

## **Mathematics and the Love of God: An Introduction to the thought of Simone Weil**

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“At fourteen I fell into one of those fits of bottomless despair that come with adolescence, and I seriously thought of dying because of the mediocrity of my natural faculties,” Simone Weil writes in a letter to her friend Father Perrin. “The exceptional gifts of my brother, who had a childhood and youth comparable to those of Pascal, brought my own inferiority home to me. I did not mind having no visible successes, but what did grieve me was 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.”<sup>1</sup>

Simone Weil, born in 1909, and her brother André, three years the elder, were the children of secular Jewish parents living in Paris. Throughout their lives André and Simone were close friends. As children, André frequently acted as Simone’s tutor, introducing her to, among other subjects, ancient Greek and Indian literature. These writings would influence the thought of both André and Simone, though with dramatically different outcomes in the two cases. André Weil became one of the twentieth century’s most renowned mathematicians. Upon his death in 1998, *The Notices of the AMS*<sup>2</sup> devoted five articles to memorials of his life and work<sup>3</sup>. He is, perhaps, best known for the role he played in founding the group of mathematicians collectively known as Bourbaki.

As a child, Simone envied her brother’s ability to penetrate into the kingdom of truth represented by mathematics. In her teenage years, this envy turned to despair, as her letter to Father Perrin recounts. Eventually, she found resolution to her struggles by realizing that the kingdom of truth is accessible to all. Her letter to Father Perrin continues, explaining this revelation: “After months of inward darkness, I suddenly had the everlasting conviction that any human being, even though practically devoid of natural faculties, can penetrate to the kingdom of truth reserved for genius, if only he longs for truth and perpetually concentrates all his attention upon its attainment. He thus becomes a genius too, even though for lack of talent his genius cannot be visible from the outside.”

Simone spent her life attempting to achieve the kingdom of truth and the majority of her writings are dedicated to elucidating how this is possible. She sees two primary routes to this kingdom: the experience of affliction and the experience of beauty. Her attempts to embody both affliction and beauty in herself have drawn the full spectrum of responses. Some have seen her as “a special exemplar of sanctity for our time”<sup>4</sup>. Others ridicule her for missing the essence of morality<sup>5</sup>.

Assessing the relationship between Weil’s life and thought is not an easy one. In an interview about his sister, André Weil said that “she defied the understanding of her life by others.”<sup>6</sup> Let us, then, follow T.S. Eliot’s recommendation in the introduction to Simone’s book *The Need for Roots*, “In trying to understand her, we must not be distracted ... by considering how far, and at what points we agree or disagree. ... I cannot conceive of anybody’s agreeing with all of her views, or of not disagreeing violently with some of them. But agreement and rejection are secondary: what matters is to make contact with a great soul.”<sup>7</sup>

For Weil, the ultimate purpose of each human being is to be absorbed and possessed by God. Each person should strive towards the utmost purity in their life. This purity of being can be attained through the experience of both affliction and beauty. Both are ways of drawing the soul toward God. For Weil, mathematics represents both aspects of this pursuit of purity. Nearly every essay or book that Simone Weil wrote is filled with examples drawn from mathematics. Flipping through her notebooks, every few pages one encounters a reference to the mathematics of ancient Greeks, a comment on the calculus, or a meditation of the beauty of mathematics. By focusing on Weil’s reflections on the nature and practice of mathematics, perhaps we will be able to more effectively use our mathematical studies to orient our lives and to help our students to orient their lives toward the love of God and neighbor. In what follows, I will attempt to place Weil’s thoughts on mathematics in the context of what are, usually, her more pressing concerns, particularly those of affliction, beauty, and the love of God. What is it about beauty that draws us toward God? What is it about extreme suffering that causes us to turn away from him?

In “The Love of God and Affliction”, she defines what she means by “affliction”:

“In the realm of suffering, affliction is something apart, specific and irreducible. It is quite a different thing from simple suffering. It takes possession of the soul and marks it through and through with its own particular mark, the mark of slavery. ... There is not real affliction unless the event which has gripped and uprooted a life attacks it, directly or indirectly, in all its parts, social, psychological, and physical. The social factor is essential. There is not really affliction where there is not social degradation or the fear of it in some form or another.”<sup>8</sup>

Weil rejects the thought that affliction may be some “divine educational method”—ordinary suffering may serve that purpose, but not affliction. There is no philosophical answer to affliction, for affliction is not a philosophical problem. Affliction is an existential problem and thus needs an existential answer. This answer is the Cross of Christ. On the cross, God himself experiences affliction in all of its social, psychological, and physical aspects. Just as Christ’s affliction made him experience total submission to the will of the Father, so our affliction makes us experience the total submission of ourselves to the brutal forces of nature and existence. Only the divine love of Christ in us can reach out to someone who is afflicted; as creatures everything within us reviles the afflicted one<sup>9</sup>.

