EGR104 Discussion Board

New Week 2 2017

Michael Faraday, a famous physicist who is known for his discovery of electromagnetic induction, deserves to be in the class of successful critical thinkers. Faraday's experiment involved placing electrical conductive wires in magnetic fields and with winding conductive wires around magnets. Through some dynamic interactions within these systems, Faraday was able to "induce" electrical currents to nearby conductive wires. Faraday was the first to discover that there was a force, called electromotive force (EMF), that resulted from such dynamic interactions. These experiments were lengthy and difficult, but Faraday demonstrated his intellectual perseverance to arrive at useful knowledge about the science of electromagnetism that are continue to exist in all electrical systems today.

On the opposite side of the spectrum, Louis Slotin, a physicist who participated in the nuclear weapon design project known as the Manhattan Project, fits the label of an epic failure of critical thinking. The story was told that Slotin was involved in an accident when he manually controlled a fission reaction by some manipulation techniques for Beryllium reflector on top of a Plutonium core. Slotin observed the rate of fission reaction changes when he lowered the reflector onto the core. In this type of experiment, shims would be used to keep the reflector from covering the core fully, however, Slotin decided to remove the shims and use a screwdriver, which violated the safety protocol. The screwdriver somehow slipped, causing the reflector to fall onto the core and started the critical reaction. Slotin then knocked the reflector to the core immediately and saved the lives of his fellow scientists. However, Slotin already received a deadly dose of nuclear radiation. To restore safety, Slotin ordered dosimeter badges to be placed on the core. Interestingly, none of the scientists wore these badges during the experiment, making it impossible to know how much radiation the scientists were exposed to. Slotin died shortly, but he failed to show intellectual humility in his decision of using the screwdriver to bypass the safety protocol.

And for Week 4

A notable success in critical thinking can be attributed to Michael Faraday, the physicist who discovered electromagnetic induction. Electricity is nearly ubiquitous in the modern world, and it is a resource that many now take for granted. Powering our many devices is as easy as plugging into the wall outlet. However, electricity was not always so easy to generate. Prior to Faraday, the only known ways to generate electricity were either through accumulation of charge by friction or chemically by battery [1]. Theories of induction existed, but there had been no experimental proof [1]. In 1831, Faraday designed an experiment whereby he coiled two leads of wire around either end of an iron ring [1]. He hoped to observe a steady current induced in the second wire when a battery was connected to the first[1]. Instead, he discovered that a burst of current was induced only for a brief period when the battery was either connected or disconnected[1]. Others had experimented with induction, but Faraday was the first to realize that current was induced only when the system was changed[1]. He went on to design several different experiments involving moving magnets about coils of wire, and he became the first person to generate electricity using a magnet[1]. Not all of Faraday's experiments produced the results he expected: It was only through intellectual perseverance, requiring many iterations of design, that he was able to demonstrate electromagnetic induction. Faraday's discoveries laid the groundwork for our current understanding of electromagnetism, and they gave rise to the electric motor and electric generator, devices which billions of people benefit from daily.

A notable failure in critical thinking can be attributed to Dr. Louis Slotin, a physicist who worked on the Manhattan Project. In the 1940s, scientists on the Manhattan project wanted to understand how to manipulate the rates of fission reactions to assist in the development of nuclear weapons and power sources. Dr. Otto Frisch designed an experiment whereby two masses of uranium-235 could be brought together in such a way that they would become critical for a brief instant[2]. Richard Feyman dubbed this experiment "tickling the dragon's tail" in reference to the great potential for danger if the criticality went uncontrolled[2]. On May, 21, 1946 Dr. Slotin conducted a similar experiment wherein manipulated a beryllium reflector placed on top of a plutonium core[3]. In this experiment, lowering the reflector caused the rate of the reaction to increase[3]. Normally, it was a strict rule that the reflector must be braced in a way to prevent it from dropping and causing the core to go critical, but Dr. Slotin instead braced the reflector with a screwdriver[2][3]. This circumvention of safety protocol cost Dr. Slotin his life. The screwdriver slipped, and the reflector fell onto the core, causing a critical reaction with a flash of blue light, indicating ionizing radiation[3]. Dr. Slotin instantly knocked the reflector to the core, saving the lives of his colleagues who were further away from the core, but he had already received a lethal dose of radiation[3]. Dr. Slotin failed to show intellectual humility when he chose to ignore safety protocols despite the fact that he knew the danger of the plutonium core, and his error in judgment cost him his life[2].

[1] Hirschfield, A, *The Electric Life of Michael Faraday*. Bloomsbury Publishing, 2009, pp. 113-120.

•         Added background on the availability, contrasting between today and Faraday's time

•         Elaborated on facts of Faraday's discoveries

•         Inserted references to provide evidence

•         Expanded on the conclusion regarding the impact of Faraday's discoveries

[2] Frisch, O, "The Los Alamos Experience", *New Scientist*, vol. 83, no. 1164, pp. 186-188, July, 1979.

[3] Hunner, J, *Inventing Los Alamos*. University of Oklahoma Press, 2014, pp. 118-121.

•         Added background on the criticality experiment, including its development and purpose

•         Elaborated on facts of the disaster

•         Inserted references to provide evidence

•         Expanded on the conclusion regarding Dr. Slotin's error

A critique from my post

**Marilyn Manriquez**

**RE: A remarkable success and failure example in critical thinking**

[**COLLAPSE**](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&conf_id=_669000_1&forum_id=_1340005_1&nav=discussion_board&course_id=_347312_1&message_id=_24680568_1)

Top of Form

The main purpose of this was not really given except for the title. It is mentioned a little at the end but its better said at the beginning as well. There is no citing of evidence, however you do give information essential to the issue. There is no bias which gives a clear for no assumptions. But there is no development of line of reasoning that leads to the conclusion other than the details themselves.

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A notable success in critical thinking can be attributed to Michael Faraday, a physicist who discovered electromagnetic induction. Faraday experimented with electrical conductors placed in magnetic fields, and with conductors coiled around magnets. By changing the electrical state of systems, he was able to induce currents in nearby conductors. Faraday was the first to realize that the force that resulted when an electrical system was changed was manifested in a field. Faraday demonstrated intellectual perserverance in his designs, which required many iterations to demonstrate electromagnetic induction.

