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Homework #6

10/8/14

Eng-095-02

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In the year 2000, Neil Armstrong, the first man to ever step foot on the moon outlined what he believed to be the 20 greatest Engineering achievements of all time. His presentation to the National Press Club highlighted innovations like high performance materials, nuclear power, lasers/optics, health technologies, imaging and computers among other now-indispensible inventions. At number one on the list was electrification. Weather or not the list was ordered in terms of importance was not clarified, however, there is no achievement in human history that even comes close to rivaling the ramifications of electrification.

The human race has developed a consumer culture that demands resources at an unprecedented rate. Not only does it dwarf the consumption of any other species but even the human consumption of recent history. Without electricity we would lack the means to keep up with the demand for food and other vital resources let alone the comforts that have come to be expected. Without electricity, mass irrigation/ factory farming would not be possible. If the entire human race were to try to provide for themselves via hunting, gathering and even small scale farming, we would likely deplete the world of most of its biodiversity and life altogether. Electricity is not only essential to the production of food but the transport of food and water that would be logistically impossible in its absence. Electricity unlike most other innovations is no longer an improvement but a necessity.

Almost everything on the list was built on the back of electrification. Of the list sample provided above the only innovation even remotely possible without electricity is the creation of high performance materials. Today electricity is responsible for communication, locomotion, and automation; it also plays a huge role in just about every other human function conceivable. Electricity is now a vital comfort that has been integrated into daily life; necessary for the survival of a species that is far past it’s natural carrying capacity and the foundation of future innovation.

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* Musician( Knowledge of acoustics could lead to better recording techniques as well as the creation of improved or even novel hardware and software. For example, a new guitar effects pedal or more ergonomic recording software.)
* Politician ( Knowledge of design, logistics and economics could lead to more informed and subsequently efficient allocation of government resources.)
* Architect ( An architect with knowledge of engineering could save a contractor valuable time and money hiring professionals of each discipline and having them communicate with each other.
* Teacher ( A teacher with a BS in Engineering is capable of teaching almost any technical class at the public school level )
* Quantitative analysist (Engineers who have training in a technical field such as electricity , mechanics , and aerospace are often hired by financial firms or banks such as Goldman Sachs . These firms’ higher engineers because they know that they have been trained to solve difficult and multifaceted problems and can often be retrained to develop mathematical models of the open market with less difficulty than someone with a more liberal education.)

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In section 2.11 the general requirements for an engineer to become professionally licensed are as follows: They must have completed a 4 year abet accredited program. They must have passed both the fundamentals of engineering exam and subsequently the principles of engineering exam. They must have had 4 years of experience in the engineering field. The state of New Jersey’s requirements are similar in composition yet have more specific clauses to address specific cases. For example in the state of New Jersey if an Engineer has 15 years of reputable field experience the FE examination requirement is waived. In the state of New Jersey in order to become professionally licensed as an Engineer an applicant must demonstrate the ability to speak and write in the English language as well as provide 5 references of which 3 must be professional engineers. The stipulations also mandate that a masters or a PHD could remove 1 or 2 years from the experience requirement respectively. Finally there is an ambiguous clause claiming that a licensed engineer must be of good reputation and character with reference to more specific guidelines.

The official website of the Division of Consumer Affairs of New Jersey did not provide a list of the engineering disciplines anywhere in the engineering /land surveying information provided nor did multiple different Google searches. As for strategies to pass the fundamentals of engineering exam many approaches exist and I intend to utilize an amalgamation of all of them. In order to pass the exam I intend to take it during my studies at TCNJ so as to have the material fresh in my mind when I take it. I also intend to begin studying well in advance of the test not just for the test but to ensure that my understanding of engineering is based on solid fundamentals. Finally in order to prepare for the test I will save all of my notes / materials from previous courses as reference for studying.