

The Essence of Leadership

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Abstract - Society has, as one of its base survival techniques, the reinforced training and education of its participants, beginning at an early age. In order to manifest value to its citizenry, it acts to foster the necessary social and economic skills to maintain the current status quo. Unfortunately, this has resulted in a reliance on complacency, leading to a more reactive, rather than proactive, culture. In order to break society of this contentment a more proactive mode of operation will require a more individualized approach in the development of specialized skills, such as leadership, within its population. Leadership, a basic survival instinct in men and women, has the potential to provide individuals with the proactive capability to solve problems more effectively and to anticipate the future needs of the societies they guide. This paper addresses these issues and provides an example of a practice routine for the improvement of leadership capabilities of our youth.

Keywords-Leadership; Five-Year Plan; The Intended You; Leadership Development; Survival; Lead; Intent

1. THE PREMISE

1.1 Background

The most successful macro-species on this planet is the Homo sapiens. We are often credited for our successes through the evolutionary addition of a single opposing digit [1]. Although it is clear that our thumbs have contributed significantly, if only as a result of a quirk in the evolutionary process, it has also allowed for a steady, if not accelerated, rate in our social and technical accomplishments [2]. While it is most likely uncertain, even to the evolutionists, as to which of the many physical and mental processes that came first or which may have co-developed over time, it is certain that everything about us in those early development stages became preferred traits in the name of survival.

In that quest for continued existence several features and attributes became significantly more important than others. It can be assumed that all of the physical features, social attributes, and cognitive capabilities that allowed for this one species to survive, flourish, and later subdue the local environment or outlast a competitor or adversary, that each became a preferred survival characteristic. As survival became less of a concern, or as the mastery of the environment became less of an all-consuming portion of getting through the day, other features could be added and/or further developed to encourage cooperative and beneficial social relationships.

It is here where culture and the sophistication of intellect began to take shape, as was demonstrated through adaptive societal trends and behaviors. As the knowledge base grew, nomadic Homo sapiens established their basic survival needs such as food sources and protection through the establishment of stationary communities. As revealed by surviving artifacts and relics, a glimpse of this form of developmental processes can be seen through primitive practices of written communication and artwork.

As with most species, adaptation was and still is, the key in the survival process [3]. Therefore, any contributor to survival, when repeated enough successfully, evolved and became a part of the survival code. This, in turn, was then reflected as a change in the size and shape of the species, the rate of birth, and defensibility of the progeny, and the inherent learned and acted upon mental capacities. Each of these was then passed forward through the genetic make-up and the teach/taught capacity of the individuals [4].

At some point it might be assumed that human beings as we know them are fully developed and masters of their personal universe. Also, it might be assumed that because of all the inherent physical characteristics and mental capabilities, evolution may no longer have as strong a hold on their development as it once did. Or, quite possibly, we are still evolving but in ways not necessarily reflected in overt physical or easily recognizable cognitive features. Some of our earlier survival traits may have become, or are becoming, latent since those may have lost some of their

importance due to our capacity to bend the will of Mother Nature.

It is thus assumed that each replica of that human genome that we occupy and enjoy most likely contains all of the capabilities and characteristics that became a positive influence during the struggles required to make us who we are, in the shape that we have become, and with the cognitive capabilities that are a part of what allowed us to learn to survive.

The general argument here is that each and every one of us has most, if not all, of the underlying features and characteristics that have been assimilated and encoded over the eons of time, which determined who we have become. In each of us reside the salient and other latent features and capabilities all within a remarkably unique outer package. While some features will enhance and encourage the development of the next generation, most of the social and technical contributions that we have developed have come from the not-so-obvious non-physical portion of our make-up. More importantly, those essential traits and their mix and measure, are most likely uniquely different in each of us as is the genetic code that physically builds us.

Since this set of traits is distinctively different in prominence and weighting in each of us, then how we socially manifest those traits and capabilities will also be unique. Add to this, the impact of environmental influences and the mix then becomes even larger with a greater defining spectrum of differences between individuals.

It turns out that the numbers of traits are most likely quite large with the recognizable presence and prevalence of some of those traits are dependent on the need to affect others and also on the impact from child rearing and the ever-present environmental factors. So the possible combinations of active and latent traits are rather infinite, and possibly more importantly, we as active learners can ourselves change the balance in those features and characteristics to alter the entire developmental process, albeit most likely with little obvious change to the physical entity.

