

Exploring the Essence of Education:

A Study of the Fundamental Questions of Education

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Educating the Whole Person

Imagine that I could invite Socrates to observe our modern world. If I asked him to identify the educated people of our society, who would he select? Would he point to our lawyers or our scientists? Our engineers or our business people? Our doctors or our educators? Surely, you would identify many of the people in each of these categories as "educated individuals" - but would Socrates?

Certainly, Socrates would find some educated people in each of these groups. But it's unlikely that he would select the same people that you might. And it's also unlikely that he would select very many people. He wouldn't be impressed by the degrees that follow each person's name, and he likely wouldn't be swayed by an impressive resume filled with honors, awards, and accomplishments.¹

Over the millennia that have passed since Plato recorded some of Socrates' dialogues on education in *The Republic*, many other voices have shaped our understanding of education and what it means to be an educated person. As a result, our society now embraces a much different view of education than Socrates suggested and others have echoed throughout history. Therefore, I will begin this discussion by going back to the words of Socrates, as recorded by Plato more than two thousand years ago, to help us better understand who he *would* view as an educated person.

In Plato's *The Republic*, Socrates dialogues with his interlocutor about "the true philosopher," seeking to identify criteria by which this individual can be distinguished from all other people (Gamble 5). In essence, by inquiring about the characteristics of the true philosopher, Socrates

¹ Before I proceed any further, I would like to note that you will likely have many questions as you read what I have written. I hope that I have anticipated some of the questions that you may ask and have provided answers to those questions. However, any unanswered questions that you may have after you finish reading are grounds for further discussion which I hope my thoughts will spark.

established criteria by which we can identify what today would be called the educated individual. While Socrates used terms such as “the true philosopher” to describe the educated individual, Greek cultural context makes this use of terminology unsurprising. Plato’s Academy, one of the best-known ancient Athenian schools, focused largely on training in philosophy (Adkins 254). The school existed to form a philosophical habit of mind in its students, and thus, in ancient Greek culture, the philosopher *was* the educated individual. Therefore, when the dialogues recorded in Plato’s *The Republic* are taken as a whole, it is clear that Socrates’ true philosopher is akin to what I am calling the educated individual. Socrates describes the true philosopher as a “lover of knowledge,” as someone who “has a taste for every sort of knowledge” and finally as someone who is “curious to learn and [is] never satisfied” – each descriptions that we would likely apply to someone we view as educated (Gamble 4). Additionally, Socrates also explains in his dialogues that the characteristics of the true philosopher are “perfected by years of education” (Gamble 11). Since it is clear that the true philosopher of Socrates’ dialogues is akin to what I am calling the educated individual, we must first understand how he used the word “philosopher” in order to more fully understand who Socrates would identify as educated individuals.

Socrates identified the educated person first and foremost with the literal meaning of the word philosopher. Philosopher, from the Greek word “philosophia,” literally means “lover of wisdom” (*philo-* love + *sophia-* wisdom). Thus, we can see that Socrates’ vision of the educated individual was intimately linked to the concept of wisdom. As a result, we must now unpack what was meant by wisdom in order to understand who qualifies as a lover of wisdom (i.e. a true philosopher or educated individual). Webster's Third New International Dictionary defines wisdom in several ways, two of which are particularly enlightening. First, this dictionary defines wisdom as “the intelligent application of knowledge” (Merriam-Webster). Note that knowledge seems to be a precursor to wisdom in this definition: it is possible for a person to have knowledge but lack wisdom – the ability to intelligently apply their knowledge. Second, the dictionary defines wisdom as “the teachings of the ancient wise men... relating to *the art of living*...” (emphasis mine) (Merriam-Webster). Richard Mitchell wrote in *The Gift of Fire* that “the largest and

simplest definition of true education that I can imagine is this: It is all that is absent in the lives of those who aren't composing *How to Live (I Think)*" (Mitchell). Additionally, the Oxford English Dictionary defines wisdom as the "capacity of judging rightly in matters relating to life and conduct," clearly relating to Webster's mention of "the art of living" (Oxford English Dictionary). Thus we can identify a direct link between each of the concepts introduced thus far: philosophy, the love of wisdom, is all about skill in the art of living. One cannot be skilled in the art of living without wisdom – the two are inextricably linked. Taken together, this all demonstrates that ultimately, Socrates and many other scholars throughout history have viewed education as a tool for giving individuals the ability to live life well, largely (although not entirely, as I will explain later) through the cultivation of wisdom. The educated individual has therefore been identified by Socrates and other scholars as a wise person, skilled in the art of living.

