor is pernicious. Any technology, or ideology, or social organization that imposes this division creates "two categories of men—those who command and those who obey," she wrote in *Oppression and Liberty* (1955). The commanders, "intoxicated," to borrow from her famous essay on the *Iliad*, lose sight

of their own vulnerabilities. The commanded — laborers — become means, not ends. Their full development is limited as they cease to be thoughtful artisans. They suffer not merely material oppression but the more radical state of "affliction," of psychological and spiritual distress and degradation. Our moral obligations toward the afflicted can't be understood as, or discharged by, respecting their rights: "To place the notion of rights at the center of social conflicts is to inhibit any possible impulse of charity on both sides." The response to affliction must be a compassionate and patient "attention," from which all ego has been purged. The very existence of affliction seems to contradict the possibility of a benevolent God. But contradiction, she believed, can spur creative thought that achieves not some unifying Hegelian synthesis but the contemplation of mystery. The contradiction between the existence of God and the existence of affliction is directly expressed in the God who suffers affliction, in the mystery of the Cross.

To some this is a challenging mysticism—to others mystification. There is no doubt that Simone honestly attempted to live it, and her writings attempt to elaborate it in ways often surprising or paradoxical. For example, *Gravity and Grace*, mined from her notebooks, says: "Religion in so far as it is a source of consolation is a hindrance to true faith; and in this sense atheism is a purification. I have to be an atheist with that part of myself that is not made for God." This passage is often quoted on atheism discussion forums. Also from that book: "There are people for whom everything is salutary which brings God nearer to them. For me it is everything which keeps him at a distance." Yet Weil is also quoted in the Youth Catechism of the Catholic Church: "Prayer is nothing other than attention in its purest form."

Posthumous publications based on her notebooks attracted a worldwide, if oddly mixed, collection of admirers, including Albert Camus, T. S. Eliot, Czesław Miłosz, Susan Sontag, Iris Murdoch, André Gide, and Pope Paul VI. It has been noted that the interpretations given to the paradoxical ideas of this Marxist atheist turned Christian (one who refused to be baptized) can say as much about the interpreters as they do about her, as when Sontag writes, "We read writers of such scathing originality for their personal authority, for the example of their seriousness, for their manifest willingness to sacrifice themselves for their truths, and—only piecemeal—for their 'views.'"

It's fair to say that Olsson, too, is less interested in Simone's thought than in her extraordinary personality, its unnerving intensity, which threatens to overshadow

everything else. Olsson finds a key to it in a fable that Simone said influenced her profoundly. Little Marie, sent to the woods for food, comes upon a house and hears a voice asking her to choose whether to enter through a door of gold or a door of tar. On saying "Tar is good enough for me," she is showered with gold. She brings the gold to her stepmother, who then sends her own daughter, also called Marie, to get more. This Marie, choosing instead the door of gold, is showered with tar.

Choosing, let alone preferring, the tar door is not rational. As Olsson notes, it is not even clear whether the first Marie ever got the food she came for. The tar door seems a choice for hardship and difficulty as such.

Those choices started early. At age six, during World War I, Simone sent sugar and chocolate she could have eaten herself to soldiers at the front. She also posited a *hidden* imaginary friend who refused to keep her company. In later life, during what the novelist John Banville has called a "tormented flirtation with Catholicism," Simone told a priest friend, "For every time that I think of the crucifixion of Christ, I commit the sin of envy."

She began serious political activism as a graduate student at the *École normale supérieure,* for which she qualified with the highest score on the entrance exam. (Simone de Beauvoir came in second.) After graduation, says Olsson, Simone pursued class-room teaching and political activities "in defiance of her own body," going for long stretches without food and rest. She belonged to the radical left—pacifist, atheist, Marxist—but, says André, was able to see through the myth that there had been a good Lenin whose vision Stalin had corrupted.

To share the lives of the laboring classes Simone took a leave from teaching to attempt a succession of factory jobs, punishing work at which she was awkward and slow. Exhausted after eight months of that, she recuperated by vacationing with her parents in Portugal, where she had the first of several mystical experiences that would lead her toward, but never to, Catholic Christianity. When the Spanish Civil War broke out in 1936, she eagerly joined a republican unit but had to be evacuated almost immediately, after scalding herself in a cooking accident. That farcical denouement saved her life, as the unit was soon wiped out.

She was a Flannery O'Connor character come to life. O'Connor herself, though respecting Simone's intelligence and fascinated by her life story, thought little of her opinions—many of which were Catholic heresies. She called that life "comic and terrible" and wrote to a friend, "By saying [that], I am not trying to reduce it, but mean to be paying her the highest tribute I can, short of calling her a saint, which I don't believe

she was." "What is more comic and terrible than the angular intellectual proud woman approaching God inch by inch with ground teeth?"