Again, it is still most likely all contained in each of us and while some of the code may be, or has become, inaccessible for a variety of reasons stemming from physical, emotional, and environmental influences, there will always be enough links to other contributory elements to effectively compensate for the latency or loss, or until the required trait is brought back on line to provide a greater contribution and flexibility. This, of course, is part of the survival process where redundancy and substitute alternatives may lead to a more successful future. We are clearly a product of everything and everyone around us and everything that came before us.

1.2 The Coded Response

It is within this coded mix that we locate those needed attributes and traits to allow us to move progressively

forward as a species. At the same time, these same traits allow us to reduce our dependency and attention on survival requirements. It is thus through this unique set of characteristics and capabilities that we have been allowed to advance and respond with ever-increasing decisiveness to the changes in the environment and our social order that we often contribute to, or indirectly cause to occur in the first place.

Therefore, this discussion is not directed to the visibly physical or measurably social manifestations of these numerous coded traits that we overtly see in our daily activities. Rather, it is a study of the less visible attributes, where they are identified by their impact and effect on something we experience, most likely a long-term materialization. These less easily identified but nonetheless important attributes must be developed and used to see their effects. As such, they are often less appreciated initially, and sometimes even ignored or thwarted. It is these same characteristics, when effectively utilized, which will yield the most attention and reward, though this often takes place long after the transitional events have occurred that allowed the traits to come forward in the first place.

It would appear that most any of these characteristics and traits could be impactful when utilized at the right time and location, in combination with the necessary supporting environmental and social influences. It should be noted that individuals are most often compelled to foster the use of these attributes in response to a survival need, but other stimuli can also help to unleash these attributes.

As an example, when survival is the only choice there is often the individual that seems to rise out of obscurity to save the day, using whatever combination of traits that were needed at the time. We see it portrayed constantly through our artistic and entertainment culture in movies and books. These stories often feature humans being pushed to the limit, whether it is the result of human error, political or criminal development, or natural disaster. There is always the "hero" who is the unlikely character, equipped with the right combination of visionary quirks and tenacity, who rises to the occasion, saving the day, and, in the process, enlightening us to a more ideal way to live and grow as a species. It turns out, as should be suspected, that the crisis situation is often the most recognizable event regarding the discovering of a latent trait, a trait that was likely there all along but undeveloped or un-triggered. The reality is we are learning creatures and each event and piece of knowledge impacts who we are and who we will become, which will then change again, continuously.

For some of us, unique traits will manifest themselves quickly because all of the supporting elements were coincidentally present to facilitate the action, or in this case, reaction. In others the time-to-proficiency may be a long-term quest, a self-improvement desire or an anticipatory response to a potential need in the future, the intuitive or visionary response. For all cases if the will and

resources are there, the desired or needed trait will emerge, albeit it will be different in composition and focus for each participant. Note that this difference is, again, a survival trait where diversity in the human response supports better coping of unexpected changes.

These coded traits and the ones we help to develop, and in some cases to possibly synergize into a new response, are impacted by everything we do, witness, and practice. This is, of course, all part of the maturation process starting at birth and seemingly remaining the same at least in capability, if not in practice, until we take our last breathe. With a clear and open slate at birth the rates in learning and physical development are skewed towards the earlier age of the individual. It is also most likely that these formative years also identify and stimulate a plethora of unexpected attributes and capabilities even if the formal portions of the educational and development programs didn't focus in those areas.

1.3 Society's Perceived Needs

Society by definition and intent has historically recognized the value and need to provide education and training opportunities for its citizens to facilitate communications and to encourage social and economic growth. Most of these educational services and activities are committed to the establishment of a minimum capability level for its citizenry, most likely, as it perceives is sufficient. As the student participant grows and matures, the knowledge and skillsets along with the learning and social experiences becomes more sophisticated and intentionally more focused to allow the participant to function and hopefully flourish in society. Social and economic improvements are accelerated through the development of individuals with visionary capabilities [5].

Out of this education and training system, along with those pre-school familial development years, comes a variety of diverse social creatures each possessing a unique set of knowledge based skills and problem-solving capabilities. If the individual experience, possibly better defined as an experiment, is successful then another participant is available to maintain and facilitate the current social system.