It is here that I believe modern educational thinking has diverged from the thinking of Socrates and other historical figures. Socrates saw education as a tool for nurturing wisdom, necessary for one to lead a good life, and he saw the educated person as a wise person – someone who knows how to live life well. He did not see education as having any "necessary relationship to schools or diplomas," (Mitchell). Today, however, we no longer recognize the clear connection seen by Socrates and other thinkers between education, the educated individual, and the concept of wisdom. Therefore, we would likely find it surprising to hear the word wisdom in a conversation about education. It probably does not even enter our minds that education and wisdom could be so intimately related.² Rather than thinking about education in terms of its ability to cultivate wisdom in students, our society tends to associate education with the acquisition of knowledge and skills. We tend to think of educated individuals as people who have completed a rigorous course of study and as a result, acquired some sort of expertise in a given field. Their expertise is based on the knowledge and skill that they have developed and accumulated

² This claim is substantiated by much of my own experience in discussions about education. Additionally, as an informal experiment, I sent a short survey to a widely-read Olin email distribution list asking "Does the word "wisdom" ever enter your thoughts when you think or talk about education (and its purpose)?" The responses were nearly exclusively negative, as I hypothesized they would be.

over the course of their “education.” However, where does wisdom, or skill in the art of living, fit in with this conception of education? It seems to me that it is missing entirely.

To understand why, we need to take a step back and examine the concept of “the art of living.” While we have already explored the concept of wisdom and its relation to education and the educated individual, the art of living goes beyond just the idea of wisdom and therefore must be understood more fully. The most important thing to note about this concept is the centrality of human beings. If we want to understand how to live life well, we need to know something about people. And if education is about learning to live life well, as Socrates and many others seem to have thought, then to understand education we also need to understand people. Education is fundamentally a human task and therefore, we must recognize the importance of understanding human beings before answering any question about education. A quote from William Fraser McDowell illustrates this point nicely: “Your men and women who are teaching are not fundamentally teachers of subjects, they are fundamentally teachers of persons; and the great passion of the teacher should... [be] for the life that he is shaping...” (McDowell). McDowell’s words demonstrate that education cannot be accomplished without a focus on and an understanding of human beings.

Because human beings are at the core of education, it is critical to understand what makes human beings uniquely suited to education. C.S. Lewis wrote about three such defining human characteristics in his book *The Abolition of Man*. Lewis uses the terms head, belly, and chest to describe these three aspects of human life. The head, as Lewis explains, is the seat of intellect and rational thought; the belly is the seat of one's appetites and desires³; and the chest is the center of one's sentiment or emotion (today, we use the term “heart” rather than chest). According to Lewis, it is the chest that sets man apart from all other beings, “for by his intellect he is mere spirit and by his appetite mere animal” (Lewis 25). By this Lewis first says that intellect alone does not make a human. In accord with Descartes’ famous bit of philosophizing –

³ The terminology here probably feels odd to us because we rarely think about appetites and desires (and certainly never use the term “belly” to describe them) beyond the daily feelings of hunger (appetite/desire for food) or fatigue (appetite/desire for sleep), for instance.

“cogito ergo sum” – the intellect demonstrates only the existence of a thinking mind, nothing more. And a thinking mind alone surely cannot qualify as human. Second, Lewis states that appetite by itself makes only an animal, not a human. Animals are ruled by their appetites and desires and, unless meticulously trained, exercise little control over whether they do as their appetites and desires demand or not. As humans, however, we also have a chest through which we express and experience love and emotion. Humans must be trained in these emotions, for as Lewis explains, “without the aid of trained emotions the intellect is powerless against the animal organism” (Lewis 24). In other words, “our appetites and desires may readily tempt us to set aside what... reason [i.e. the head] requires,” and thus “our emotions must be trained and habituated, so that we learn to love the good (not just what seems good for us)” (Meilaender). Only a resolute love of the good (a topic I will return to later), achieved through training of the chest (i.e. the emotions), will enable the head, belly, and chest to operate in harmony – for as Lewis says, “the head rules the belly through the chest” (Lewis 24). Humans flourish only when these three elements of the human person work in unison. To return to the concept of the art of living, we can see that living a good life must require one to rightly order his or her intellect, appetite, and emotion (or head, belly, and chest). And, as we have seen, this requires training not of the intellect alone, but of the chest *along with* the head. Schooling that focuses exclusively on the head fails to educate the whole human being and fails to provide a true education.