Simone Weil refuses to talk about the purpose of affliction. Instead, she discusses how we can make use of it. We will be able to make use of suffering only if we recognize that our bodies and souls are obeying physical and psychological laws in their responses to affliction. God created these physical, biological, and psychological laws to which our bodies and spirits are subject. In our extreme suffering our very bodies are glorifying God in their submission to his laws, even though we ourselves may be disobedient. As we suffer, we must remember that God himself, through the cross, identifies with our suffering. Simone shocks us with a directive for how to respond to suffering, “Whenever we have some pain to endure, we can say to ourselves that it is the universe, the order and beauty of the world, and the obedience of creation to God which are entering our body. After that how can we fail to bless with the tenderest gratitude the Love which sends us this gift?”<sup>10</sup>

She contrasts the roles of affliction and of beauty: “Joy and suffering are two equally precious gifts which must both of them be fully tasted, each one in its purity and without trying to mix them. Through Joy, the beauty of the world penetrates our soul. Through suffering it penetrates our body.”<sup>11</sup> So aesthetic appreciation and horrendous affliction are both ways for God’s reality, expressed in the “order and beauty of the world” to possess us utterly.

Simone Weil consistently emphasizes that we must recognize and bow before the reality of God. Echoing St. Paul’s comment that “the creation was subjected to frustration, not by its own choice, but by the will of the one who subjected it”<sup>12</sup>, Weil reminds us that of all created beings only humans have been given the choice of obedience. Beauty and pain are gifts to help us focus our attention on how all of creation submits itself to God. God causes us to experience our constraints as imperfect, finite, created beings. This awareness of these limitations, she explains, “...is the same truth which penetrates into the senses through pain, into the intelligence through mathematical proof, and into the faculty of love through beauty.”<sup>13</sup>

Both beauty and affliction testify to the contradiction that is at the root of human experience: the contradiction that we are the images of God and long for him, yet find ourselves unable to approach him and subject to his absence from our lives<sup>14</sup>. In her notebooks she defines “Beauty” as “a sensual attraction that maintains one at a certain distance and implies a renunciation. ... One wants to devour all other desirable objects. Beauty is something that one desires without wanting to devour it. We simply desire that it should be.”<sup>15</sup> As examples of the beautiful, Weil discusses the Catholic mass<sup>16</sup>, a Greek statue<sup>17</sup>, and mathematics. She writes, “Beauty is the manifest appearance of reality. Reality represents essentially contradiction. ... The beauty of mathematics lies in contradiction.”<sup>18</sup> A moment later she continues, “What is beautiful in mathematics is that which makes abundantly clear to us that they are not something which we have manufactured ourselves. That thing is contradiction. ... The essence of beauty lies in contradiction, scandal, and not at all in appropriateness; but it must be a scandal that forces itself upon one and fills the heart with joy.”<sup>19</sup>

Because mathematics gives us the sense that it comes from beyond us, it is beautiful. We are aware that it is not our own creation but is the image of something eternal. Beauty always causes us to

recognize that we are finite, limited beings. Just as when we see a beautiful work of art, we wish only to gaze endlessly at it, so a beautiful piece of mathematics causes us to contemplate it intensely. Beauty awakes in the viewer the opposite response from affliction. Just as the response to affliction is derision and anger, the response to beauty is joy. In the midst of thoughts jotted in her notebooks is this comment: “Joy ... is the feeling of reality. Beauty is the manifest presence of reality.”<sup>20</sup>

For Weil, all reality is transcendent. We may occasionally experience beauty, or reality, in nature or elsewhere. On the whole, though, we are separated from true reality. Our lives mostly consist of affliction and pain. Our experience of beauty, our experience of reality, is thus a contradiction. We must treasure and rejoice in the rare moments when we experience beauty. Since beauty, which is reality, is to be treasured, Weil gives science a privileged place when she writes, “The object of science is the exploration of beauty a priori.”<sup>21</sup>

“Doing mathematics” is not, however, for most people an experience of beauty. Simone, having grown up in André’s intellectual shadow, is well aware of this. In fact, most of her references to mathematics deal with the value of mathematics for those who are not inclined to it. In her notebooks she writes, “Mathematics alone make us feel the limits of our intelligence.”<sup>22</sup> Her essay “Reflections on the Right Use of School Studies toward the Love of God” is entirely devoted to this topic. For Weil, the main goal of schoolwork is to develop one’s concentration so that it is possible to pray more fervently and attentively. She even says that considered this way, all school subjects have equal merit: they can all develop the “faculty of attention which, directed toward God, is the very substance of prayer”<sup>23</sup>. Rather than desiring subjects that we find easy, we should seek out those with which we have difficulty. She provides an example from mathematics:

“If we have no aptitude or natural taste for geometry, this does not mean that our faculty for attention will not be developed by wrestling with a problem or studying a theorem. On the contrary it is almost an advantage.