It turns out that if the intent is to make sure a sufficient percentage of the populace has the necessary communication skills to interact socially, conduct business, and provide the wherewithal to maintain the status quo in our social and economic infra-structure, then maybe the maintenance of a minimum level of competency directed specifically at those skills is sufficient. Clearly, "why fix what isn't broken" works very well, if in the comfort of the moment we hope that everything will always stay the way it is.

Nothing ever stays the same, no matter how comfortable or blind-to-reality we become. As Heraclitus confided, "change is the only constant in life" [6]. The reason we are such diverse and capable creatures it that nothing ever stays the same and any attempt to make it stay that way

only increases the rate and consequences of that change. It is most interesting to note that our reaction and future anticipation of change provided the coding for the attributes and traits that we call on to absorb and compensate for that current and future change. With this also then comes the need to not only react but to also become proactive and create our own change. Again, this is all part of that diverse code with which we have been provided and gifted.

1.4 The Current Educational System

The current educational system at all levels, primary, secondary, and college, may well be sufficient to maintain our current social and economic position, but does it provide for those needs-for-change that inevitably are going to occur? The United States is no longer the best in everything, as we once believed we were [7]. Our students rank dismally as compared to several other industrialized nations and we are even with some that are yet to achieve any kind of industrialized status. More importantly, with increasing environmental and population growth concerns and the desire for a global minimum standard of living, coupled with the ever-increasing desire to advance our technological base that's needed to meet and satisfy this same list, can the current educational system even maintain the status quo?

The general consensus, of late, is that the range of skills and definable attributes focused on by the current system just isn't enough and won't be nearly enough in the future. Yet, in spite of the deficiencies in the current system, it seems we still discover those few that develop the requisite skills to rescue us from ourselves. So, how do we account for that seemingly continuous supply of creative individuals that rise up, even in spite of those limited skills made available from the current educational system? Where did those skills and attributes come from and how did they develop, unassisted?

A portion of the answer may come from the indirect consequences of the un-defined, unseen and, as a result, immeasurable contributions from the current system. Or, and this one seems to be the more plausible, it is primarily the result of the coded responses to the stimuli going on around us and the individual's desire to always find the better, safer, and more convenient path, part of the human condition.

If the attributes are effectively available in all of us and we need them to make our current system more effective and functional, then why aren't we focusing more on these traits as definable outcomes? The answer turns out to be in part knowing what the needed attributes are, a lack of understanding of how to develop those attributes, and a failure to recognize a valuable pathway early enough to provide timely assistance.

1.5 The Leadership Impulse

For this discussion leadership is one of those key components that has been overlooked by the system. History books are full of the strong-willed, tenacious,

compulsive, focused, charismatic, visionary, and successful leaders. Each was uniquely different with different social and economic backgrounds. Most all of them faced adversity, financial and physical woes, and often some had serious problems with social and interpersonal relationships. Their common distinguishing set of traits, in addition to those mentioned, derived from a 'fire in the belly' and an inability to quit solving an obvious need.

Looking closer at the history of these individuals you will find that prior to their documented success, some were frequently regarded as scoundrels, dreamers and, more often than not, totally crazy. They took risks, often times putting themselves and their family and friends in financial jeopardy, even to the point of putting survival into question. It is funny how success cures all of these ailments, along with the opinion of others.

Fortunately for all of us, leadership is not limited to just those few that made the history books or more recently The History Channel. We find evidence of their leadership attributes all around us and it is often present in some form in most interactions and transactions. Most of these individuals will never make the history books or the evening news, for that matter. All, though, are essential for more than just our survival. They organize us and provide direction and indirectly, but effectively, provide the lubrication that's needed from the inevitable social friction of just being around each other. They, in turn, thus create the fundamental pathways plus the guidance to provide social and economic progress and success.

Without the presence of leadership we tend to be ineffectual in our dealings with each other and the work we need to accomplish. The proficiency in this skillset becomes more pronounced in the effectiveness of the results and the success of the outcomes. Yet, with the basic understanding of the value and importance of this skill, there seems to be very little attention paid to the development of this all-important leadership attribute. In other words, we know it when we see it, but we still have trouble defining it before the fact or, to take it a step further, we seem to lack the ability to encourage it.

1.6 The Latent Leadership Trait

With leadership as one of the basic and also one of the more survival-driven characteristics in our cognitive make-up, it would seem important to understand how this trait is identified, enhanced, and enabled. Some leadership growth is a natural consequence of the maturation process, consisting of how the individual was raised and educated. Even the basic knowledge and communication skill sets provided by family, cohorts, and the educational system can provide elements essential to the development of the leader within [8].