Yet, this is exactly what we and our modern schools have done. Lewis puts it poignantly as he concludes his discussion of education in *The Abolition of Man*, criticizing how modern education has become limited to training the head to the neglect of the chest: “In a state of ghastly simplicity we remove the organ and demand the function. We make men without chests and expect of them virtue and enterprise. We laugh at honour and are shocked to find traitors in our midst. We castrate and bid the geldings be fruitful” (Lewis 26). Lewis is saying that by failing to educate the emotions, we end up effectively removing the human heart and creating “men without chests,” people that are incapable of virtue despite societal demands for virtuous behavior. This educational oversight has severe consequences. If the chest sets humans apart

from other beings as Lewis says, then to remove the heart by neglecting to educate it is to remove part of what makes humans human. In the words of Lewis, “We castrate and bid the geldings be fruitful.” In failing to educate the chest, we destroy our ability to pass our full humanity on to the next generation.

Lewis’ quote brings one additional concept into view that will help us to understand what true education is and, therefore, what is missing in our education today: virtue. If neglecting to educate the chest along with the head makes people incapable of exercising virtue, then the opposite should also be true: educating the chest must at least *enable* one to live virtuously. Virtuous living can therefore be seen as a hallmark of a person with an educated chest. This idea of virtuous living brings us back to the concept of the art of living. We established earlier that the art of living requires wisdom. However, we can now see that wisdom alone does not enable one to live the good life. Virtue is also required, for virtuous living is made possible by a properly trained chest, the “organ” that makes us uniquely human. Therefore, an education that neglects virtue in turn neglects educating the chest and ultimately fails to educate the whole person. Such an education cannot rightly be called true education.

While we can see thus far that virtue, wisdom, and the art of living are each interconnected and related to true education, we must further explore the concept of virtue. This is another word which, like wisdom, is not commonly used in modern discussions on education. The Oxford English Dictionary defines virtue as “conformity of life and conduct with the principles of morality,” thus bringing into view yet one more word not commonly used today in regard to education: morality (Oxford English Dictionary). From this definition, we can see that virtue is undergirded by morality: virtuous living is moral living. Therefore, to cultivate virtue in individuals, education must have a moral component. Moral education is necessary to produce men *with* chests who *are* capable of virtue.

This perspective on the relationship between virtue, morality, and education is not new; it goes all the way back to the writing of the Greek philosophers and, somewhat later, early Christian

thinkers. Lewis cites St. Augustine, who spoke of virtue as "*ordo amoris*, the ordinate condition of the affections in which every object is accorded that kind of degree of love which is appropriate to it" (Lewis 16). Today, this concept may be difficult to grasp since we may not think of objects as meriting a particular kind or degree of love. However, according to Lewis (writing in the 1940s), "until quite modern times all teachers and even all men believed the universe to be such that certain emotional reactions on our part could be either congruous or incongruous to it -- believed that objects did not merely receive, but could *merit*, our approval or disapproval, our reverence or our contempt." (Lewis 14-15). In other words, there is some sense by which an emotional reaction could be right or wrong, correct or incorrect, true or false, to its object. Education of the chest thus trains the individual in the correct emotional responses to objects, enabling him or her to recognize and rightly respond to things like truth, goodness, and beauty. *This* is moral education, aimed at producing virtue in students. In Aristotle's view, the goal of education was to teach the student to "like and dislike what he ought." (Lewis 16). Again, the words of Gilbert Meilaender speak to this concept: "our emotions must be trained and habituated, so that we learn to love the good (not just what seems good for us)."