“It does not matter much whether we succeed in finding the solution or understanding the proof, although it is important to try really hard to do so. Never in any case [is] a genuine effort of the attention wasted. It always has its effect on the spiritual plane and in consequence on the lower one of the intelligence, for all spiritual light lightens the mind.”<sup>24</sup>

Weil, thus, both privileges and denigrates the role of mathematics. On the one hand, it is a means for experiencing beauty and true reality, on the other it is just one subject among many through which we can attempt to master our concentration. This attitude develops humility. “Above all it is thus that we can acquire the virtue of humility, and that is a far more precious treasure than all academic progress... [T]here is no doubt that school studies are quite as good a road to sanctity as any other.”<sup>25</sup> But seeing mathematics as one road among many does not diminish the value of the subject in and of itself. A bit later in the essay, she writes, “The solution of a geometry problem does not in itself constitute a precious gift, but the same law applies to it because it is the image of something precious. Being a little fragment of a particular truth, it is a pure image of the unique, eternal, and living Truth, the very Truth that once in a human voice declared: ‘I am the Truth’. Every school exercise, thought of in this way, is like a sacrament.”<sup>26</sup>

If academics, and mathematics in particular, are supposed to inculcate the virtue of humility, why is that we encounter so many arrogant scientists and mathematicians? Weil takes up the faults of modern science in her essays, “Reflections on Quantum Theory”, “Classical Science and After”, “Scientism: A Review”<sup>27</sup>, and her book *The Need for Roots*. Her criticism of science and scientists centers on three related aspects of the way science is currently practiced: The elitism and arrogance of scientists, the denial of the divine aspects of science, and the substitution of algebraic manipulations for deep understanding.

James Gordon Calder, in his essay, “Against Algebra”<sup>28</sup>, examines Weil’s critiques of science as it was practiced from the Renaissance to 1900, the classical period, and from 1900 to about 1943, the modern period<sup>29</sup>. He demonstrates that Weil’s critique of classical science centers on its claims of absolute knowledge, or the ability to get absolute knowledge. Scientists of this period, however, ignored the great distance that separated the calculations of science from everyday life. This distance divided the practice of science from a concern for “the good”. Calder also recounts how Weil criticizes modern scientists for claiming that they have solved ancient and modern paradoxes, when all they have done is cloaked the paradoxes in the language of mathematics. Rather than wrestling with these fundamental contradictions that are in the nature of things, scientists claim that because the

contradictions can be expressed in equations, the problems are “understood”. Many of Weil’s criticisms of science may actually be criticisms of popularizations of science, since she herself was not a practicing scientist. But, because most of the popular articles she read were by scientists such as Henri Poincaré and Werner Heisenberg, much can be learned from her essays. Calder ably summarizes and elucidates the arguments which are contained largely in “Classical Science and After” and “Reflections on Quantum Theory”. For our purposes, Weil’s criticisms of the *culture* of modern science and mathematics in The Need for Roots are more relevant.

For Weil, “the true definition of science is ... the study of the beauty of the world”<sup>30</sup>. Because beauty is utterly beyond any of us, the proper reaction to beauty is joy and humility. Instead of humility, Weil sees an intoxication with the power and prestige of science. She criticizes society’s very idea of what greatness is. “Our conception of greatness is the very one that has inspired Hitler’s whole life. When we denounce it without the remotest recognition of its application to ourselves, the angels must either cry or laugh, if there happen to be angels who interest themselves in our propaganda.”<sup>31</sup>

This confusion of greatness with power and prestige affects the very motives of scientists: “Technical application plays such a large part in the prestige of science that one would be inclined to expect savants to derive a powerful stimulant from reflecting upon the different forms of application. In fact, what provides a stimulant is not that but the actual prestige such applications confer on science. Just as the idea of making history goes to the heads of the politicians, so the savants become intoxicated at feeling themselves to be taking part in something really great.”<sup>32</sup>

Of course this sense of greatness that inspires so many scientists is false because it is “a greatness independent of any consideration of the good.”<sup>33</sup> Regarding this lack of consideration of “the good”, Weil asks if there is any scientist who, though he realizes his discoveries will upset human existence, would not “strain every effort in order to carry his researches to a successful conclusion.”<sup>34</sup> Instead of considering the consequences of his or her research, the scientist attempts only to produce more and more results.

