

**ASSIGNMENT: CONTRIBUTE TO THE
NATIONAL DAY ON WRITING!!!**

DUE DATE: OCTOBER 19TH – MONDAY BY 9AM

As a class we will be contributing a document to the National Archive for the NATIONAL DAY ON WRITING. Which is October 20th.

Your task is to choose your favorite topic from this class – either the lecture or the lab – and prepare an approximately 1/3 to 1/2 page piece of writing about that topic. This writing could be of any genre – essay, conversation, interview, story, poem – it must be original so no references are required!

For instance, maybe you really like the Bohr model of the atom. Perhaps you could imagine yourself being Mr. Bohr at the moment you realized that the H spectra was really a great picture of what an atom looks like. Write a fictional diary entry that Mr. Bohr might have written on that day.

Perhaps the photo-voltaic effect is your favorite. You could compose a poem celebrating the award of the Nobel Prize for Physics to Mr. Einstein.

How about data compression? You could write an essay about the strange connection between data compression and encoding and its effect on communications in sub-Saharan Africa.

It is up to you – please be as creative as you want to be!!

Submit your writing to me by 9am on 10/19 – I will create a single document and submit it for our class and be sure that everyone has a copy.

Rick Sheperd

There once was a man from Peru,
Who wanted LEDs that were blue.
Due to droop, they were bad,
And that made him sad
So he asked students in Electronics 2.

He said, "What's the problem here?
Why does my efficiency disappear?
When currents are high,
It brings a tear to my eye.
A solution, there is none, I fear."

The students all knew what to do.
To books and the web they all flew.
They looked all day long
To put right this wrong
An answer exists they all knew.

Michael Giannettino

Harry, the Great Hippity-Hoppity Hole

In the world of electrons, there exists a small species known as holes. These holes are a very happy group, and they love to run around. The electrons, on the other hand, are a terrible race and they love to pick on the holes. Every day, the electrons host races in the infamous arena known as The Atom. The holes are allowed to race but because the holes are so greatly outnumbered by the electrons, the electrons always team up against the holes and kick them out of the arena. Even though they are greatly outnumbered by the electrons, every day the holes continue to try and win a race because they love to run. One day, Harry, a hole outcast from society because he liked to hop instead of run, snuck into The Atom and joined in on the great race. Once the race began the electrons did as they had always done and teamed up against the holes. All of the holes were eliminated except for Harry. Miraculously, Harry was able to survive by hopping over the electrons. He would leapfrog over one electron after another until he came to the finish line. All the holes now cheering on Harry, he hopped over the last remaining electrons and won the race. Harry became a hero to the holes and was forever known as Harry, the Great Hippity-Hoppity Hole. From that day forth, Harry had set an example for his race and now all holes hop instead of run.

I'm a Heisenberg Particle!

By Sheldon Cooper

Journal Entry 10/19/09

Today I signed up for classes for my final semester here at University College. There weren't many options to choose from for I had to sign up for at least 5 courses to graduate (TOTALING ONLY TEN CREDITS, yes ONLY ten☺). I signed up for 2 out of 3 courses available but not sure if I will be taking both or switching one for another. All the course titles have been chosen but not all teachers have been heard from and are definitive. I thought to myself "I'll find out next semester". For the next few months I'm going to feel like one of Heisenberg's particles, I know where I'm going or how fast I'm going, but I can't know both. How am I supposed to carry on with this huge annoying variable hanging over my head? You may know the feeling and I'm sure Heisenberg himself did as well. I wish I could what I will be doing and when it will be happening in the future but it seems I'm just not allowed to know both.

David Lester

The Well

I came into consciousness alone in an endless tomb. The walls of my impenetrable cell rose higher than I could ever reach with no seeable ceiling nor sky. Below was a pit deeper than Hades itself, with no semblance of a floor beneath my feet. I was not falling, however, I knew that much. My body simply stuck in the middle of this endless void, an infinite well. The last thing I remembered was a flash of light; a burst of excitement that may as well as shot me right into this soulless place. Nothing before that. How was I to escape? The infinite gray walls of this surreal fortress may have well as been solid steel a hundred feet thick.

The solitude, the time passing, got me wondering. My standing feet turned to pace, then to walk. I was strutting back and forth and back and forth between the pillars of my prison. There was no method that presented itself for my escape, no essence of daylight or hope within my chamber, or even a floor or ground or earth to let me revel in apparent reality. Just the walls remained, with my bouncing between the endless barriers keeping a spark in this dead-cold void.

Minutes passed. Hours passed. Even weeks seemed to go by, with my pacing remaining true along my winding path between the walls. Questions surfaced in my mind over and over again. Never with answer or assurance did they pass. Only uncertainty graced my sleepwalking dreams.

One day was different. One out of the million-billion passing days showed itself unique. I took one tenth of an extra step over my usual 31.415 paces between the two walls. Suddenly my world showed free. I was outside. I escaped the tomb.

Outside was in a sea of life, of others like my own, in a familiar world of bustling routines, feelings, and realness. The walls must have relinquished their seize on my being, giving me a tunnel to return to my world, my ground. My reality.