Once more, a conflict arises between our modern conception of education and that of various scholars throughout history. Education is not about *free* thought, but *right* thought, for we only find freedom when we find truth. It is about giving the individual the ability to think for him or herself and recognize truth. "We should not think of this moral education as indoctrination, but as initiation. It is initiation into the human moral inheritance...," our way of transmitting humanity to future generations (Meilaender). In essence, moral education should be viewed no differently than we view scientific education. Just as we discover and teach scientific truth, "we have not decided what morality requires..." but rather, "we have discovered it. We transmit not our own views or desires but moral truth..." (Meilaender). This idea of moral truth and its part in education draws its roots from the thoughts of Socrates presented earlier. Thus, by looking to what Socrates had to say about moral truth and its place in education, we can see how he

connected this concept with the idea of wisdom that was central to his view of education and the educated individual.

Socrates addressed this facet of education by talking about the true philosopher being a "lover of the vision of truth" (Gamble 5). According to Socrates, the lover of truth would have "power of judging what is good and what is not," thus enabling him or her to recognize and rightly respond to absolute beauty, for example (Gamble 4, 5). Viewing the educated individual as a lover of truth is in perfect accord with the idea of wisdom, as Socrates shows by asking "can the same nature be a lover of wisdom and a lover of falsehood?" (Gamble 10). The obvious answer, and the one that Socrates expected, is "no" – the lover of wisdom must love the truth. Russell Kirk identified this connection between truth and wisdom in his reflections on "Education in a Free Society," stating that the chief end of education is to enable students "to seek after Wisdom -- and through Wisdom, for Truth" (Kirk). Additionally, Kirk writes that "Socrates believed the end of learning to be [moral], and that right reason would support the cause of virtue..." (Kirk) Socrates connected this all with the art of living the good life; to him, the "wise man [was] the good man, and the good man [was] the wise man" (Kirk). Thus, we now see how each of the concepts I have addressed here connect with not only the Socratic view of education, but also the view of education and the human person developed by the likes of C.S. Lewis.

Retracing the argument, we have seen that education is about enabling the individual to live the good life, or to be skilled in the art of living. This is predicated on wisdom – "the intelligent application of knowledge" and the "capacity of judging rightly in matters relating to life and conduct" – which thinkers as old as Socrates viewed as indispensable to living the good life. Additionally, we have seen that the human person is the focus of education, and therefore, to understand true education, we must understand the human person. We have seen that the human person can be understood as having a head, belly, and chest, the lattermost separating us from all other beings. The chest, as the seat of human love and emotion, must be trained along with the head to form a fully human individual capable of virtuous living. And virtuous

living, as the definition of “virtue” shows, requires knowledge of morality. True education must take this all into account by maintaining not just an intellectual component, but also a moral aspect meant to cultivate virtue in students and enable them to recognize and rightly respond to truth – for only with these characteristics can one gain the ability to exercise skill in the art of living and become an educated individual. Neglecting any one of these elements results in something less than education and produces a person stripped of part of his or her humanity.

Let me now return to the initial question - who in our society would Socrates identify as educated individuals? It seems to me that he would search but find few. He would look for the wise and find only the knowledgeable. He would seek the virtuous and find only the morally bankrupt. He would look for those skilled in the art of living - those who understand what it means to be human - but find only machines, programmed by years of so-called education to live less than fully human lives.

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The Error of Training as Education

For nearly eight years (four years of high school and almost four years of college), I have dedicated myself to learning engineering. By almost any standard, most people would say I've had an exemplary education. My high school ranked among the top in the nation, and many have heralded my college for providing its students with an innovative and rigorous engineering education. But does my eight-year journey through engineering education make me an educated individual? Does engineering education even qualify as true education? After my exploration into the foundations of education, presented in my previous piece, "Educating the Whole Person," I am convinced that it does not. Engineering education is more properly termed training, for unlike true education it is not aimed at cultivating wisdom and virtue in students to enable them to live the good life.

Instead, I believe that starting in high school and continuing through college, I have received exemplary *training* in the practice of engineering – and training, on its own, is not true education. Training and education are two different things, and we do ourselves and our society great harm when we conflate the two, substituting training for education but calling it education nonetheless. In this piece, I hope to show that while we often think of our engineering⁴ schools as providing an education, it would instead be more accurate to call what these schools provide training. This is not to say that engineering schools do not do enough, but only to push back on the assumption that engineering schools *educate*, when in reality, they only train.