In that early maturation process there are the normal competitive games and interpersonal relationships. There are also the numerous un-scheduled and random activities and stimuli that can occur during the growing process. All

of these impact our growth and how we interpret the world around us. Since we are unique individuals and no two can have the same code and be exposed to the same stimuli, what we get is a diverse and generally motivated populace. A certain percentage of this population, if given the correct tools, stimuli, and encouragement, will accelerate their leadership capabilities. From this vantage point they can help to define and provide the solutions to our future personal, social, and economic growth needs.

For some individuals the current maturation process is sufficient to stimulate and grow the leadership trait. For others it may take an internalized personal goal or some crisis to get the process accelerated. In all of these cases the leadership bug, once identified and encouraged, can become a pervasive driving force for the individual and the people and environment around them.

The vital lesson we should get from our history books is that society really needs these visionary individuals, although the general public most likely won't understand that need until success or progress is achieved. Fortunately, leaders tend to march to their own drummer and don't normally consult with their fellow citizens regarding the direction they have visualized. Most likely this notion of secrecy may be essential for unfettered progress and a result of trying to explain or define their vision to another uninitiated follower.

These driven individuals may succeed purely because they have their own preferred vision of the future and most likely all based on some internalized sense of need. In all cases there appears to be a kernel of need that starts the process as in the English proverb, which states, "Necessity is the mother of invention" [9]. The question then might become, how do we mass duplicate the environment to help refine and grow that process?

1.7 Stimulating Leadership Attributes

The generalization so far is that we all are equipped with a standard, and very diverse, set of genetic traits that are in turn impacted by the environment and social system we interact with and react to. The survival of our species and the success of our social development rely on this diversity and how we consciously and often not so consciously utilize those traits. Each of the observable attributes manifests itself, if allowed and given the proper attention and encouragement, based on the current needs of the system. For other cases survival becomes the driving influence and all we can do is get out of the way and let the need drive the outcome.

The normal trends in all living creatures is to be reactive and as a result, often times, wasteful. We are not excluded from this tendency and most of the current problems caused by solutions to earlier problems could have been at least mitigated if we were less reactive and more proactive. We are our best when we become bold in our actions and decision-making. We are more strongly equipped to solve pending and future problems by intercepting them before they are exacerbated. Leadership

becomes one of those traits essential in being pro-active and also in providing the required direction and focus to carry out the vision [10].

There are a number of traits that are essential to our survival plus the social and economic progress we constantly strive to perfect. In this maturation process key events can impact and direct the individual's development. Waiting for that triggering event and hoping the influence will eventually meet the need that caused the event may, at best, be haphazard and unreliable.

More importantly, with the rate and increase in size of our social and environmental problems, plus the pressing global demands for minimum economic opportunities, we are now in need of a more directed program to stimulate and enhance the traits we will need going forward. Leadership must be at the top of the list if we are going to accelerate our social and economic progress and thus provide the pro-active and preferred vision of our future.

Consider the following personal development program as an initial, if not primary, step in developing the leadership skill set within any individual. Note that the time periods used and the depth in the details of the program are somewhat flexible. Age and maturity will both affect the details and the outcomes but in all cases progress through this exercise can have a profound impact on the individual, if they accept this vision as their goal.

2. THE INTENDED YOU

2.1 A Sample Development Program

The current process for participation in our society, starting at birth, is to spend extended contact time with parents or guardians to develop the required communication and social interaction skills. We then begin our educational process with pre-school programs, which eventually leads into primary and secondary education. Following this, if we are so inclined, there is a host of advanced educational opportunities including colleges, universities and trade schools, and less we forget the numerous books, lectures, short courses, and the Internet. Then, as you become productive, there are employee based educational requirements and opportunities and an abundance of self-help programs.

For all of these processes there is a natural implied progression in this system for developmental opportunities. This is the current system; you might say it is a deterministic life cycle for us as individuals as it attempts to provide value for the maximum number of participant. Thus, the current system can be viewed as a successful strategy, as long as the results satisfy the needs of society. The question then becomes, will this current system yield the types of individuals that are the leaders for tomorrow, and at the correct time and in adequate numbers? Some would say that the current system was never intended to identify and nourish the specific traits that are required to create these unique individuals. It could be that the current system might actually discourage those traits since they are

hard to recognize in their earlier stages and catering to those specific traits might interfere with doing the most with the least as is currently mandated. These leadership traits are often not part of any formalized educational and training program. In a lot of cases this training ends up being provided through individualized community-based attention or in a mentoring arrangement outside of the normal classroom programs. In some cases this training may actually develop in spite of the current system. But though this may be the situation our society imposes upon possible future leaders, the current social system clearly benefits from the leadership traits that do develop. Even if it doesn't understand or provide for them, our culture demands that these unique individuals rise above these resisting elements to drive society into a prosperous future [11].