I am finally a part in this big world once again.

Richard Jassel

“Good vs. Evil: The Chronicles of the Electron vs. the Proton”

It was a cold, winter night in 1905 and Albert Einstein was sitting by the fire just thinking about energy and what type of tea to make. Suddenly, his light flickered on and off and he heard a creaking in the floor boards. His dog then jumped up on his lab and it made him howl like he had seen a ghost. He said, “Scruffy, do not scare me like that, and look you made the light flicker.” Then Einstein preceded to tell Scrappy that he may have given him an idea. He ran to his study and began reading over a proposition made by Max Planck which said that energy in an atom occurs in little chunks called quanta. Based upon his findings, and his dog causing the light to flicker, he decided to agree to Planck’s theory. These chunks are now known as photons. He ended up talking about the photoelectric effect which is the release of electrons from metals when light shines on them. Einstein described the struggle between the electron attempting to stay in the metal as a vicious battle with two likely competitors. In one corner sat a vicious proton who wants the electron gone while in the other corner sat a measly electron. If the light shined on the metal was of low frequency, then it was always without a doubt a David vs. Goliath ending where the electron would come up big, defeat the bull proton, and be allowed to stay in his home, the metal. In the sad cases, if the light shown were of high frequency, the electron really did not stand a chance. The proton was the upgraded model and he really had all of the new weapon upgrades which wiped out the electron and sent him packing from the metal. It also really depended on the energy level of the photon, even with the high frequency light. Every now and then, the electron would still battle within inches of its life and come up victorious.

Eric

Systems Engineering: What a Concept

I did much research into what was considered the first general topic ever taught from one man to another. I found no definitive answer. Maybe the question is too broad. Would we consider the first thing ever taught to from one human to another, to start at how to hunt and gather food or more primordial. Primordial meaning the ability to retain some idea or concept from another ingrained us from the beginning of evolution. However, when the concepts that are being expressed from one to another get more and more complex, we then have to get creative.

Human speech(or grunting sounds, at first) evolved out of the necessity to communicate more complex ideas, but our brains had to evolve also to think smarter thoughts than those of thoughts of more primitive minds that only produced thoughts that were simple enough to convey with body gestures. Which came first the sounds or the thoughts? It's the chicken and the egg all over again. Human language also followed along the same lines, out of the need to express harder concepts.

Let us fast way forward. Engineering, when we look at in the context of being one of the large areas of human knowledge, is one of the newest. So, what is this subject really. Funny, how one go through the education system for so very long and not think about what education is all about. Pondering this subject of human knowledge sometimes seems like a very weird one, when one eventually does think about it.

This subject called engineering seems to be one that bridges the gap of amazing ideas and physical implementation. We express thought, ideas, and knowledge into viable solutions to problems in the world. Now, there seems to be a rising popularity in the area of systems engineering. Where most anything can be thought of as a system.

Let us just take a for instance.....

Our brains are a system, there are inputs/stimuli/chemicals and there are outputs/electrical impulses. In our brains are processes, impulse responses, and probable outcomes based on certain stimuli[inputs]. There are unbelievable amounts of computations/thought/decisions happening at once, some in parallel and some sequentially. There is hardware/neurons in our brains.

Everything can be thought of as a system.

Over the course of history man's brain has evolved to be more complex and become smarter and smarter. For a long time only mathematicians and physicist could understand some very complex ways to think of the way the world works and to explain [teach] these in ways, with symbols, that could be understood to every other human if

only he or she were to able to understand what they meant(or cared to ponder the concept). The problem is we don't all think exactly the same.

Engineers are continually evolving as well. In keeping with history, the engineer is thinking of everything in our world in conceptually unique ways so that our primitive brains are able to process our ideas more efficiently. These unique models of general systems allow for problem solving on grander scales in keeping with our growing world. The world seems to be growing and changing in every way but it's physical size. Our brains will have to keep up.

I believe that humans living together as a group can be thought of as a system. I am reluctant to use the world 'world' as a system because I do believe we will leave the confines of this planet and branch out but still remain a group as humans. We will someday engineer our human system to work together more efficient as possible. I think that will have to mean: more peacefully and dependently on one another. We perhaps will have to evolve past our terrible irrational natures(inherited from our fearful evolutionary ancestors), that we still possess today, so that one day we can consider our human system optimally running. Or perhaps we will have to engineer our human system to work optimally around our human fragilities and shortcomings.

We can think up a way.

Jessica Donovan

Therm and Ray's Big Adventure

Two photons, Therm and Ray, worked for years at the Fusion power plant on the north pole of the Sun and decided to retire together on Earth. On their last day of work, they traveled to the Sun's equator to take the Flare bus to Earth. The next Flare was due at noon when the Earth rises to its highest point on the horizon. The Flare arrived on time and Therm and Ray were on their way to the cool blue planet at the speed of light. A few minutes later they arrived at their destination ready for some excitement. They were heading for a place they knew nothing about, but hoped would provide them with an electrifying experience. Therm and Ray landed on a solar panel on the roof of a home in Washington Township, passed through security and customs, but before they could claim their baggage Therm was absorbed by the system and converted to an electron while Ray passed through the system and was deflected onto the cool surface of a glistening swimming pool. Therm was not feeling like himself after the transformation to an electron and whirled through some wires to a pump, which circulated warm water to the swimming pool, cooling its surface.

