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Calabretta: Interdisciplinary Nurtures and Expands Capacity  
Of Towers and Philosophy  
How Interdisciplinarity Nurtures and Expands Capacity  
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Few things seem to elicit the queasy feelings of dread and apprehension as a freshman declaring his or her major in college. Others see it as more of a sport and collect multiple majors over their academic career. I, for one, have been enrolled, sometimes concurrently, in an array of majors as an undergraduate and graduate student including mechanical engineering, architecture, civil engineering, apologetics and philosophy. To some this may seem like evidence of a morbid indecisiveness, but in fact, the typically circumscribed areas of study in college were much too specialized and did not suit my many and varied interests. Declaring a major somehow seemed not only irrevocable, but indeed, more like defeat – a giving up of sorts. Nonetheless, discrete choices had to be made. I was assured that these discrete choices would lay the foundation of an educational resume sure to establish credentials and enhance professional demand. After all, in the early 90s, it was common knowledge that specialized education and training would provide the best preparation for a successful and fulfilling career and by extension, life. I have since come to believe otherwise. My years in the academy and professional workforce have convinced me that it is a holistic, interdisciplinary approach to education and career that provides a deep and broad foundation upon which one can build a robust, effusive and God-honoring vocation.

In my early years in the workforce, I found the “resume approach” to the job market useful in some respects, but beyond the initial successes and enthusiasms of a first job and a promotion or two, it became clear to me that further career progression was not based on my specialized, educational skillset, but on other not-so-easily-defined factors. I was working at a civil engineering firm with peers who were also college graduates with specialized degrees and who had very similar technical skills. My colleagues were wonderful people and good engineers, but strangely enough, I came to find that engineers do not make an engineering firm successful. It is the engineers of course who make sure that bridges and towers don’t collapse, but every engineering firm is full to the brim with technically accomplished individuals. It turns out that technical competence is not the primary indicator of an engineering firm’s success. For an Engineer, engineering is only the beginning.

As a practicing Professional Engineer with over 20 years of experience in the field of telecommunications, there was one thing that I looked for during interviews of prospective team members over everything else. More than specific knowledge or a particular degree from a particular institution, this trait was the standout quality that made me consider a candidate seriously. A resume which highlights a clear progression of responsibility and achievement shows accomplishment of course, but it is not the golden ticket many who are just starting out in their career think that it is. A properly crafted resume was usually necessary to land a first interview, but frankly, it was soon set aside a few minutes into the meeting. The distinguishing trait which I looked for more than technical skill or competence during my interviews was a somewhat uncommon quality – something that I call “capacity.”

By “capacity” I mean how much a person is capable of, not only in terms of *specialized* skill or talent, but in *diversity* of skills and talents. The capacity of a container, of course, relates to how much it can hold. A five-gallon bucket will hold up to five gallons of any number things - water, rice or even kittens! Since every person, just as every container, has inherent capacity, the interview process was a way for me to ascertain that capacity – how many “gallons” could this person hold? Every candidate had technical skill of course, that was obvious from their engineering degree, but this was really only a minimum threshold since every candidate had similar expertise. Nonetheless, such an important skill likely gave them at least a “two gallon” capacity. This was a good start, but I expected more. How did they present themselves? Could they express themselves well, both verbally and in writing? If so, this was another “gallon” of capacity. Were they resilient? How did they handle the unexpected? Engineers expect regularity and consistency, but what happens when an unforeseen field condition disrupts the design or a client wrecks a project’s schedule on a whim? Does everything fall apart or are other avenues explored and new solutions created? If the latter, another “gallon” of capacity was added to their total. What kind of intellectual, emotional and spiritual depth of character did this person exhibit? At a minimum this person needed to integrate into a team, but could they contribute meaningfully to it? Could they invigorate it? If yes, their total was expanded by yet another “gallon” of capacity. If you have been keeping count, a technically qualified engineer without the other qualities I was seeking had less than half of the capacity I was looking for

in an ideal candidate. But someone may wonder whether it is practical or even right to expect more than specialized knowledge and technical skill from a candidate applying for something like an engineering position? This might be a valid question if an engineer was just concerned with engineering, but this is just not the case. For an Engineer, engineering is only the beginning.