A notable failure in critical thinking can be attributed to Dr. Louis Slotin, a physicist who worked on the Manhattan project. Dr. Slotin was directly involved in an infamous criticality accident in which he manually controlled a fission reaction by manipulating a beryllium reflector placed on top of a plutonium core. Dr. Slotin and several colleagues were observing how the rate of the fission reaction changed when he lowered the reflector onto the core. Normally, shims would be used to prevent the reflector from completely covering the core, but Dr. Slotin chose to remove the shims and brace the reflector with a screwdriver instead. This circumvention of safety protocol cost Dr. Slotin his life. The screwdriver slipped, and the reflector fell onto the core, causing a critical reaction. Dr. Slotin instantly knocked the reflector to the core, saving the lives of his colleagues who were further away from the core, but he had already received a lethal dose of radiation. In a futile attempt to restore safety to the situation, Dr. Slotin ordered dosimeter badges, which none of the scientists had been wearing during the experiment, to be placed on the core. This act was futile, as it was now impossible to measure how much radiation the scientists had previously been exposed to. Dr. Slotin failed to show intellectual humility when he chose to ignore safety protocols, and this error in judgement cost him his life.

Bottom of Form

Michael,

                During your analysis of Mr. Faraday’s discoveries on induction, you may need to elaborate more on the electrical theory behind inductance. You write that, “by changing the electrical state of systems, he was able to induce currents in nearby conductors”. More clarity of this key concept may be needed in order to familiarize the reader on what electrical properties Mr. Faraday changed, and what results these changes may have yielded.  Also, you wrote, “Faraday was the first to realize that the force that resulted when an electrical system was changed was manifested in a field”. It is my opinion that this statement should have included a citation in order to make the information seem more credible. How do you know he was the first? A source may add credibility to that particular claim. Towards the end of your analysis, you claim that Faraday had experimented many times to demonstrate electromagnetic induction. For added depth, you may have included some failed experiments, or listed a progression that could have led him towards his success.

During your assessment of the critical thinking failure of Dr. Slotin, I have noticed that little attention had been given to Dr. Slotin’s point of view. I understand that this was a mishap that had cost him his life and endangered the lives of his peers, but there must have been a reason for his actions. For example, why did Dr. Slotin remove the shims and brace the reflector with a screwdriver? You state that he and his colleagues were observing differences in the rate of fission when the reflector was lowered. Was he manually lifting and lowering the reflector at the time of the incident? Also, some clarity on the process of fission should be included. What is the role of the reflector in the process? Is it a shield?

PICO Framing of the CAIB Report

Through our reading of the Columbia Accident Investigation Board and the NOVA documentary on the same, It seems as though there were many underlying factors that created the environment that had overlooked the damage caused by the external tank foam. What had really shocked me was that the video reported this issue occurring on the very first shuttle flight in 1982. It was determined that after repeated success, the issue was overlooked or deemed a, "maintenance issue". In turn, an attitude of complacency had fallen over NASA, because the repeated success of the shuttle in spite of foam damage had replaced a sound engineering solution that could have prevented the foam strikes all together. Below is a PICO framing of the analysis based on information provided in the CAIB report. Below the PICO statement is an outline based off of information in the report.

If NASA managers and engineers (P) resisted an attitude of complacency created by an atmosphere of recurring successes(I) and model best safety practices of the organization after the Naval Nuclear Propulsion (Naval Reactors) program (C), how would it positively impact safety reporting?(O)

**P = Population (participants, problem, process, point of view, primary event)**

Population(management, engineers), problem(catastrophic failure, complacency), process(shuttle re-entry, take-off, safety reporting), primary event(shuttle accident)

**I = Intervention (therapy, treatment, causes or etiology, improvement, investigation, interpretation)**

Cause(Cultural issues, confusing success with sound engineering, giving in to the pressures of strict deadlines), Improvements(Using outside agencies to enforce safety, improving safety culture, ability to operate in a centralized and decentralized manner, improving communication, avoiding simplification)

**C = Comparison (Opposing arguments)**

U.S. Navy Submarine Flooding Prevention and Recovery (SUBSAFE), Naval Nuclear Propulsion (Naval Reactors) programs, and the Aerospace Corporation’s Launch Verification Process

**O = Outcome (measurement)**

Improvements in reporting and culture, the issues have been reported multiple times, but had not been seen as serious.

**Respond:**

Nicholas, I think your PICO question is excellent!  The question clearly incorporates all four components of PICO.  The P clearly defines the Who and what.  Who(Nasa Engineers and Managers) and the what(the shuttle accident, failure and safety reporting).  The I clearly defines the why(improve safety, culture and communication) and how(using outside agencies and avoid simplification).  Your comparison with SUBSAFE is very good in that SUBSAFE seems to set a standard for safety protocol, and communication.  Your outcome does show improvements in the actual reporting of issues and I would also add in prevention of shuttle accidents as well as adding in a factor that could be measured such as something related to reporting issues. They could create a way to show the effects that reporting issues in a timely manner had on prevention of problems.

Great PICO framing, you could add some reasons why you chose some of the factors.  Having read the same article, I can see why you chose everything, but to an outsider it might be less clear.  Explicitly state why you included SUBSAFE as a Comparison for example or why you included avoiding simplification in your Intervention.

Great job!

      Week Three discussion

[Collapse](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15585830_1)

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         The aqueducts of Ancient Rome exemplify successful application of quality of thought.

The aqueducts brought in water from sources far away from the city, up to 60 miles to                           Prob. The romans had to transport water great distances

supply water to baths, toilets, fountains and homes.  The aqueducts also removed waste                                                      by foot.

water from the cities to keep them clean.  The aqueducts were built with a slight                                    Info: Lets the reader see that there was a thought behind

downward slope and moved water through the use of gravity.                                                                the invention.

         The aqueducts served a purpose and solved a problem.  They answered the questions,

“How can we move water from a natural spring into our city, so we don’t have to carry water

pails anymore?” and “How can we remove waste to prevent disease and sickness?”  They                       Assump. Author is making an assumption based on

obviously based this whole idea on the concept of gravity.  If they built this transport system                                current belief with out proof this was the

at a gradual downward slope, the water would eventually make its way into the city.  It had                                 intention. Also low slope could have been

to be gradual in order to transport the water from springs that were very far away otherwise                                 other reasons.

the water wouldn’t get there.

 The Romans used data, facts and experiences to maintain this large system of aqueducts.

