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Applying Knowledge: Who Cares?

OK, time to try again. That was the next logical step. A rush of emotions had passed over me. They were feelings that you may get when you try to do something new and it doesn't work out. It could be learning to ride a bike for the first time and falling down, or even cooking your first meal and discovering it did not taste quite as good as you had expected. The emotions were excitement, frustration, and fear. But mostly, it was disappointment. Disappointment that it had not gone as planned, disappointment that I was not getting the results that would lead to my breakthrough that would solve the world's energy problems.

A little less than two years ago, I had attended a talk by an entrepreneur who was striving to rid America of its dependence of oil. His solution was electric cars with an innovative re-charging system, and he was using science and applying it to tackle some of the biggest problems in the world today.

This was a fascinating idea for me. I always liked the sciences, but sometimes I did not see why I needed to learn how two atoms bonded or why stereochemistry was so important. Research, however, provided the opportunity to use what I was learning in classes and apply the knowledge to real world problems. So I began a project, hoping to solve our energy problems today. My solution – to efficiently convert abundant methane gas to easily transportable methanol using a not-yet-discovered catalyst. And I would be designing this not-yet-discovered molecule, building it piece by piece, fashioning it to my liking, and running tests in the lab to see if I had gotten what I wanted. The applications were endless...a cleaner form of combustion, a cheap fuel source, and national freedom from the shackles of oil producing countries. How could I not make it my goal to see if these great applications could be realized?

After several repeated experiments, I found myself in the same place. I was in the laboratory looking at the results of my latest reaction. Up until this time, I had been working for about a month on one small step...and nothing was going my way. This time was no different. The data indicated that I was not making my molecule. Again. I therefore decided to scrap my current plan and try another route. The process was so simple and for some reason, my predicted results were eluding me.

So, in another attempt, I was in the Northwest Labs, dressed up in a white lab coat and goggles. I felt like a chef. My table was clean, my glassware was spotless, and there was state-of-the-art equipment at my disposal. Everything was in place to allow me to do something big, and that is what I believed. I set out four bottles in front of me, each the size of a milk carton. The contents inside each bottle were the building blocks of my molecule. One by one, I weighed out my materials and added them together. First I added a clear liquid. Then another clear liquid. Then a third clear liquid. And finally a

white powder. These were my ingredients, and the final step was to allow time for everything to cook together.

When finished, my mixture had turned a dark orange, and I took a small sample. In order to analyze it, I went down to an underground room that looks like a NASA training facility. High-tech magnetic machines are strewn around the room, each oddly enough controlled by what looked like a computer from the 70's. These machines are able to detect specific atoms and essentially produce a fingerprint of the molecule, allowing us to ID it. After calibrating the instrument, and typing in some commands, the nearby printer began to rumble and out came my results. I looked down at the piece of paper and there it was. I never could imagine that something so simple could be so exciting. Before, there would be empty space, but now there was a beautiful additional black line in the printout. This signified I had gotten what I had wanted.

And another experiment to run was my prize for this small victory. It was at this point that the realization hit me. Yes, it was a struggle to make it work, but with each failed experiment, there came something new that had to be explained. I was actively working with the project, becoming more connected to it. With each passing day, I was learning. I was thinking about why this was not working. I was troubleshooting. I was solving problems with individual steps, far removed from the glory of an energy solution. Getting to the next step was great, but discovering why that first step worked was the true reward. Throughout the process, I saw my motivation evolve from pursuing a potential application to an overwhelming desire for a greater understanding.

The whole project was daunting from the start. I needed to overcome 50 steps before the potential applications would be realized. I overcame step 1, and now I am on step 2. Will applications eventually follow? I hope so. But right now, who cares? It's enough to enjoy the pursuit.