Are non-technological sciences, such as mathematics or theoretical physics, any better? No, Weil responds. She gives two reasons why theorists are no better than technologists. First, though theorists often profess a disdain for applications, they fail to realize that almost all of the prestige that comes to science comes from those technical applications. She points out that apart from technical applications, skill at theoretical science would be viewed by the public as something akin to skill at chess: a nice game, but one without any importance. Thus, the attitude of detachment assumed by theoreticians is at best deluded or at worst hypocritical.<sup>35</sup> Weil dissects the motives of scientists even further: they do not even primarily care about the opinion of the public—they care primarily for the opinion of their fellow scientists.

“The primary social consideration for savants is purely and simply one of professional duty. Savants are people who are paid to manufacture science; they are expected to manufacture some; they feel it to be their duty to manufacture some. But that is insufficient for them as a stimulant. Professional advancement, professorships, rewards of all kinds, honors and money, receptions abroad, the esteem and admiration of colleagues, reputation, fame, titles—all that counts for a great deal.”<sup>36</sup>

Her thought here was likely influenced by her brother. Early in his mathematical career, André Weil fought, in his terms, a “war of the medals”, where he and several friends campaigned against the introduction of new national medals for scientists. He feared that the pecuniary awards would corrupt the motivations of scientists. Looking back on that time period he reflects sarcastically, “We were naïve enough to think that the joy of discovery was itself ample reward.”<sup>37</sup> This was a sentiment with which Simone would surely have agreed. Late in his life the only one of the many awards which André Weil ever mentioned was the Kyoto prize; the rest he ignored.<sup>38</sup>

For Simone, however, the arrogance of scientists is merely symptomatic of a larger and deeper problem. The problem is that the pursuit of truth has been forgotten. And forgotten not only in science, but also in all of culture. “Since the spirit of truth is absent from the motives behind science, it cannot be present in science. If one were to expect to find it, on the other hand, to any considerable extent in philosophy and literature, one would be disappointed.”<sup>39</sup>

Weil is particularly caustic towards those who see an opposition between religion and science. It is a sign that the spirit of truth is absent from both. “No deaf men’s dialogue could possibly equal in comical force the polemic between the modern spirit and the Church. The unbelievers select, in the name of the scientific spirit, and to use them as arguments against the Christian faith, truths which constitute indirectly, or even directly, manifest proofs of that faith. The Christians never notice this, and make feeble attempts, with a bad conscience and a distressing lack of intellectual honesty, to deny such truths. Their blindness is their punishment for the crime of idolatry.”<sup>40</sup>

In science, the lack of truth is seen in the fragmentation of the academy. Even people in the same department cannot understand each other’s research. Every one is a stranger outside their own work. Weil is not primarily protesting against increased specialization. She objects to how scientists believe whatever a scientist from outside their discipline says, based solely on his reputation or popularity. They are reluctant to question the assertions of another scientist because it would limit their own public authority. The cultural vogue is to accept the words of scientists as authoritative, much as an earlier generation accepted the words priests. This inability to evaluate the work of other scientists or accurately communicate one’s own work testifies to a lethargy towards truth. “Today the ease of communications all over the world in peacetime and specialization carried to an extreme have made it so that savants of each specialty, who themselves constitute reciprocally their one and only public, form the equivalent of a village. ... Whatever [the village] is prepared to admit in science is admitted; whatever it is not prepared to admit is rejected. There is not a single disinterested judge among them, since each specialist, owing to the very fact that he is a specialist, is an interested party.”<sup>41</sup>

What then is the solution? For Weil, “the remedy is to bring back again among us the spirit of truth, and to start with [it] in religion and science; which implies that the two of them should become reconciled.”<sup>42</sup> How is this reconciliation to take place? Weil points to the ancient Greek model. “Greek science was based on piety. Ours is based on pride. There is an original sin attaching to modern science.”<sup>43</sup>