They had to repair cracks and holes, clear gravel and other rocks as well as calcium carbonate                  Note:Contradiction to the authors conclution

build up.  They figured the best places to set up inspection and access points and they also                     Concept

figured out that changing their pipes to lead ceramic and stone and making them shorter

allowed workers to replaced damaged pipes much more efficiently.

 This whole aqueduct system led to some very good consequences, such as clean, running                     !! This makes a good point. It explains the conclusion of

water, baths, sewage and stagnant water removal, and grand fountains to name a few.                             why the author believes the invension of the canal sys-

                                                                                                                                                                system was historic invention or technology

                                                                                                                                                           \*  implic if the author is correct then the aqueducts had

                                                                                                                                                                         many benefits

The New Orleans Levee and Canal System represents a failed, historical engineering example

and a failure to adhere to critical thinking by its engineers.  On August 29th 2005 there were                    Info/Data

over 50 failures of the levees and flood walls protecting New Orleans.  The primary cause of the                 POV. Author blames the engineer when construction

flooding was inadequate design and construction.                                                                                              was never 100%

 The levee and canal system served a purpose, to contain floods, which historical had occurred                  Info/Data

several times, in 1927 and 1965.  Congress invested a lot of money in hiring a group of

Engineers to fix this flooding problem. One major problem with the disaster in 2005 was the

project was only around 60% completed.  When the project began in 1965 it was only supposed

to take 13 years.  40 years later, in 2005 it still wasn’t completed.  The water destroyed flood walls           Note:Possible contradiction if the project was incomplete

and also caused erosion of the levee walls built into the Earth, both of which were considered design                  Engineering may have not been the issue at heart

flaws.  This slow process coupled with design flaws, led to the label as “the worst engineering                    Implic: If the author is correct it implies this title to the

catastrophe in US history.”                                                                                                                                  event

Part II

The aqueducts of the roman emplire were an important technology. They improved the lifestyle and health of the population of Rome.

The New Orleans Levee Failure was a catastraphe that could have been avoided. Many design flaws and lack of completion lead to the complete failure.

In both articles it was well stated that there was a problem to solve. In the roman situation the problem was focused on only the primary question of why this

was an important invention. With the New Orleans Levee's I felt the point was lost when the author mentioned issues about construction and completeness.

When something is incomplete it makes a poor case for any situation since you can't blame construction since it may not have been them who was delaying

constuction. In the same manner we cannot be lead to believe the engineer since proof can only come from a completed design. Maybe other points could have

been made that better explain why the engineers were to blame.

In the first article the evidence is lacking but the line of reason is straight forward and sticks to the point. The line of reasonning is well supported. I do not thing

it shows too much sensitivity to points view since it makes some assumptions out of the eveidence which look more like opinion than fact. With the data

provided the author does provide a logical conclusion. In the second article we are given many data points which appear to be correct but the line of reasoning is

not clear. The claims of engineering issues is not supported, whereas the construction issues were evident as well as possible bureaucracy. So the author failed

to be clear as to the engineering issue. Evidence also shows that the author was biased to the issue which makes it insensitive to different POV. As such the

point of the article is not well supported, since the logical conclusion is not supported.

Part III

Eplination of issues

Roman issue                      New Orleans Article

2                                       2

Evidence

1.5                                      2

Conclusion

3                                       1

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An Engineering Success:

There have been many successes in engineering quality of thought and ingenuity throughout history. These achievements have led to great innovations and new technologies, but have also brought the world great wonders and mysteries[[M1]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_1) . One such achievement and example of great critical thinking is that of the Great Pyramids in Egypt. These structures not only baffled people [[M2]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_2) for centuries with their immense designs and grandiose scale, but to this day are still considered an impressive feat compared to modern standards[[M3]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_3) .

What is so impressive? Not only are these structures still intact[[M4]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_4) , but it has been debated [[M5]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_5) for many, many years on their methods of construction. It is impressive alone to create such grand structures that remain in the most part whole, but to create such mystery as to how they were created no doubt invokes a sense of wonder[[M6]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_6) . The techniques and methods of transporting materials the ancient Egyptian engineers utilized have often been speculated and tested, with many different theories arising through years of study. Throughout my lifetime, I’ve heard of many different theories of the construction techniques[[M7]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_7) , but now the main theory [[M8]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_8) suggests the use of sleds to haul the rock over sand, using water to stiffen the sand allowing the sleds to glide easier.

It is remarkable[[M9]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_9)  to think of the skill and thought[[M10]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_10)  needed to use the math and engineering concepts used in the building of the pyramids with the aid of modern technology. One such aspect of our thought processes in modern times was evident in many of the theories suggested. The tendency to overthink and over-engineer[[M11]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_11)  can be quite easy today with material and technology more readily available. Explanations[[M12]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_12)  for how the pyramids were built could and where often more complicated than needed,[[M13]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_13)  with some examples using countless numbers of human labor for material transportation and slingshots to project material higher on top of the pyramid. This compared to sleds and water.

**Paraphrase of the Great Pyramids engineering success:**

**The Great Pyramids are impressive monuments that have stood the test of time. These structures would be difficult to build even with modern technology, which makes their construction with ancient technology even more impressive. Though it is easy to speculate about spectacular construction and engineering methods that may have been possible, it is most likely that the construction methods were quite simple.**

The main purpose of this passage is to discuss the construction techniques used to build the Great Pyramids. The author injects some of their own sense of wonder into the discussion.

There is no direct evidence cited aside from an anecdote about the different theories about the construction that have been offered over the author's lifetime.

There is no reasoning offered for the conclusions given.

The author recognizes competing theories regarding the construction, but dismisses them without providing evidence against them.

The author concludes that the construction techniques were most likely simple, but doesn't give evidence in support of that claim.

**Explanation of Issues - 1**

**Evidence - 0**

**Conclusions - 1**

An Engineering Failure:

On July 17, 1981, the second and fourth floor walkways of the Hyatt Regency Hotel in Kansas City, Mo collapsed[[M14]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_14) , falling upon a party being held in the hotel lobby below. 144 people were killed, with over 200 more injured. The failure was caused by many factors in conjunction with the actual structural failure that caused the collapse[[M15]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_15) .