To see why this is the case, let me return for a moment to my previous discussion of education and the educated individual. In "Educating the Whole Person," I argued that a good education

⁴ I will primarily use engineering to illustrate my point in this piece since my own experience has been in engineering education. However any number of other fields could be substituted for engineering. Fields in the liberal arts may be one exception, although I would argue that our current conception of the liberal arts also fails to live up to the educational standard of "training in the art of living" as I have described.

gives students the ability to exercise skill in the art of living by providing instruction in wisdom and virtue. I argued that the educated individual is one who is skilled in the art of living: one who knows the difference between knowledge and wisdom and exercises virtue in his or her life. But where does any of this fit in with an engineering education? Judging from my own experience over the past eight years, it does not fit. If my description of a good education is true, this is not the sort of education that I have received through my study of engineering.

There are two distinct facets to the issue that I raise. The first relates to the question of "who is responsible for education." This question will help us examine where the blame falls if, after years of schooling, students fail to achieve a true education. The second speaks to the institutional question of precisely what our schools, from kindergarten to undergraduate, are geared to teach. Are they established to train individuals in some narrow branch of knowledge, or in the much broader (and, I would add, far more important) skill in the art of living?

Initially, the question of who is responsible for education seems quite complex. Clearly, there are many different individuals and groups that have a stake in the education of even a single person. We could consider the individual's parents, teachers, school administration, or any level of government (local, state, or federal) in relation to this question. Each of these persons or bodies does exercise some influence over the education of an individual. It is true that "as persons, we do make society, and as society, we do make persons," and therefore, education, as an institution geared toward the forming of persons, "is entangled in that paradox" (Mitchell). Society and its constituents are central to the task of education. However, the educational efforts of society are for naught if just one person does not take responsibility: the individual student.

Education, as I have characterized it thus far, can be seen as a state or event that is internal to the student. In the words of Richard Mitchell, "education is not something that one person does to another.... we have to do it in ourselves, one by one" (Mitchell). This thought can be traced back to Epictetus, the Greek Stoic philosopher. According to Mitchell, "Epictetus, who

could neither read nor write, supposed that education was an inner condition... by virtue of which one could do everything that living requires, and do it well" (Mitchell). This can also be related to the philosophical habit of mind described in Socrates' dialogues by Plato. The true philosopher of Socrates' dialogues cannot be forced into existence through education. Education is not something that is bestowed upon an individual, but rather something that the individual must grasp himself or herself. Looking at education in this way leads to the conclusion that the individual bears the primary responsibility for his or her education. This point can also be seen in relation to motivational theories concerning intrinsic versus extrinsic motivation. While extrinsic motivators are often needed to push a student in the right direction, education requires some degree of intrinsic motivation. If a student has no desire to learn, if he or she has no taste for becoming educated, no one can force him or her into the "inner condition" of education. Thus, if after eight years of exemplary schooling I find that I am still uneducated, I have no one to blame but myself.

This is true in a sense, but it neglects the second facet of this issue, which I raised earlier: the institutional question. What exactly are our schools geared to teach? If they are not oriented toward the sort of education (true education, as I have been calling it) that gives people the ability to be skilled in the art of living⁵, then how can the individual ever succeed in educating himself or herself? If this point is never raised or articulated by the educational establishment, how will the individual know to seek this sort of education? Again, the paradox described by Mitchell comes into view: "as persons, we do make society, and as society, we do make persons" (Mitchell). While no one but myself can transform me into an educated individual, "I will never be nourished by those who are not themselves nourished, never brought into thoughtfulness unless others have gone there before me" (Mitchell). The educational

⁵ I have yet to provide any description of what this sort of education would actually look like if implemented for reasons that will become apparent later. I believe this task to be, in large part, beyond the scope of this work. Therefore, I have directed my attention to the underlying issues that must first be considered before questions of implementation are raised. The next logical step in my work here would be to delve into the question of implementation. For further reading on the question of implementation, see Dorothy Sayers's piece, "The Lost Tools of Learning" or Russell Kirk's piece, "The Revitalized College: A Model."

establishment and the educators which form it *are* important and, like the individual, must conform themselves to the true goal of education: the enabling of an individual to lead the good life, characterized by wisdom and virtue. Thus, while I am responsible for becoming an educated person, it is necessary for the educational establishment to support me (and all other students) in this endeavour, as well as make me aware of the true aim of education.