Eventually the complex social system that we function in may come to realize the need to cultivate a greater variety of skills with more of an individualized development program. Or, possibly society will create a separate path for leadership and other survival skill development and assume the existing system will provide for the basic and more fundamental social and communication skills. Until then, alternative methods need to be created and applied to insure that we will have the correct numbers of leaders with the required skill sets in the future.

The question may well become, where do we start? For this, the answer may be as simple as providing the individual with the ability to lead themselves, at least initially. More importantly, it may well have very little to do with the current educational system, and even less to do with the age and maturity of the participant. Leadership, like everything else that comprises us, has to develop memory, where the more frequent and practiced the activity the more effective the capability.

2.2 What Path Are You Taking?

To develop this leadership directed program approach, consider how the current educational system behaves and what its processes accomplish, or in this case what it inadvertently does or doesn't do. For most of the right reasons the current system has a pre-planned set of requirements. Starting with pre-school and even ending up with advanced college granted degrees, the participant is required, by law and custom, in some balanced measure, to take and pass a series of topics with at least a marginal competency. Some require memorization while others have a required and practiced skill set. Being born into this environment means that everyone knows, or thinks they know, what they should be doing and learning. You finish one grade or class and you know you will then proceed to the next, until you finish that set of requirements and expectations. Normally, the system in its many forms, starting with your parents or guardians and then adding your teachers and mentors, have steered your development through these formative years. The process is so organized that most participants will follow the

program with little question or input and simply trust that the system will net the appropriate personal goals at some future point in time [12].

The reality is that most of the decisions have been made for you and sometimes even to the extent of deciding career preferences. While in a lot of cases this process may turn out to be quite successful, the real question should be did society and the participant rise to the best of their capabilities and expectations. Was it the best or even a reasonably proper scenario for the participant?

Consider the following scenario. If you were to decide to take a trip from Point A to Point B using public transportation, then you would accept that the process is well known and, unless there is mechanical breakdown or you experience inadvertent delays, you will most likely arrive at the expected location. Not a lot of practiced thought or decision-making choices are to be made if you take this route. Even if you get off too early or too late the system will cycle back and pick you up next time around. There may be penalties and lost time for the mistake but there is comfort in knowing that the system will adsorb and compensate for the error. This example easily fits most everyone's comfort zone.

This process works well with busses and even more so for rail transportation. In all of these situations the vista stays basically the same and if it doesn't, it most likely doesn't matter because you are only an observer and not an active participant. For this example the reality is you can observe but not really interact or suggest changes. This is much like the current educational system, where Point A is required and getting to and participating in all of the stops along the way to Point B has been laid out for you to participate and contentedly follow along. The result is often there are too many students that arrive at a terminal degree and are seemingly lost as what to do next.

Now, consider a system where personal transportation is the norm. You can walk, ride, or drive through a variety of paths limited only by your resources and time. You may still choose to arrive at the original Point B but on these trips you can choose to vary the landscape by picking a different route. More importantly, you can choose to be a more active observer or, if so inclined, to the extent of becoming a participant. As such, and because of this opportunity, you may choose to reach Point B sooner or only long enough to then move on to an alternate Point C, a personal goal previously unseen because of the requirements and restrictions of the mass transit system option.

By achieving the initial intended destination, Point B, using personal transportation means you have met the required expectations of your co-participants and influencers but, in this scenario, you have reason to reach further than the initial goal or requirements. Note that while you are altering your personal travel map, you will have the opportunity to stop and learn from a broader range of experiences, to broaden your communication

competencies and personal skill sets along with the acquisition of a greater breadth and depth in knowledge.

This exposure to alternate paths, where you have control over the decisions and directions, can provide you with unexpected choices and opportunities, as well as the ability to recognize the need to refine other cognitive attributes. It has also created a more practiced skill in forming and reforming your personal vision of yourself in the future. All of this requires a personal leadership perspective that is fundamental if the participant is eventually to become an effective leader of others.