The investigation into the disaster revealed many instances of critical thinking failures and poor organizational practices. While the hotel was still in construction, the roof of the hotel atrium collapsed due to failures of the roof connections[[M16]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_16) . The engineering firm associated with the project had requested to be present during construction, but the request was ignored by the hotel owning corporation in order to avoid additional costs[[M17]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_17) . The original walkways engineering design was also modified by the fabricators, a change that led to the collapse [[M18]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_18) and a change the fabricators say was communicated to the engineering firm and approved. That alleged approval was denied by the engineering firm.

Whether the design change was approved or not, the result was disastrous. The original design only allotted for 60% of the minimum load per Kansas City code anyway, having the second floor walkway connecting to the ceiling via rods, and the fourth floor walkway supported by beams.  However, the change made by the fabricating contractor resulted in only 30% of the minimum load capacity, having the fourth floor beams supporting the fourth and second floor walkways, with the second floor walkway hanging from fourth floor walkway by the rods. Both the original design and modified design called for bolts at the beams’ welded point, further weakening the structure[[M19]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_19) .

Compounded by negligence of both the engineering firm and fabricating contractor, the design was flawed and doomed from the start[[M20]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_20) . Failures and problems during the construction of the hotel should have indicated a failed process, but professionalism was lacking on both sides[[M21]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_21) . Poor communication was also a factor. The fabricators, concerned by the design, should have done a better job of indicating the dissatisfaction with the engineering firm, and the engineering firm should have made itself more accessible[[M22]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_22) . This would have also been easier to accomplish it the hotel owning corporation would have placed more emphasis on safety rather than money, and had allowed the engineering firm to oversee critical construction processes. There was no indication that anyone involved tried to think of the ramifications of each action[[M23]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1" \l "_msocom_23) , and there was certainly no indication that critical thinking skills were employed.

**Paraphrase of Hyatt Regency Engineering Failure:**

**The 2nd and 4th floor walkways of the Hyatt Regency Hotel in Kansas City collapsed due to poor planning and a lack of communication among the engineering and construction teams and the project management. The engineering of the walkways did not meet minimum safety requirements, and  changes made to the construction plans compounded this error, causing a catastrophic failure. Proper communication and an emphasis on safety would have made this disaster easier to avert.**

The author clearly states that several factors contributed to the failure of the walkways. The author seems mostly unbiased, but towards the end assumes that no actor made any attempts to rectify the situation.

The author gives many facts that are directly related to the discussion.

The author reasons that the two main design flaws might have caused the failure on their own, so the combination of the two compounded to overcome any safety precautions that were in place. This reasoning is supported by the evidence given.

The author does discuss the two belligerent viewpoints regarding the fabrication change and the management's perspective of valuing money over the engineering team's presence at the construction site.

The author logically concludes that several factors together caused the failure, but he assumes that no actor on either side made any attempt to solve the problem during the construction phase.

**Explanation of Issues - 2**

**Evidence - 2**

**Conclusions - 2**

 [[M1]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_1)Premise- The construction of the Great Pyramids was a great and wonderful achievement.

 [[M2]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_2)Problem- How were the Pyramids constructed?

 [[M3]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_3)Conclusion- Is there evidence for this claim?

 [[M4]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_4)When were the Pyramids built? Are there older structures that are still intact? Where do they rank in terms of size?

 [[M5]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_5)Debated by whom?

 [[M6]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_6)POV

 [[M7]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_7)POV- anecdote

 [[M8]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_8)Whose theory? What evidence is there that this is the most accepted theory?

 [[M9]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_9)POV

 [[M10]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_10)Is it known what sort of planning went in to the construction of the Pyramids?

 [[M11]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_11)Conclusion- Today's engineers tend to overthink and over-engineer.

 [[M12]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_12)Whose? Is there evidence against these claims?

 [[M13]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_13)Assumption- The construction methods of the Pyramids were simpler than many people think.

 [[M14]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_14)Problem

 [[M15]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_15)Premise- The structural failure was inevitable due to the following factors, indicating systematic failures in critical thinking

 [[M16]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_16)Assumption- The roof collapse is related to the walkway collapse. Used as evidence of systematic critical thinking failure.

 [[M17]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_17)Assumption- The presence of the engineering firm would have increased safety. Used as evidence that money was valued higher than safety.

 [[M18]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_18)Is there evidence that this change is the primary cause of the collapse?

Where in the structure did the failure occur?

 [[M20]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_20)Conclusion- Compounding errors made by both teams caused the failure.

 [[M21]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_21)POV

 [[M22]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_22)I thought the engineering firm requested to be present during construction.

 [[M23]](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_942679_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15595192_1#_msoanchor_23)Assumption

 Improved Success and Failure Argument

[Collapse](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_946062_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15707309_1)

Top of Form

            Many instrumental creations had influenced the development of industry in the 20th century, but few had been such an enormous success of critical thinking and quality thought in engineering as the programmable industrial robot. Patented by George Charles Devol Jr. in 1961 [1], the programmable robot had since benefitted companies and employees alike through both making manufacturing facilities safer and more efficient.

            The industrial robot had undoubtedly increased safety in the workplace because it had removed the workers from hazardous materials, and decreased the injuries accrued on the job from menial repetitive tasks.  Sound critical thinking was employed by the designer, Mr. Devol, when he had taken into account the points of view of factory employees during his design. Devol envisioned the handling of dangerous materials and the execution of dangerous tasks being handled by his robots [1]. As a matter of fact, the very roots of robotics are derived from the teleoperator, a device composed of mechanical linkages that had separated its operator from hazardous radioactive materials [6]. It has been argued that the inclusion of robotics and other advanced automation has created a negative impact for manufacturing employees and the workforce as a whole [5]. Devol’s first robot, the Unimate, delivered to General Motors in 1961, had been unpopular with employees fearing that they had been replaced by machines [1]. These fears are unfounded as successful integration of robotics only replaces the repetitive processes employees would normally perform. These same employees could have the potential to increase their skills and receive training to supervise the installed robotic systems instead of perform the actions the robot has undertaken [2].

            Aside from the obvious improvements to worker safety, the successful implementation of industrial robots can greatly increase manufacturing efficiency. One of the primary means of achieving higher efficiency over previous forms of automation is increased versatility. Higher versatility of the robot is apparent in the many applications it could be used for. Retooling and reprogramming the same robot for a different application is much faster and much more cost efficient than buying an entire new automated machine for each application. The versatility of the industrial robot was strategized at its very inception. Devol noted that existing manufacturing methods that had made tons of machinery obsolete due to product design changes, “seemed wasteful and no way to run a business”.[1] Some would argue that the relatively high cost of installing, setting up and starting up a new industrial robot would raise production costs enough to offset any increase in output[2]. This is true in the short term, and could very well be true long term if existing employees are not willing to become educated on their new, ‘tool’ and embrace the potential that it brings to their facility. However, well planned and successful integration of robots in the workplace that require the properly trained personnel in optimized roles to support the robotic lines can definitely make a positive impact on efficiency [2].