Simone and her parents fled Paris on the last train south toward Vichy France, where she became active in the Resistance. In 1942, she reluctantly accompanied their escape to the United States, from which she immediately agitated to return: to be parachuted into France on some daring undercover mission; to found and join a squadron of front-line nurses that would tend the injured and dying, under considerable threat of death themselves; to put herself somehow at risk.

She got as far as the Free French headquarters in London. Assigned the tedious task of evaluating proposals for organizing the post-war French government, Simone again exhausted herself, while at the same time limiting her food intake to what she fancied might be the ration given a child in occupied France. In five months she produced the equivalent of some 800 printed pages, including those that became her best-known work, *The Need for Roots*. A *summa* of her most fully developed social thought, it identified "uprootedness," loss of connection with the past and loss of community, as the central, tragic social fact of modernity and argued that its sources lay deep—in particular, in the basing of morality on rights rather than obligations of compassion.

In 1943, she collapsed with tuberculosis, for which the only treatment then available was rest and nutrition. But she ate less and less, and kept her overseas family ignorant of her deteriorating state. She had steadfastly refused to be baptized, insistently heterodox or heretical on many theological questions and believing she would have to remain excluded from the Church. But she apparently asked someone to perform the rite should she become comatose, and, according to one report (disputed among biographers), when a friend later sprinkled her with tap water and recited the baptismal prayer, she said, "Go ahead, it can't do any harm."

André learned of her death from a telegram that arrived out of the blue. Her friends disagreed about whether Simone sought that death. The coroner's report described it in the only vocabulary available to a bureaucrat: "the deceased did kill and slay herself by refusing to eat whilst the balance of her mind was disturbed."

Was she a visionary, a saint, or a crank? Or all three? Francine du Plessix Gray links her asceticism, her desire to share in the suffering of the world's oppressed, to anorexia. The Harvard psychiatrist Robert Coles, who calls himself "her largely unstinting admirer and sometime apologist," is nonetheless dismayed that "someone so wonderfully sensitive, thoughtful, and decent, someone whose words could be so free of

cant, hypocrisy, and banality, someone who was brave both personally and intellectually, and honorable as well, [could] *also* be so blind, so willfully obtuse, and, alas, so forbidding."

Olsson sees Simone's life as a search for a goodness located outside everyday reality, a goodness that she also believed was inaccessible. That search is therefore bound to fail but, she believed, the quality of a life lies in the quality of its searches. Although "Weil" is pronounced *vay*, Olsson says, it ought to sound like *wail*.

After narrating the drama of Simone's disquieting death, Olsson offers a muted coda. It circles, with many digressions, around the story of an old and frail André making his last trip to Japan, to accept the 1994 Kyoto Prize for basic science. The prize citation (evidently translated from Japanese) praises him as "the most significant contributor to the drastic development of pure mathematics in this century," one whose "mathematical ideology is pure and universal."

All mathematics students can recite a long roll call of great practitioners, if only because landmark discoveries tend to bear their names. Mathematical immortality is nonetheless impersonal, because mathematical practice is Whiggish. Progress is real and, as it occurs, earlier work becomes absorbed by reinterpretation. A teacher can often point to some familiar fact and, saying, "Now let me show you what's really going on," use it to introduce students to a whole new world. (The fundamental theorem of calculus, a literally epoch-making discovery, can thus become "just" the simplest special case of the Stokes–Cartan Theorem.) André, still a living memory, will eventually become a monument.

Simone's earthly afterlife has been tied to her particularity, which has inspired both hagiography and fierce criticism. The asceticism can seem absurd and self-dramatizing, such as refusing to heat her lodgings in imagined solidarity with workers who were typically quite snug. The fervor so appealing to Olsson's youthful self is two-edged—passion does not, after all, confer moral authority. Most problematic was Simone's attitude toward her Jewish background. Leave aside her fierce hostility to the Old Testament, which counted among her heresies; this crusader for justice was virtually silent about the Holocaust. And when Vichy's anti-Semitic laws touched her directly, by blocking her appointment to a teaching position in Marseille, her response was not to denounce them but to play the clubhouse lawyer with a lengthy explanation of why she shouldn't be classified as a Jew.

Writing the book inspired Olsson to resume those YouTube lectures and look forward to their sequel, though they contain "nothing I need to remember, nothing I need to

know." She is pleased when her son asks, "Where are numbers?"—which is how the adventure begins. She happily ups the ante. Where are "all the unknown theorems, all the hidden proofs, all the math not yet discovered?"

André concluded his acceptance speech for the Kyoto Prize with a rhetorical question: "Having thus become acquainted with beauty in mathematics, to what else could I have dedicated my life?" Is that a sufficient reply to Simone's request for "the interest and significance" of his work? The question may have no non-circular answer, no answer that doesn't start from a deep belief that truth is beautiful and justifies itself.

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