Weil considers Greek religion and mathematics in her essays, “God in Plato”<sup>44</sup>, “Notes on Cleanthes, Pherecydes, Anaximander, and Philolaus”, “Some Thoughts on the Love of God”<sup>45</sup>, and many places in her notebooks. In summarizing the essence of Greek philosophy, Weil emphasizes the role played by a mediator. For instance in Plato’s famous analogy of the cave, the philosopher is the one who mediates the light of truth to those bound in darkness.<sup>46</sup> For the Pythagoreans a rational number is that which mediates between two whole numbers. What, then, of the irrationals which are so difficult to grasp conceptually? What mediates between the incommensurables and us? Geometry itself was revealed to the Greeks as the mediator between us and the irrationals. The hypotenuse of a unit square enables us to grasp  $\sqrt{2}$ . Weil writes, “[T]he discovery of the incommensurables, so far from being a defeat for the Pythagoreans as is so naïvely believed, was their most wonderful triumph.”<sup>47</sup> To make her point, she quotes from one of the Pythagoreans, “...what is ridiculously called land-measuring (i.e. geometry) and is really the assimilation to one another of numbers not naturally similar, an assimilation made manifest by the destiny of plane figures. It is clear to anyone who is able to understand it that this marvel is not of human but of divine origin.”<sup>48</sup> Geometry mediates between us and the irrational numbers—without geometry we would be unable to grasp them<sup>49</sup>. For the Greeks, then, geometry was a religious practice. The incommensurables provided an object for one’s religious contemplation.

Weil doesn’t stop with a description of Greek religious practice, she continues their project. After reading the Greek philosophers, the New Testament references to Christ as mediator seem especially relevant. The Greek word, *logos*, which is used for the rational numbers, can also be translated “mediator”. The irrational numbers were called *logoi alogoi*, which can be translated as “unnamed ratios” or “words without words.”<sup>50</sup> Because geometry is the mediation between us and the incomprehensible incommensurables, Weil sees the revelation of geometry to the Greeks as a prophecy of Christ. She explains: “There is not naturally mediation between sinners and God (they are ‘numbers not naturally similar’), just as there is not between unity and numbers other than square. But in the same way that geometry, through the destiny of plane figures, supplies a miraculous mediation for these numbers, so there is a miraculous operation, contrary to nature, which establishes a mediation between criminal humanity and God (‘assimilates to one another numbers not naturally similar’).”<sup>51</sup> Weil recounts the legend that Pythagoras, recognizing the divine nature of mathematics,

performed a sacrifice after discovering “the possibility of drawing a right-angled triangle inside a semicircle”.<sup>52</sup> In order to rescue modern science from its arrogance and provincialism, we must recapture a notion of the spiritual nature of mathematics.

Critics of attempts to mix science and religion often cite the supposed ill effects that belief in God will have upon scientific practice. Countering this, Weil points out that for the Greeks, “the divine character of anything only made them more exacting in regard to precision not less so, ... It was because they perceived a divine relation in geometry ... that they invented the method of rigorous demonstration....To restore science as a whole, for mathematics as well as for psychology and sociology, the sense of its origin and veritable destiny as a bridge leading toward God—not by diminishing, but by increasing precision in demonstration, verification and supposition—that would indeed be a task worth accomplishing.”<sup>53</sup> In discussing the restructuring of science after the war, in The Need For Roots, Simone’s thought naturally turned towards her brother’s work. She writes “The generation of mathematicians now approaching the age of forty is aware that after a long dearth of the scientific spirit in the development of mathematics, a return to the exactitude indispensable for savants is in process of taking place by use of methods almost identical with those practiced by Greek geometers.”<sup>54</sup> At the time when she wrote this (1943), André would have been about 37 years old. Bourbaki began, according to Cartan’s recollection, in 1934 and in his autobiography André Weil has a photograph of Simone at a Bourbaki meeting in 1937.<sup>55</sup>

As might be supposed, Simone Weil’s views on mathematics have a direct bearing on how we both teach and research mathematics. First of all, we should be sure to concentrate our and our students’ attention on the beauty and the perceived contradictions found in mathematics. By focusing our attention on both, we may hope that our spiritual lives may be enriched. As the writings of many Christian mystics make clear, the act of contemplating God and his goodness is not an easy one, therefore if we or our students find mathematics difficult, that only increases its value in developing our concentration. “Whenever the intelligence is brought up against a contradiction, it is obliged to conceive a relation which transforms the contradiction into a correlation, and as a result the soul is drawn upwards.”<sup>56</sup>

Secondly, we have the task of inculcating in ourselves and in our students love in the truth. The pursuit of truth should develop in us a deep love for our fellow human beings and for God. Loving in truth is the recognition that before the truth that surpasses us all in its goodness and beauty, all humans are equal. Loving in truth means loving explicitly loving God and implicitly loving him in our neighbor with all our mind. Our task as teachers is to instill in our students the humility of love in truth. The knowledge gained from mathematics is to increase our love for God and neighbor. Weil encourages us, before we start writing or reading anything, to ask ourselves, “Am I in line with truth” or “Am I going to find truth in here?”<sup>57</sup>