* •         Structured argument more clearly, including multiple claims, reasons to support claims, evidence, and acknowledgements of contrasting points to each claim.
* •         As suggested in the mark-up, used more detail of the design process (as far as the inventors ideals that were incorporated into the design).
* •         Made efforts to add reasons and evidence supporting why robots performing tasks would be a better choice than people.
* •         Considered people’s points of view about robots potentially taking their jobs.
* •         Had more credible sources as evidence (scholarly journals, etc.)

[1]   L. A. Ballard, *et al.*, “George Charles Devol, Jr. [History],” *IEEE Robotics Automation Magazine*, vol. 19, no. 3, pp. 114–119, Sep. 2012.

[2]   G. Carro Fernandez, *et al.* “Robotics, the New Industrial Revolution,” *IEEE Technology and Society Magazine*, vol. 31, no. 2, pp. 51–58, Summer 2012.

[5]   B. P. KRUGMAN, “Robots And Robber Barons,” *The New York Times*, p. 27, 10-Dec-2012.

[6]   R. Paul, “Robots, Models, and Automation,” *Computer*, vol. 12, no. 7, pp. 19–27, Jul. 1979.

            Many engineering setbacks throughout history have often resulted from a type of ‘perfect storm’ resulting from multiple failures that could be design related, material related, process related, etc. The mass recalls of millions of vehicles manufactured by the Toyota Motor Company from 2009 to 2011 is an example of critical thinking failures in different departments through different stages of development. Failures in the development and design of complex sensory equipment such as accelerator pedal position sensors (APPS) and failures of management properly mitigating risks and supervising processes have contributed greatly to the largest failure to arguably one of the greatest manufacturing companies on the planet.

            In an industry that is steadily employing new technologies; proper understanding of these technologies is paramount in the proper design and development of a quality product. When the average automobile today has over 60 engine control modules (ECM’s) and 10 million lines of code involved in the software that operates them [3], sensory information and electronic device quality is extremely important. Toyota had failed to properly test and design accelerator pedal position sensors because the discovery of defects such as ‘tin whiskers’ has become reasoning to recall vehicles due to quality and safety concerns. Upon close inspection of the accelerator pedal position sensor, it had been determined that there was a consistent formation of conductive strands of material known as ‘tin whiskers’[7]. These strands are known to cause electronic failure when they contact other conductors in the circuits and short them out [7].

            Other failures in critical thinking can squarely be blamed on Toyota’s management. The main fault of Toyota’s management during the period that created the defective vehicles was creating a complacent culture that was satisfied with its current quality and refused to implement more strict quality controls. The issue was, in part, due to the simple lack of managerial resources as part of a push to overtake General Motors as the world’s largest automaker [4]. Without sufficient management that was regularly involved in the manufacturing process, quality could have ‘slipped’ unnoticed. On the matter of complacency, the attitude among the highest level of management and engineers was that the company had already achieved quality ‘nirvana’ [4]. This corporate culture of complacency was evident in 2009 when a special committee tasked with upholding strict quality practices was disbanded [3]. The reasoning behind this change was that the task force was considered redundant because quality control was already present in all of Toyota’s processes and thus, ‘part of the company’s DNA’ [3].

* •         Included more technical elements of specific failures such as the tin whiskers found in the APPS.
* •         Better structure throughout the argument (Claims, reasons, evidence, etc.)
* •         Much more reliable and relevant sources (journal articles, peer reviewed, technical papers)
* •         Much more breadth and depth added to claims.

[3]   R. E. Cole, “What Really Happened to Toyota?,” *MIT Sloan Management Review*, vol. 52, no. 4, pp. 29–35, Summer 2011.

[4]   M. A. Cusumano, “Reflections on the Toyota Debacle,” *Commun. ACM*, vol. 54, no. 1, pp. 33–35, Jan. 2011.

[7]   B. Sood, *et al.*, “Tin whisker analysis of Toyota’s electronic throttle controls,” *Circuit World*, vol. 37, no. 3, pp. 4–9, 2011.

A phenomenon that has seemed to cross social and economic barriers over the past quarter century has been the vast proliferation of technology, more specifically, personal computers. Personal computers had boomed in popularity in the United States in the 1980’s, but in developing countries, they have been seen more as a novelty than a necessity. In 1996, the total number of computers worldwide had equaled approximately 300 million, with 100 million of them belonging to the United States [1]. This is something that seemed commonplace in America, in a ‘first world’ country, but what about developing nations?

In Ethiopia, there had been a push to close the ‘digital divide’ through the implementation of education an awareness programs over the last decade. As A. L. Gebretsadik writes, “in Ethiopia a number of public and private schools, colleges, and universities have started relevant programs, such as in information systems, computer science, and computer engineering; some even offer specialized training, such as in data communication and networking. Besides, observations indicate that a large number of freshmen in the country are interested in studying electrical, electronic, communications, computer, telecommunications, and software engineering and/or technology.”[2] It can be assumed that the desire of achieving technological competence can be associated with a necessity to utilize technology such as computers to interact on the global scale. If we reference figure 1-1, we see that Ethiopia stays relatively ‘poor’ over the period of 1998-2006, but the number of computers still increases exponentially.

[1]     E. Juliussen, “Computers,” *IEEE Spectrum*, vol. 34, no. 1, pp. 49–54, Jan. 1997.

[2]     A. L. Gebretsadik, “Computer communications in developing countries,” *IEEE Communications Magazine*, vol. 43, no. 3, pp. 1–4, Mar. 2005.

Bottom of Form

While I agree that a high driver for nations acquiring computers and technology is so that they can compete and interact on the global setting, I also believe much of this has to do with the cost and aid. As you stated in regards to Ethiopia implementing more tech-focused higher education programs, I would say that much of that is possible through lowered cost of technology and aid from other countries. As an example from my own past, my first computer was priced over $2000 dollars and didn’t even have a GB worth of hard drive space; and that was the late 90s. Now computers with much more power and capability can be purchased today at a lower comparable price than in the past [1], [2]. So basically, since the cost of technology is much lower than it once was, more and more affordable computers can now be purchased by the people. As you can see in Figure 1-1 above, the number of computers in total by nation increases as the people in the nation becomes wealthier.