This brings me back to my original point: training in engineering is not oriented towards making students able to exercise skill in the art of living. It neither prepares students for nor alerts students to the true aim of education: gaining the ability to live the good life. We can use the list of "Core Competencies" developed by Olin College (which define the educational aims of the institution) as a lens to see why this is the case (Miller). Some of these core competencies, such as qualitative analysis, quantitative analysis, or diagnosis are standard for engineering schools. However, these three areas each relate to teaching students some skill to help them become better problem solvers and ultimately better engineers, not necessarily better humans, since humans are far more than problem solvers. The aim of these competencies (at Olin or elsewhere) is not seen in terms cultivating wisdom or virtue in students to enable them to lead the good life. Olin's list of core competencies extends far beyond these three, however, including items such as "lifelong learning," "teamwork," "communication," and "contextual awareness." It is here that Olin's approach to teaching engineering is most innovative and unique. However, innovative and important as the inclusion of these competencies may be for teaching engineering, they still do not accomplish the fundamental task of education that I have been describing. Thus we are wrong to categorize what Olin does as education and should instead label it more accurately as training.

Take the "lifelong learning" core competency, for instance. At face value, this core competency seems closest to what I have been calling a true education. By lifelong learning, Olin means that "graduates will be able to identify and to address their own educational needs in a changing world" (Miller). While I do not presume to know the intent behind this statement, I can say that it is most commonly understood to mean that when I face a new problem, I will have the skills I

need to learn whatever is necessary to solve the problem at hand. In other words, I'll be an autonomous learner, able to learn new things without the support of an institution. While this goal implicitly requires the student to learn valuable life skills such as resilience and patience, these qualities are not seen as virtues necessary for one to learn in order to live the good life; the moral component of education geared toward cultivating virtue in students is missing. The "contextual awareness" competency also comes close to falling in line with the true aim of education. This competency states that "graduates will demonstrate knowledge of the ethical, professional, business, social, and cultural contexts of engineering" (Miller). In other words, students will be able to see how their work as engineers fits in a broader context, whether social, cultural, economic, or ethical. These *are* both excellent goals to strive for, but they still fall short of the requirements I have laid out for true education. As we learned from C.S. Lewis in *The Abolition of Man*, humans are more than pure intellect (Lewis 25). Establishing competencies such as these, with no reference to the moral component of education meant to cultivate virtue in students, is to neglect the human element of true education. These competencies address only the head and its ability to learn without also addressing the chest (which, as C.S. Lewis explained, sets humans apart from animals) through moral education (Lewis 25). The focus on these competencies helps Olin to produce excellent engineers, but neglects to help Olin form more complete humans.

In other words, Olin does less for its students than we tend to think. We think it offers students an education, but it does not.⁶ It offers only training – exemplary training, even – in engineering, not true education geared toward enabling students to lead the good life through promotion of wisdom and virtue. To be clear, I do believe that Olin's approach to teaching engineering is both innovative and effective – but primarily for the purpose of training

⁶ These statements do not apply solely to Olin, either. I could likely say the same today about MIT, Harvard, Wellesley, or Babson, for instance. While each of these institutions claim to educate their students, I am claiming that they are, for the most part, merely offering training in various fields of study, and that we must therefore dispel the illusion that graduates from these universities automatically qualify as educated individuals simply by virtue of the school name and degree printed on their diploma or even their GPA upon graduation.

engineers, not educating humans. My intent is not to disparage the Olin approach, but only to draw attention to the idea that while we may call what Olin does "education," we should not mistake Olin graduates for educated individuals (although some may be) and we should not mistake an Olin education for a true education.