2.3 What Will You Look Like?

If you ask a preschooler what they want to be when they grow up, you will get a spectrum of answers, often affected by who they know or what is currently the focus on the shows they watch or the video games they play. Some will also be impacted by the stories that are read to them or the images on the toys they play with. These are important images for a child to have along with the notion that they can be one of those individuals once they mature through adolescence and master the basics needed to meet the career objectives.

While these are extremely important visions of a personal future, especially for a child, they are often not realistic or representative of what can be achieved following the path that society has laid out for you. In fact, to dream up and maintain a personal vision most likely requires that the participant must deviate from the expected and well-maintained path that society tries to impose on them. Most likely this is as it should be to achieve the unforeseen problems and future goals not yet recognized by society.

Following the generic path man-dated by society may also be counter-indicated for leadership trait development. Marching to a different drummer seems to fit the myriad of individuals who have distinguished themselves as strong leaders in the past. This may also apply to innovators and most anyone with a specialized trait that exceeds the developmental capabilities of the current system.

While the leadership trait may not be the only one that needs a specialized focus, it might be one that can have the strongest potential impact on our society going forward in the future. We all have at least a small amount of this invaluable trait and since most everyone will have an opportunity to practice this skill numerous times in his or her lives, it would seem that nourishing it during the maturation process might make sense. Also, independent of age or maturity this skill is a guaranteed survival requirement, thus it needs attention throughout our lives.

One of the most effective ways to encourage this skill development is to simply provide leadership to one's self. Practice makes perfect and if we are going to expect the arrival of these individuals with well-developed leadership skills when we need them, we need to provide the practice events.

3. THE FIVE-YEAR PLAN

3.1 What Steps Will Yield The Leadership Outcome?

An innovative way to stimulate and refine the development of leadership skills, especially in our youth, is through their establishment of long-term personal goals. Then by growing the required decision tree around what it will take to achieve that goal, the fundamental attributes of leadership are established. For example, several groups of engineering students have been challenged over the years to describe themselves in careful detail five years into the future. Curiously, while some participants already had links to potential future employment, not one could describe themselves just five years out. Few had any notion as to the next steps after graduation. None had any expectations as to what many of the next steps might need to be, or what role they may need to play in the required decision-making process.

Admittedly, the process was not as simple as just setting a personal one-sentence statement, but that was the first step. They were instructed to describe themselves in detail ranging from their personal life activities through their professional life aspirations. This included their health and physical fitness goals, their family and living condition requirements, down to their transportation preferences. This became a multiple class period effort with numerous homework assignments, the details of which are too complex to include in this paper.

They also needed to drill down into their professional aspirations including the types of jobs along with the management and leadership skills they intended to acquire plus the life-long learning modules they intended to master. Note this assignment also turned into several class periods, often requiring large group participation and discussion, mostly centered on what are the actual key characteristics that are needed to allow for a secure and personally fulfilling lifestyle.

From this point they then had to identify and categorize the myriad of activities and requirements that would be needed to meet those key characteristics. Again, this required several class periods of discussion and earnest contemplation. Group participation became essential, as before, in arriving with a personally generated list, where no two were alike. Interestingly, as these individual personal goals became clearer the willingness of the participants to share them among others in the working group became less pronounced.

Finally, the students were asked to provide order to the requirements with a timeline for completion of the tasks. Since many of the tasks were dependent on successful completion of the total package on a timely basis, it became evident that waiting for the next prompt from school, a job, family, or friends to take action, was not going to net an acceptable or predictable outcome.

It is important to note that the choice of a five-year period was arbitrary, but well suited for graduating engineering

students. This exercise has proven to be extremely timely and schedule dependent. It should be shifted based on the age and maturity of the participants. Also, the act of drilling down into the parts and sub-parts of the characteristics is a very difficult and time-consuming activity, which cannot be taken lightly. They are fundamental to identifying the resources needed along with the vision the individual wants to attain. This total act seems to help break the current pattern of simply following the person in front of you while still making sure to meet the minimum requirements of the current system.

It appears, fortunately, that very few of us want to simply be average, at least not initially. So any program that provides the developmental skills to lead yourself on a self-directed path also seems to evoke and strengthen the same characteristics that are identified with leadership traits. An intended vision for the future is possibly one of the strongest attributes. The act itself leads the participant to look further into the future they want to affect. This is one of many practices that can be used to help our youth to achieve their greatest goals.