As I mentioned before, initiatives have also been taken by many countries to aid in the supply of computers to tech-limited countries [3]. Many of these low-income countries have taken advantage of this by starting computer literacy programs and teaching the educators on how to use technology in the classroom [4]. As technology education increases, I can see more and more interest in the field, as you stated before. So with low cost, plus aid, plus interest in the field, I can certainly believe an upward trend in the number of total computers in a country.

References

[1] BLS. (2013). *Recent Price Trends in the Computer & Peripheral Industry*. [Online]. Available: http://www.bls.gov/mxp/computer.pdf

[2] M. Perry. (2009). *Computer Prices Have Fallen By 90% Over the Last Ten Years: Is That Evidence of Monopoly Power?* Washington Post. [Online]. Available: http://wallstreetpit.com/4300-computer-prices-have-fallen-by-90-over-the-last-ten-years-is-that-evidence-of-monopoly-power/

[3] Computer aid reaches key milestone. (2012). Appropriate Technology, vol. 39(2), pp. 45-47. [Online]. Available: http://login.ezproxy1.lib.asu.edu/login?url=http://search.proquest.com/docview/1029864461?accountid=4485

[4] E. Gaible and M. Burns. (2005). Using Technology to Train Teachers: Appropriate   Uses of ICT for Teacher Professional Development in Developing Countries. [Online]. Available: http://www.infodev.org/infodev-files/resource/InfodevDocuments\_13.pdf

Child Mortality V Food Supply for US and Mali

Top of Form

There appears an interesting correlation, and perhaps also causation, between the available food supply per person and the rate of child mortality for children five years and younger. Shown below [Figure 1] a similar trend through history can be seen between two largely different countries; The United States of America and Mali.

Child Mortality V Food Supply for US and Mali  
When we look at the overall movement of these two countries through history, we see that the mortality rate of children from ages zero to five drops continuously as the amount of available food increases per person.  
 When looking specifically at the earlier years in the Mali timeline, several spikes can be seen in food supply. Two of the largest causes of this lack in food that can be seen comes from the Sahel Drought, which lasted from 1968 to 1974, and a rise in overall temperature of almost 0.8 degrees celcius for the region [1]. Both of these factors have caused sporadic increases and decreases of a considerable amount in food production for the region. This increase in temperature and the drying of vital lakes has been seen to increase the length of droughts and hinder recovery from them [1].  Mali's once largest lake -Lake Faguibine- has dried so badly that it has slowed and almost entirely stopped fishing, livestock herding, and agriculture in the region [2].

The later half of the Mali timeline follows more similarly to the United States, with a fairly continuous slope downward in child deaths as food becomes more available to each person and more drought resistant styles of agriculture have emerged. This is also not to show that food availability is the only cause for this change; Food assistance from foreign countries, as well as medical aid and practices have surely made a large difference as they have become more available to poorer regions in the world. However, despite these aids the rate of change in child death is still relatively similar between one of the richest and poorest countries in the world.

References:

[1] U.S. Geological Survey, 'A Climate Trend Analysis of Mali', 2012. [Online] Available: http://pubs.usgs.gov/fs/2012/3105/fs2012-3105.pdf  
[2] U.S. Geological Survey, 'Drying of Lake Faguibine, Mali', Earthobservatory.nasa.gov, 2015. [Online]. Available: <http://earthobservatory.nasa.gov/IOTD/view.php?id=8991>.

While there is clearly some correlation between food supply and child mortaility, I do not believe that you can claim causation for a number of reasons. Firstly and most importantly, this conclusion ignores the effects of public health on child mortality. Unfortunately, Gapminder does not have consistent number on infectious disease deaths, but infectious disease currently accounts for over 50% of deaths in Africa, compared with less than 10% in the United States[1]. Secondly, the model of food supply vs. child mortaility does not seem to account for the stagnation of child mortality in Mali during the Sahel Drought. During this time, the food supply varied widely, but child mortality stayed steady.

Using Gapminder to graph income per person vs. child mortaility, we see a much stronger relationship over time. There are a number of possible explanations for this. The first to mind is that greater income allows greater access to food through purchasing power, which explains the correlation between food supply and child mortality. However, income also correlates with a greater access to healthcare and sanitation and lower rates of death from infectious disease. The difference in income between the United States and Mali explains the large difference between deaths from infectious disease between those two countries.

Indeed, the World Health Organization comes to the same conclusion. "Across the world, children are at a higher risk of dying if they are poor. The most impressive declines in child mortality have occurred in developing countries ... whose economic situation has improved. ... There are significant differences in child mortality risks in all countries[1]."

[1] World Health Organization, *The World Health Report 2003*. World Health Organization, 2003.

**Week 6:** Henry's Daughters

Top of Form

The most severe ethical issues I had observed while viewing Henry’s Daughters are as follows:

The dissemination of private and proprietary information between Henry’s two daughters, Laura and Julie.

The lack of respect for public privacy in allowing the state police to obtain biometric data collected during the project that could potentially be used to track and ‘spy’ on the public.

The intellectual theft that had occurred when Julie’s boss had used the simulation program she had created (and also stole from GUIDEME) for his PhD dissertation.

Using influence to solicit government aid in procuring contracts when Henry had taken Senator Bob out fishing and pitched the entire project to him.

In order from most to least severe or critical, I would list the ethical issues I had noticed as follows:

-Potentially harming the public through violating their right to privacy

-Receiving contracts unethically through influencing the Senator.

-Intellectual theft

-Leaking sensitive proprietary information

Henry’s Perspective

                It’s my opinion that Henry should burden the majority of the responsibility since he had started the entire chain of events. The biggest specific ethical issue Henry faces coincides directly with Section II, article 4, item (a) of the NSPE Code of Ethics for engineers.  This item addresses conflicts of interest. As a part time lobbyist, I believe that Henry should do a better job keeping his political affiliations separate from his engineering endeavors.  Henry should consider retiring permanently as a professional engineer if he wants to continue with his political ventures. If he needed guidance, I would assume that Henry should consult with some peers to gain perspective of whether or not he is behaving ethically.