Michael McDonald

Jimmy Boron, Boy Superstar

Jimmy Boron was a promising corporate superstar, at the young age of 21, as he moved his way up the ranks of Periodic Table Inc. However, ever since he moved to Outer Shell, NY he has harbored a rare illness that doctors can only describe as blackbody radiation syndrome. Studies were done to find out what exactly this is but still no one can explain why when his frequency increases, the energy he emits does not go off to infinite like the rest of the elements that Dr. Physics predicted would happen. Instead Jimmy's energy hits a peak and then decreases as a function of temperature. This is dangerous for several reasons. When he is in an important business meeting giving a sales pitch to the Precious Metals of the Periodic Table such as Gold and Platinum and things start to get heated, Jimmy is first to go completely ionic and break down in front of everyone. At a local university, Professor Planck, a mathematics wizard, was able to describe Jimmy's behavior in quantized units of $h \cdot \nu$ where ν is Jimmy's frequency and h is Planck's constant ($6.63 \cdot 10^{-34}$ J-s). However Planck was not completely sure as to why this equation represented Jimmy's behavior so well.

Word got around to Planck's nephew Einstein, also a pretty smart little element. He used Planck's observation to note that when Jimmy is in the heat of the moment, ie when the spotlight is all on him, some of Jimmy's electrons would become dislodge or emitted from his outer shell. Einstein called this the Photoelectric Effect. The intensity of the moment however played a huge role in this. If the frequency was not high enough, no electrons were emitted and Jimmy was fine. However at a certain frequency and above, more and more electrons are yielded but they all have the same energy. It was this discovery that Einstein shared with Dr. Physics to help develop a potion that would allow Jimmy to keep being successful even under the gun. The potion, deemed the Work Function, calculated exactly the amount of energy Jimmy was expending at every point in his big meeting depending on the frequency and rank of the other elements in the room. Jimmy now takes his daily pill of the Work Function and he is able to control his energy emission and use it to his advantage to reel in every big corporate deal that Periodic Table Inc can get their hands on.

My Life as a Pixel

By: Colin Donovan

Hi, my name is Petey Pixel. I'm a tiny, little guy who lives in a neighborhood with my family. I have eight family members who look practically identical to me. I mean really, the resemblance is just unreal. Several other families with slightly different heights live in the same neighborhood called the Pixel Reserve. Every family has 8 eight members in our neighborhood and their yards connect to ours. We all get along very nicely... Well... except for Pauly Pixel and his family. Pauly never cleans up after his dog and is always blasting that darn rap music.

There are many other neighborhoods in our town of Pixelville. Each neighborhood's pixels can vary greatly in their characteristics. Some have pixel families who are really tall around 256 on the height chart. They are so good at basketball. While others, mainly the limbo champions are really short, closer to a height of 1. Then there are tons and tons of family who live in Pixelville whose heights range anywhere in between these.

I may be just a small guy with small family members, but I'm part of a big, happy community. Every Pixel in Pixelville has something that makes us part of a neighborhood, while at the same time making us a little different from surrounding neighborhoods. What's important to us residents of Pixelville, is not our differences, but that we all come together to help form the bigger picture: The digital Image.

The photovoltaic effect! – Wendell Jiao

Now most of you know, that Einstein's the people's champ
With $E=MC$ squared under his belt, he opened doors and gave chances
But what you might not know, is that he didn't win the Nobel Prize for it
But instead, it was the photovoltaic effect
Sounds cool but what it really is, it's even cooler
It involves the creation of a voltage in a material upon exposure
To electro-magnetic radiation, the generated electrons are transferred
From one material to another
So as a result, it creates a buildup of a voltage between two electrodes
Amazing, amazing, physicists and scientists this is pleasing
Most photovoltaic applications the radiation is sunlight for this reason
It also converts solar energy into electrical energy know as solar cells
Einstein's dedication and his hard work did not fail
Putting up countless hours to science can only prevail
And helping the scientific advancements of this world is the greatest story to tell

The Little Electron Who Could

By Andrew Flanyak

Once upon a time there was a little electron name e^- .

He sat in his home with his mother Valence Band in Semiconductorville staring across the street.

He always wanted to go visit his best friend Hole living across Band Gap Street but Hole's mother Conduction Band would not allow Hole to cross the street.

e^- was a little older than his friend Hole but his mother still refused to give him the energy to jump on over Band Gap Street to see his friend.

She said even though your older than your friend Hole doesn't mean that you can do everything he can't.

e^- tried and tried to convince his mother to no avail

So he shuttered and shook creating a lots and lots of heat to annoy his mother until she finally succumb to his wishes.

She gave him the energy and let e^- jump over Band Gap Street to finally see his best friend Hole.

And so e^- and Hole got to play happily together all day.