Thirdly, in addition to approaching mathematics as a means for spiritual contemplation and as an opportunity for instilling a spirit of truth in love, Weil encourages us to restore the value of mathematical ideas as symbols of spiritual ideas. For example, to the Greeks, the circle was an image of God, because it is unchanging and completely self-contained. Weil applies this symbol to the Christian conception of the relationship between the persons of the Trinity. Turning to modern science and its refusal to see spiritual significance in its studies, she writes, “Concern for the symbol has completely disappeared from our science. And yet, if one were to give oneself the trouble, one could easily find, in certain parts at least of contemporary mathematics... symbols as clear, as beautiful, and as full of spiritual meaning as that of the circle and mediation. From modern thought to ancient wisdom the path would be short and direct, if one cared to take it.”<sup>58</sup>

Seeing mathematics as rooted in the spiritual tradition of the Greeks and early Christians is consonant with Weil’s early ideas on the teaching of mathematics. These are described mainly in her essay “The Teaching of Mathematics”<sup>59</sup>. For Weil, the best way to teach mathematics, and a method with which she had success at the girls’ school, is to root mathematical concepts in the broader history of ideas. For instance, she devoted “a dozen hours” of a philosophy course to an introduction to the calculus by placing it in the context of the centuries’ long struggle with the “fundamental contradiction between the continuous and the discontinuous”<sup>60</sup>. She reports that “As a teaching experiment this outline was entirely successful, in the sense that it was understood by all the students, including the weakest in mathematics, and interested them to the point of enthusiasm. They understood that mathematics is a product of human thought<sup>61</sup> and not a collection of dogmas.” In

addition to a historical approach to mathematics, Weil recommends that students be given a history of the relation between science and technology and have some “apprenticeship to and practice of some productive technical skill, combined with a more detailed study of the history of this technique in relation to science and to technology in general.”<sup>62</sup> For Weil, the use of history in teaching mathematics and science is not the use of historical anecdotes, “village gossip” she would call it later, to keep our students from dozing off a half hour into our lecture. Rather, mathematics itself is to be viewed historically and culturally, in order to break the idolatry of the modern age, which is scientism, and replace it with a more ordered understanding of the proper role of science and technology.

Simone Weil sees mathematics as just one of many ways of perceiving eternal beauty and struggling with the contradictions of our earthly experience. For Weil, the important thing is to obey God with all of our being: whether through the appreciation of beauty or the embodiment of affliction, we must submit to God. Science is the study of the beauty of the world<sup>63</sup> but the beauty and order of the world are also manifest in physical labor.<sup>64</sup> God, by his grace, gives each of us the chance to approach him through whichever way suits our character and circumstances the best.

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<sup>1</sup>Weil, Simone. “Spiritual Autobiography”. The Simone Weil Reader. Ed. George A. Panichas. New York: David McKay, 1977. p12

<sup>2</sup> Appearing in the April 1999, June/July 1999, and September 1999 issues. These are available online at <http://www.ams.org/>

<sup>3</sup> Although, note Cartan’s final paragraph, “It is not possible to evoke the memory of André Weil without that of his sister, Simone, the dedicated philosopher. Certainly they were very different from each other and did not have the same aspirations. But their thoughts came together sometimes, and they felt deep down a great affection for each other. André told me of his despair when a telegram informed him in New York that his sister had just died of exhaustion at Asherford in England on August 24, 1943. He later occupied himself actively in the publication of the *Oeuvres Complètes* of Simone Weil. Each of them in turn has contributed to the enrichment of the heritage of mankind.” Henri Cartan. “André Weil: Memories of a Long Friendship”. Notices of the AMS. June/July, 1999: 636.

<sup>4</sup> Fiedler, Leslie. Introduction. Waiting for God. By Simone Weil. Trans. Emma Craufurd. New York: Harper, 1951: 3.

<sup>5</sup> Becker, Jillian. “Simone Weil: A Saint for our Time”. The New Criterion March 2002. Quoted from the online edition at <http://www.newcriterion.com>.