Laura’s Perspective

                Laura was put in a really bad spot by her father. Laura’s biggest ethical issue was her failure to report to the proper authorities that she understood the ‘contest’ and the awarding of the contracts was rigged. The Senator hints at that during the ethics hearing, but it was her responsibility as the project manager and a professional engineer. Laura should have shown some courage and reported the violation as soon as it was made clear to her. I would guess that normally, she would want to seek guidance from her father… but his moral compass isn’t exactly on point. Her boss, Jack doesn’t seem so ethical either. She could probably contact the NSPE and report her concerns, they could more than likely aid her in contacting the appropriate authority.

Julie’s Perspective

                Outside of the burdens of responsibility and political involvement lie Julie, the most junior in terms of experience. Julie’s ethical issue is completely self-inflicted. During seemingly innocent chatter between her and her sister, Julie gains knowledge of a computer simulation used in the rival’s design. She then uses this information to create a similar system for her own team. I would have changed Julie’s decision to incorporate technology that is similar to the rival and found a different solution to the specific technical problem at hand. I would have also informed my boss that the knowledge I obtained, was obtained unethically and should not be published in his dissertation.  Guidance should have been sought from more experienced engineers in the firm that were not involved in the current project at hand.

Responsible Party’s Perspective

Organizational culture could have been improved through periodic training of the employees on topics such as ethics and proper ethical behavior. The process would involve all employees making awareness an ‘all hands’ activity and I would also initiate an anonymous reporting system where employees could safely report unethical behavior.  New policies would be communicated to employees during mandatory training and initial hiring. Affidavits would be signed acknowledging the understanding of such policies. Clients would be informed in the contract about the ethics policies held by the organization. The public would be informed through press releases and advertisements.

I found the following NSPE codes applicable to the case:

I. Fundamental Canons

•  Avoid deceptive acts.

•  Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.

II. Rules of Practice

4. Engineers shall act for each employer or client as faithful agents or trustees.

1. Engineers shall disclose all known or potential conflicts of interest that could influence or appear to influence their judgment or the quality of their services.
2. Engineers shall not accept compensation, financial or otherwise, from more than one party for services on the same project, or for services pertaining to the same project, unless the circumstances are fully disclosed and agreed to by all interested parties.
3. Engineers shall not solicit or accept financial or other valuable consideration, directly or indirectly, from outside agents in connection with the work for which they are responsible.

III. Professional Obligations

4. Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve.

1. Engineers shall not, without the consent of all interested parties, promote or arrange for new employment or practice in connection with a specific project for which the engineer has gained particular and specialized knowledge.
2. Engineers shall not, without the consent of all interested parties, participate in or represent an adversary interest in connection with a specific project or proceeding in which the engineer has gained particular specialized knowledge on behalf of a former client or employer.

5. Engineers shall not be influenced in their professional duties by conflicting interests.

1. Engineers shall not accept financial or other considerations, including free engineering designs, from material or equipment suppliers for specifying their product.
2. Engineers shall not accept commissions or allowances, directly or indirectly, from contractors or other parties dealing with clients or employers of the engineer in connection with work for which the engineer is responsible.

9.  Engineers shall give credit for engineering work to those to whom credit is due, and will recognize the proprietary interests of others. - See more at:

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**Respond**

In this case, Julie would be the easiest to defend in court from an ethical point of view. The lists of ethical issues for Henry and Laura are fairly long. Henry had fixed a competition, as well as used his position and his companies to his advantage to make money in an unethical way. Laura most prominantly let a large amount of information slip - as it pertains to what her team was doing-, knew the outcome was fixed from the start of the competition.

It could be argued that Julie has made mistakes that some young doe-eyed engineers make when they hit the business world. They tend to talk up their work and misrepresent it in the process. Her will to succeed, as well as impress her father and sister would have had a direct amplifying affect on this, but the idea behind the software system that Julie decided to build off of accidentally shared information is in some ways unethical, but not illegal. Julie built this system off of her own knowledge, and put the work in to build it. As far as we know there was no proprietary information utilized, it was done by her own merrits. In fact, with Software Engineering there are thousands of ways to solve the same problem, and the odds are she took an entirely different approach in her work to realize this software. Idea's can't be copyrighted, only their implementation can be, and this information was not divulged, or probably even known by Laura. Think of it like competing programs such as Google Docs and Microsoft Word. Two different approaches to one idea that do the same thing - they allow formatting and sharing of text documents.

Week 7 Discussion

Running head:  AN EXAMPLE OF FALLACIES USED IN PUBLIC PERSUASION

**An Example of Fallacies Used in Public Persuasion.**

**Hieu Pham**

**Arizona State University**

**Author Note**

**This paper is prepared for week 7 of Engineering 104, Spring 2015, taught by Professor Ruddell.Abstract**

Human life cycle begins with birth, followed by aging, and then by illness, and death as the final stage. During this life cycle we “fear of very present dangers,” [Bikkhu, 1999]. The worst danger of all is death. For this reason, methods were proposed to provide a peaceful, dignified, and medically controlled death to the terminally ill patients.

These methods are part of euthanasia, which is the “act or practice of killing hopelessly sick or injured individuals (as persons or domestic animals) in a relatively painless way for reasons of mercy,” [Merriam-Webster, 2014]. Over the years the medical community had tried to educate both the government and the public about new medical interventions which “have shaped the dying process, giving us options that can impact when, where and how we die,” [Ache.org, 1994].

Many people, including medical professional found euthanasia inhumane because the act contradicts the pledge to save lives which medical professionals uphold at all time. However, there is a fine line between medical professional pledge and the patients’ preferences to their painless end-of-life approach that raised many questions and concerns worth debating. A few arguments techniques were used in this topic that will be the main focus of this paper to identify and analyze them.

**An Example of Fallacies Used in Public Persuasion**

**A Logical Fallacy**

As stated in the American Medical Association Code of Medical Ethics, “Euthanasia is the administration of a lethal agent by another person to a patient for the purpose of relieving the patient’s intolerable and incurable suffering,” [AMA-ASSN.org, 1994]. The result of this administration is a controlled death that remove intolerable pain from a living human. This act is consistent with the definition of homicide defined in our judicial system. However, through *Argumentum ad logicam* fallacy, our judicial system allowed some form of homicide to be excusable from others. For example, euthanasia administered as a criminal punishment is judicially tolerable regardless of the health of the criminal (who may or may not have a terminal illness) at the time of the execution, whereas, the same act is judicially inexcusable when carried out by a doctor in response to the request of a painfully dying patient. There seems to be an interval of “excusability” justifiable by law, similar to that in mathematic where there exists an interval of integrability. The question is why one form is judicially justifiable and all others are not although both forms are ethically incorrect.