As a Civil Engineer, one of my duties involved providing expert testimony before various governmental boards and commissions. Procuring approval for telecommunications facilities, those tall monopoles and towers stacked with antennas that allow your mobile devices to function, always involved a series of meetings with zoning, planning and permitting officials that could take years to be approved and, in some cases, ended up in the court system. These governmental entities were quasi-judicial in that evidence and testimony was presented in favor of the project and others, often local NIMBYs (Not In My Back Yard types), could offer opposing arguments. While the locals never came to these meetings with actual torches and pitchforks, the sentiment was often present nonetheless. In these sometimes-antagonistic environments, the testimony of the expert witnesses was absolutely crucial. Frankly, knowledge of the facts, knowing *what* to say, was the easy part of giving testimony, but knowing *how* to say it, and even more importantly, what *not* to say, was often much more critical. These meetings could be an orderly, measured affair or more akin to a three-ring circus or even a Wild West shootout. Nothing in my engineering degree program prepared me for this aspect of my profession.

What did help me immensely was other non-engineering training and experience. My time spent as an architecture student was perhaps most instrumental, but not simply because I could draft or read a set of blueprints. Architecture students were expected to present their ideas and designs to their professors and classmates in a semi-public forum known as a “critique” or “crit,” for short. This was essentially a version of *Shark Tank* without the possibility of any glory or a big payout. It was a grueling and sometimes even a humiliating experience to stand before your peers and instructors and make a credible pitch for your lovingly crafted design. There was little concern for niceties or sentiment and in comparison, *Shark Tank* seems more like a therapy session, but after years of such exposure, standing before an antagonistic crowd at a zoning hearing was child’s play. Persuading a governing board also involved as much art and finesse as technical expertise and often, more. A competent engineer who could not navigate the minefield of the approval process became more of a liability than an asset. I have seen many perfectly plausible applications self-destruct due to the testimony of a technically skilled engineer who could not read the room correctly or who did not take the proper cues from the attorney arguing the case. Even in a highly specialized field, a *capable* expert witness was much more of an asset to an attorney in a difficult case than a merely *competent* one.

In my case, architectural training honed my speaking skills and expanded my ability to navigate complex interactions involving governing boards, opposing attorneys and the occasional irate farmer who claimed that our project would cause his cows to stop producing milk! I worked with many attorneys over the years who said that they were relieved when they found out that I was part of their team since they were much more confident of the outcome. Additionally, my pursuits in apologetics and philosophy improved and expanded my ability to think critically and express myself well, particularly in writing. Beyond writing detailed specifications and reports, engineers often have to write responses to clients explaining some finer point of a contract or clarify some design decision to regulatory officials. Nothing in a technical writing class will equip an engineer with much more than an adequate competency, but a fluid and expressive writing style which is also lucid and cogent will reap immense returns, professionally and otherwise.

It should be apparent that my perspective regarding “capacity” is not meant to be limited to the endeavors of education and career. Capacity can and should be expanded in every individual along many and varied lines. Interdisciplinarity, the integration and synthesis of a diversity of knowledge, skills and abilities, is the hallmark of such an ever-expanding capacity and should not be limited to the workplace. In *The Count of Monte Cristo*, by Alexander Dumas, the Abbe Faria makes the following incisive observation: “To learn is not to know. There are learners and the learned. Memory makes one, philosophy the other.” There is a difference between learning and knowing, just as there is a difference between competence and capacity. We must come to terms with the fact that the modern propensity for specialization has, for all its positive benefits, artificially constrained our natural, that is, God-given, potential. It might be said that prior to the Industrial Revolution, man, as an artisan, *used* tools to give shape to his prodigious capacity for creativity and expression, from mundane chairs and wagons to soaring symphonies and cathedrals. It might also be said

that post-Industrial Revolution man has rather *become* a tool, simply a means to some end. This is a striking reversal and one which must be remedied.

As created beings, our Creator has called each of us not only to learn and to work, but to something deeper, broader and more remarkable - a vocation. Of course, this includes an education and likely a career, but we miss out on our greatest calling when we allow the utilitarian and mercenary standards of our culture and economy to determine and drive, not only the means, but the ends of our living. I have yet to meet a person who has not been created for a capacious and robust life characterized by freedom and fulfillment, but I have met many who have been constrained and circumscribed by artificial and often self-made limitations. Sadly, the latter dominates my experience. Modernity epitomizes specialization. How can anyone be astonished that it is also characterized as constrained, two-dimensional and monochrome? All of creation is marked by an abundant and extravagant diversity on the one hand, and yet displays a profound integration and synthesis into a remarkably unity on the other. We have a birthright which beckons us to a majestic diversity of knowledge and experience and we honor and gratify our Creator when we partake of and even exploit such capacity. Education might be one pathway to a career and a career might be one pathway to a vocation, but one's calling can never fully be realized by such things. This is much too small a horizon for the expansive capacity for which we have been created. There is so much more. For the learned, learning is only the beginning.