If this is the case, and even one of the best, most innovative engineering schools in the world neglects to truly educate its students, we must ask two critical questions. First, while the training of skilled engineers is necessary for the functioning of our society (as I will touch on again later), what harms might come from wrongly thinking that training in engineering constitutes a good education? Second, acknowledging that our world depends on skilled engineers, where does an engineering education fit in terms of one's academic life? Another way of asking this second question is to consider whether a school like Olin really does or should aim to *educate* its students or aim to merely provide training in engineering (although we call it and think of it as education).

To understand some of the potential harms that might arise from wrongly thinking of technical training as education, we can again look back to the Socratic dialogues recorded by Plato. In the dialogue from the *Republic* referenced in my previous piece, Socrates describes the true philosopher in reference to who should govern the republic. He argues that the government of the republic should belong only to the true philosophers, or, in our language, educated individuals, saying that "to these only you will entrust the State" (Gamble 11). However, when we think of those people who have merely received training as educated individuals, we do ourselves great harm, putting those who are less educated than necessary in positions of power in our own republic thereby entrusting the state to the wrong individuals. We esteem people who have earned important-sounding degrees, from one or another prestigious university even though, as I have explained, their degree gives no indication that they have been truly educated. We then rely on these "educated" individuals to either lead or at least advise those who lead our country. Thus, we end up with politicians who lack understanding of how to govern with wisdom and virtue, since they have never learned to exercise wisdom and virtue in

their lives or in their work over the course of their faux education. And this is just one of many disservices that we do to ourselves by thinking that our training programs provide students with an education.

Another potential harm can be seen in scientific fields. Scientists today, although they are awarded with a Doctor of Philosophy (remember, philosophy literally means "love of wisdom") for their training, often lack the philosophical education that their degree proclaims. As a result, a solid philosophical foundation is missing from many modern scientific fields. Lacking a true education which leads to "knowing what things are for, not simply how they work," scientists remain untrained in applying wisdom and virtue to their work (Bauman). Our scientists know how to ask "can we do this?" a question that requires only knowledge, but not how to ask "should we do this?" a question that requires wisdom. They have only been trained, and thus, in the absence of true education, lack the wisdom and virtue to rightly apply their knowledge.

But isn't all this a lot to ask of those who simply want to be scientists or engineers? Isn't it a lot to ask of our educational system as a whole? In short, yes. However, it is all essential, for although "we do not reach the moon by way of Plato and Aristotle... we might not know what to do when we get there, or why we should even make the attempt" without the educational foundation I have described (Robinson).

Returning to the second question I posed earlier, we must consider where training in engineering ought to fit in terms of one's academic life. Training in engineering is absolutely necessary, for much of our world and our economy depends on the work of skilled engineers who have been well trained in their trade. It seems impossible for on-the-job training to provide an engineer with all of the knowledge and skill he or she needs to be a competent worker, so some amount of formal training must be necessary. This is where the core competencies developed by Olin are incredibly useful and valuable. Institutions like Olin are critical establishments for training the next generation of engineers and technological innovators. Olin *should* aim to produce expert engineers. However, if institutions like Olin aim

only to train and not educate – in other words, if they neglect the moral component of education and fail to nurture wisdom and virtue in students – graduates of these institutions and society as a whole will be subject to the potential harms outlined previously. Engineers, like all other humans, need to have a foundation of true education so they know how to rightly apply their vocational knowledge. Ideally, this foundation would be established during a student's years in the K-12 system (or a system reformed keeping in mind the educational aims I have described). Students leaving the K-12 system would then be well prepared to go into more specialized fields, such as engineering, with the educational foundation necessary to apply wisdom and virtue to work in their field. However, even if this educational foundation is formed in K-12 schooling, colleges and universities still should not neglect the moral component of education, which helps students understand "what things are for, not simply how they work" (Bauman).

In conclusion, we must realize the danger in thinking that training is equivalent to education. We must realize that many of our college graduates lack true education, despite the degree that may follow their name. We must realize that many of our institutes of education are geared only to produce "technical functionaries," whether in engineering, science, law, or health, rather than full human beings (Bauman). Only when we realize that these issues are the root of our educational woes will we be able to solve the problems we face. We are capable of solving these problems, but to do so, we will need to admit that our views of education are, in many ways, mistaken. We will need to return to the ideas of thinkers like Socrates and those who followed his tradition. This won't be easy, but it can be done.

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