**A Sophistry Fallacy**

The American Medical Association members believe that doctors must respect “the principle of patient autonomy”, [AMA-ASSN.org, 1994]. Nonetheless, there was a dilemma in one case where a patient who was terminally ill with amyotrophic lateral sclerosis (ALS) disease and became respirator dependent without hope for recovery. The patient persistently requested to be extubated and allowed to die, if the physician honored her request by allowing her to die, is the doctor a murderer?

And then, if this patient has a greedy relative who anxiously wants his or her mother to die to avoid dissipation of his or her inheritance by a long hospitalization, that relative enters the patient’s room while she was sedated, extubates her, and she dies. When the hospital staff discovers what the relative has done and confronted the relative, he or she replies, “I didn’t kill her, I merely allowed her to die. It was her ALS disease that caused her death.” This is a transparent sophistry because the relative deliberately killed his or her mother. However, why would it be a criminal act when the relative did the same thing the doctor would have done in honoring the patient’s request?

**To be fallacious or not to be fallacious, that is the question.**

In a heated debate like this one, there are ethical reasons to persuade the audience to be fair to both the patients and the doctors. However, it was unfortunate that the definition of homicide was too binary that only justified the act when punishing criminal by members of the judicial system. Because of this binary nature, doctors who perform euthanasia are classified as murderers although what they did was respectful despite the end result. The laws must be revised to take into account the suffering that terminally ill patients endure and provide exceptions as needed. Sometime an inhumane act is the most humane one.

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Respond

RE: AN EXAMPLE OF FALLACIES USED IN PUBLIC PERSUASION

[Collapse](https://myasucourses.asu.edu/webapps/discussionboard/do/message?action=list_messages&forum_id=_946197_1&group_id=_268979_1&nav=group_forum&conf_id=_529374_1&course_id=_296601_1&message_id=_15953739_1)

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I agree that equating euthanasia with homicide is a fallacy of oversimplification. The acts of murder and manslaughter are each distinct from euthanasia. For this reason, many jurisdictions have recently adopted laws that allow euthanasia, while many others persist in their prohibition of the act.

However, the analogy between euthanasia and execution is a poor one. Using the AMA definition of euthanasia, it is the "the administration of a lethal agent by another person to a patient for the purpose of relieving the patient’s intolerable and incurable suffering." Execution does not meet this definition because it is not used for the purpose of relieving suffering. The methods of execution are indeed meant to be relatively painless, but this is to avoid what may be seen as cruel punishment. Furthermore, the act of euthanasia is usually done according to the desires of the individual, while execution is usually done against the individual's will. This is not to comment on whether execution is a moral practice, but to compare the two practice is conflating two very different things.

You go on to give an example about a patient with ALS who desires to be extubated and allowed to die. This is also a poor analogy because it refers to a different ethical dilemma. Referring back to the AMA defintion, this situation does not qualify as euthanasia because no lethal agent is administered. In fact, refusing medical treatment to be allowed to die is a common practice in most jurisdictions. Patients or their guardians may give "do not resussitate" orders if they wish to die. However, the proper legal permission and due process must be followed. If a relative were to remove the feeding tube without permission from the patient, a medical doctor, or the proper legal authority, the act would be considered homicide.

A famous example of this type of case was that of Terri Schiavo. She was in a persistent vegitative state and effectively brain dead for over 8 years before her husband asked for her feeding tube to be removed. His request was granted by a local judge, and the validity of this decision was upheld by the US Supreme Court. Despite the protests of Terri's family, Michael Schiavo had custody over Terri and he had the legal right to make the decision with her doctors to remove her feeding tube to allow her to die. Jeb Bush, Florida's governor at the time, attempted to overrule the judge, but this action was reversed by a second decision of the US Supreme Court.

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Alisha Hannan

Successful:

Early submarines could only stay submerged for a few days at slow speeds and a few hours at top speed.  The nuclear submarine extended that time frame to a few months.  The first working submarine built by Dutch inventor Cornelis Drebbel used eight wooden oars to propel under water.  The concept of filling bags of water to lower the submarine and ejecting water from the bags to raise the submarine was introduced by an unknown inventor in 1747.  During the nineteenth century, submarine research had progressed.  Submarines once propelled by hand-operated propellers began using steam engines, gasoline engines, and electric motors. Under the direction of Hyman Rickover, American inventors Ross Gunn and Philip Abelson designed the first nuclear submarine, the Nautilus.  These nuclear submarines were able to carry missiles  and nuclear warheads.  Research began for submarines to attach mine to the bottom warships, but the project was soon abandoned.  Following the partnership of Fulton and Robert Livingston, the steam-powered vessel Clermont was launched.

Requirements

There are three parts of this assignment. Include all three parts in a single post in the Module 3 Post forum.

1. Copy a classmate's forum post from the "Module 2 Post and Reply A: Historical Example" assignment. Apply close reading to the post, and mark it up using markings of your own or those suggested on p 17, "Marking and Abbreviations" in *How to Read a Paragraph*. One way to do this is to quote the text you are commenting on, then on the following line make your comment. For example:  
     
   "This is a strong conclusion based on my evidence."  
   I disagree for the following reason: ...  
     
   Create a new thread in the Module 3 forum that contains your classmate's post with your markup and comments; don't forget to include Parts 2 and 3 below before submitting the thread.
2. Summarize each historic example in your classmate's post by stating the main point in one or two sentences based on the information in the post. In addition, analyze their work based on the Elements of Thought by answering the following questions:
   1. Is the main purpose and the key questions well stated? Are they clear and unbiased?
   2. Does the writer cite relevant evidence, experiences, and/or information essential to the issue?
   3. Does the writer develop a definite line of reasoning, explaining well how he or she is arriving at his or her conclusions?
   4. Is the writer's reasoning well-supported?
   5. Does the writer show sensitivity to alternative points of view or lines of reasoning?
   6. Does the writer provide a logical conclusion with the information provided?
3. Using the rubric in Table 1, assess the level of performance for the three criteria.  List the criteria and include a number for each; for example,
   1. Explanation of issues: 3
   2. Evidence: 2
   3. Conclusions: 2

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