<sup>6</sup> Coles, Robert. “Giants of Reflection: Simone Weil had her own manner of looking inward, or outward at the world and its workings”. America. 181:18. Dec 4, 1999: 6. I think the rest of the quote quite beautiful:

“You have been studying my sister’s work, so you must know that she defied the understanding of her life by others. She was *sui generis*, hard for people to know even when she was there among them. Who is she? —I was asked again and again. Once when I told her what others wanted to know she replied: ‘It makes no difference—not the personality of this one or that one!’ So I told one of the people later who was curious about her, that if she wanted to know who Simone is, she would try to think of her soul—its search for a home, for its Creator...Of course, Simone had confronted her own disbelief in God, so she would naturally stir others to ‘disbelief’ when they heard of her or as I spoke of her. They respected her for her analytical thinking, but her thinking had taken her far from university seminar rooms. She no longer held her head high with ideas that held others spellbound; she was herself spellbound. She was on her knees in ... churches, praying and praying to God.”

<sup>7</sup> Eliot, T.S. Introduction. The Need for Roots. By Simone Weil. Trans. Arthur Wills. New York: Putnam, 1952: vi.

<sup>8</sup> Weil, Simone. “The Love of God and Affliction”. The Simone Weil Reader. *Op. cit.*: 439-443. This essay is reprinted from On Science, Necessity, and the Love of God.

<sup>9</sup> *Ibid.*: 464. “All the talk about original sin, God’s will, Providence and its mysterious plans (which nonetheless one thinks one can try to fathom), and future recompenses of every kind in this world and the next, all this only serves to conceal the reality of affliction, or else fails to meet the case. There is only one thing that enables us to accept real affliction, and that is the contemplation of Christ’s Cross.”

<sup>10</sup> Her comment could be misinterpreted as an admonition for one who is afflicted to remain in that state. I think Weil makes it clear that this would actually be a misuse of affliction. Though counseling those who are afflicted to make proper spiritual use of it, Weil always unequivocally condemns those people and institutions which

perpetuate such a state. Though her actions are not always entirely consistent, Weil's life and writings always side with the oppressed versus the oppressor.

<sup>11</sup> *Ibid.*: 450

<sup>12</sup> Romans 8:19-22

<sup>13</sup> "The Love of God and Affliction". *Op. cit.*: 456.

<sup>14</sup> This is eloquently expressed in Notebooks II.410: "Each thing we desire is in contradiction with the conditions or the consequences attaching to that thing. ... The reason is that we are made up of contradiction, since we are creatures, and at the same time god, and at the same time infinitely other than God. Contradiction alone makes us experience the fact that we are not All. Contradiction is our wretchedness, and the feeling of our wretchedness is the feeling of reality. For our wretchedness is not something that we concoct. It is something truly real. That is why we must love it. All the rest is imaginary. In order to be just, one must be naked and dead—without imagination. That is why the ideal of justice has to be naked and dead. The Cross alone is not exposed to an imaginary imitation. So that we may feel the distance between us and god, God has to be a crucified slave. For we can only feel this distance looking downwards. It is very much easier to place oneself in imagination in the position of God the Creator than it is in that of Christ crucified."

<sup>15</sup> Weil, Simone. Notebooks. 2 vols. Trans. Arthur Wills. London: Routledge & Kegan Paul, 1956: II.335

<sup>16</sup> Notebooks: II.335 and "Forms of the Implicit Love of God", Waiting for God: 187.

<sup>17</sup> Weil, Simone. "God in Plato". On Science, Necessity, and the Love of God. Trans. Richard Rees. London: Oxford UP, 1968: 131.

<sup>18</sup> Notebooks. II: 386-87.

<sup>19</sup> *Ibid.*

<sup>20</sup> Notebooks. II: 360-36.

<sup>21</sup> Notebooks. II: 440.

<sup>22</sup> Notebooks. II: 511

<sup>23</sup> Weil, Simone. "On the Right Use of School Studies toward the Love of God". Waiting for God: 106.

<sup>24</sup> "School Studies": 106-107. Compare to her statement in Notebooks II: 515: "God is the source of light; this means to say that all the different kinds of attention are only debased forms of religious attention. It is only of God that one can think with the fullest possible attention. Conversely, it is only with the fullest possible attention that one can think of God. Those who are incapable of such an attention do not think of God, even if they give the name of God to what they are thinking of. But if they realize that they are not thinking of god and really desire to do so, grace helps them to concentrate their attention more and more, and what they think of then becomes closer and closer to God. The highest ecstasy is attention at its fullest. It is by desiring God that one becomes capable of attention. God is the source of reality; this means to say, that the essence of reality lies in beauty or transcendent appropriateness."

<sup>25</sup> *Ibid.*: 109.

<sup>26</sup> *Ibid.*: 112.

<sup>27</sup> These essays are all contained in Science, Necessity, and the Love of God.