4. SUMMARY

The message from this paper is that every individual, and the social environments that they live and grow in, require a minimum number of skills that must be mastered to insure value to all of the parties involved. To guarantee that society will continue to advance, at what currently appears to be an ever-increasing rate, will require that we pay more attention to specialized survival traits.

Leadership is one of the more important ones, which has had little attention paid to it. Fortunately, simple early-state programs can be developed to enhance those skill sets. Learning to lead oneself may be the single most important first exercise. From there we need to create a series of strategies that allow the student to grow the skill set along with a forum to practice the outcome.

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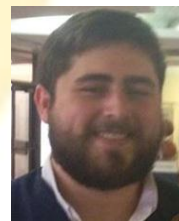


Allison M. Arnold received her Bachelor of Science degree in Civil Engineering from West Virginia University (WVU), Morgantown, West Virginia, USA in May 2014. She is currently pursuing a Master's of Science in Mechanical engineering while working with the Center for Industrial Research Applications (CIRA) at West Virginia University on various developing technologies. During her undergraduate career, Allison has upheld several vital positions within various student organizations, including Engineers Without Borders (EWB), American Society of Civil Engineers (ASCE), Society of Women Engineers (SWE), the academic honor societies Alpha Lambda Delta (ALD) and Golden Key, as well as Chi Epsilon, the national Civil Engineering honor society. Her work experiences include a variety of vocations that have taught her a diverse array of skills. Beginning with shadow work under the Morgantown City Civil Engineer, Allison grew to explore more mechanical interests through her internship with Thrasher Engineering. Working as a tennis professional for the Greenbrier resort not only required advanced human-recourses skills, but also imparted conflict resolution and leadership skills.

This further blossomed as she worked as a tutor for the athletic department, and as a teaching assistant for various courses at West Virginia University including early engineering classes, strength of materials labs, and mechanically static sciences.



Samantha Melroy is a mechanical engineer undergraduate at West Virginia University (WVU). She has put an emphasis on leadership and entrepreneurialism by having the capability to do so with her undergraduate research opportunities created by NASA Space Grant Consortium and other organizations. Currently she is working on underground anomalies detection system funded by NASA Space Grant and will continue with the efforts for the continuation during undergrad and grad-school. Melroy is a member of Society of Women Engineers (SWE), Society of Automotive Engineers (SAE), as well as American Society of Mechanical Engineers (ASME).



James Hunsucker received his Bachelor of Science in Electrical Engineering in 2014 from West Virginia University (WVU), Morgantown, West Virginia, USA. He is currently pursuing his Master of Science in Mechanical Engineering, also at West Virginia University. Currently he is a member of the Center for Industrial Research Applications (CIRA) at West Virginia University, where he is working advanced ignition systems with the Quarter Wave Coaxial Cavity Resonator (QWCCR) and the underground detection of anomalies using passive methods.

James E. Smith received his Bachelor of Science and Master of Science degrees in Aerospace Engineering and Doctor of Philosophy degree in Mechanical Engineering from West Virginia University (WVU), Morgantown, West Virginia, USA in 1972, 1974, and 1984, respectively. He is currently the Director of the Center for Industrial Research Applications (CIRA) at West Virginia University, where he is also the Innovation Coordinator and Professor in the Mechanical and Aerospace Engineering (MAE) Department. He has taught at the University since 1976, before which he was a Research Engineer for the Department of Energy (DOE). He was the 2009 SAE International President and Chairman of the Board of Directors, which afforded the opportunity to travel to the innovation centers of the world. During his 40-plus-year scientific career, he has been the principal and/or co-principal investigator for various projects funded by federal agencies (Tank-Automotive Armaments Command (TACOM), Department of Defense

(DOD), HEW, Department of Transportation (DOT), US Navy, Defense Advanced Research Projects Agency (DARPA), and Department of Energy (DOE)), international corporations, and numerous US corporations. The work in these projects has resulted in the publication of over 250 referred technical papers and articles. This work has resulted in the granting of 34 United States Patents and numerous foreign patents on mechanical and

energy-related devices. Dr. Smith is a member of American Institute of Aeronautics and Astronautics (AIAA), Society of Automotive Engineers (SAE) International, American Society of Mechanical Engineers (ASME), International Society for Computers and Applications (ISCA), American Society for Engineering Education (ASEE), and the Institution of Mechanical Engineers (IMEchE).