<sup>28</sup> Calder, James Gordon. "Against Algebra: Simone Weil's Critique of Modern Science and its Mathematics." Explorations-in-Knowledge. 1987: 4; 47-73. Calder attempts to place Weil's critiques in the context of her thoughts on "necessity" and "grace" but he completely leaves out her comparison of classical and modern science to ancient Greek science. Since Simone Weil's readings of Plato and older Greek philosophers and mystics is so central to her philosophical, religious, and social thought this seems like a major omission.

<sup>29</sup> Her views of the three main ages of science is aptly summarized in Notebooks I: 27. "With the Greeks, the science of nature was itself an art... To make of the universe the work of God ... That is object of Greek science. That of classical science is to 'make us masters and possessors of nature'... by means of a knowledge that we find in ourselves. That of contemporary science; to express in algebraical terms the regularities of nature, in order to make use of them."

<sup>30</sup> Weil, Simone. The Need for Roots. Trans. Arthur Wills. New York: Putnam, 1952: 261.

<sup>31</sup> *Ibid.*: 219.

<sup>32</sup> *Ibid.*: 255.

<sup>33</sup> *Ibid.*

<sup>34</sup> *Ibid.*: 256.

<sup>35</sup> *Ibid.*: 255-56.

<sup>36</sup> *Ibid.*: 256-257.

<sup>37</sup> Weil, André. Apprenticeship: 121.

<sup>38</sup> Knapp, Anthony. "André Weil: A Prologue". Notices of the AMS. April, 1999: 435.

<sup>39</sup> Roots: 260

<sup>40</sup> *Ibid.*: 259.

<sup>41</sup> *Ibid.*: 258.



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<sup>42</sup> *Ibid.*: 261.

<sup>43</sup> Notebooks II: 548. See also “Classical Science and After” Science: 21 and this passage from Roots: 244: “It is science, then, which is mistaken. Not science, to be perfectly exact, but modern science. The Greeks possessed a science which is the foundation of our own.... The sum total of knowledge accumulated was naturally very much less. But by its scientific character, according to the full significance we attach to that term, and judged by what we hold to be valid standards, that science equaled and even surpassed our own. It was more exact, precise, rigorous. The use of demonstration and of the experimental method were perfectly conceived.”

<sup>44</sup> “God in Plato” was not actually an essay written by Weil. It was assembled from her notebooks after her death.

<sup>45</sup> These essays are all contained in Science.

<sup>46</sup> Weil has a lengthy discussion of this allegory in “God in Plato” *Op. cit.*: 106-113.

<sup>47</sup> Weil, Simone. “Notes on Cleanthes, Pherecydes, Anaximander, and Philolaus”. Science: 142.

<sup>48</sup> *Ibid.*: 142

<sup>49</sup> I am unsure whether Simone Weil was aware of non-constructible numbers. In any case, she might argue that the perimeter or area of a circle mediates between us and the number  $\pi$ , a number which is certainly non-constructible. In general, she was not in favor of using algebraic methods to prove geometric results. She seems to have expressed some disdain for the work of Galois. See Calder’s article “Against Algebra”.

<sup>50</sup> Notebooks, I: 146.

<sup>51</sup> “Cleanthes”: 144

<sup>52</sup> Roots: 291

<sup>53</sup> Notebooks II: 441. Compare to the passage from Roots: 259 quoted earlier and note 40.

<sup>54</sup> Roots: 244.

<sup>55</sup> Weil, André. Apprenticeship: 118. The text says 1937, but the photograph is dated 1938.

<sup>56</sup> “God in Plato”: 113.

<sup>57</sup> Roots: 260

<sup>58</sup> *Ibid.*: 292. In addition to the image of the circle, Weil explains the spiritual significance of inscribing a right triangle (which mediates rational and irrational numbers) into a circle (which is the image of God). “Geometry thus becomes a double language, which at the same time provides information concerning the forces that are in action in matter, and talks about the supernatural relations between God and his creatures.” There seems to be some progress on the front. See, for example: Noonan, John. “Infinity and Deity: Glimpses of God in the Numbers”. Mars Hill Review 20: 37.

<sup>59</sup> Details of how she actually practiced her method may be found in notes taken by one of her students: Weil, Simone. Lectures on Philosophy. Trans. H. Price. Cambridge UP: 2002.

<sup>60</sup> Weil, Simone. “The Teaching of Mathematics”. Science: 73.

<sup>61</sup> She wrote this before her encounter with Christ, perhaps later she would have chosen different wording. I think, though, her suggestions for teaching mathematics would remain the same.

<sup>62</sup> “The Teaching of Mathematics”: 74

<sup>63</sup> Roots: 261.

<sup>64</sup> *Ibid.*: 295-302.