“How to be Creative: A Scientific Choose-Your-Own-Adventure and Other Thoughts”

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“First off, I would like to thank Dr. Driscoll for that introduction. I know I can always count on him for flattery no matter what the situation. Also, I would like to thank Dr. Raudenbush and the rest of the research symposium committee for asking me to speak at this event.

I am obligated to state that the views expressed in this talk are mine and not those of the United States Government or the Department of Defense.

I usually speak in front of people who are above my pay grade and try to convince them that something is either worth pursuing or it isn't, but I'm convinced that this is a much tougher crowd, so I hope that something I say sparks interest and sticks with you.

Research has been important in my life because it has taught me how to be an analytical thinker. It has taught me to question and ask "why?" I have used these skills and experiences I gained by doing research, not only here, at Wheeling Jesuit, but in my other research experiences at Georgetown, probably almost every day in my career and I'm grateful that I had the opportunity to be exposed to the process and hard work of performing my own research project. It prepared me for a taste of what it's like to be a researcher or scientist. It also provided me with the opportunity to solve problems on my own, and give me a sense of responsibility and empowerment.

Right now, I manage research. I am tasked with making scientists and researchers care about things like a budget and schedule. We are tasked with coming up with material solutions for problems facing the country in the area of biodefense.

When trying to work with scientists and researchers to develop these solutions, the hardest thing is to get these individuals to realize that while the research and science that go into working towards these solutions is critical, there is another side of this work, which is the translation of the scientific discovery into product development.

This is where hard work and ingenuity need to be at their best. Innovation is a contact sport - that is, the creativity and hard work put into research needs to collide with industry to bring a solution or product to maturity and spark innovation.

Innovation, that buzz word that has become quite popular and you hear all the time now. Everyone is big on being innovative. When people think being innovative, they naturally associate creativity with being innovative.
Creativity is not some special, "you-either-have-it-or-you-don't" thing. There is no such thing as a creative type of person. No creative gene has been identified that is passed down from generation to generation. It is a skill - and in being so, we can all learn to be creative and get better at it.

If you think about it, there are really two different types of creativity, and the second one is really dependent on the first.

1. The Relentless Form - which is not fun
2. The Eureka Moments - which can be fun

The relentless form is that kind of creativity which is born out of sweat and failure. This is the kind of creativity in which paper or data or whatever media in which you are working becomes inundated with red pen or track changes. This is the type of creativity that doesn't get the fame or press.

Out of the relentless form comes the eureka moment. Many of you have probably had this type of moment. And if you haven't, you will. This is the moment when you think that you've reached the end of all possibility, when you've believed you have played out every scenario or thought-process to the nth degree. You then decide to make your 5th coffee (or adult beverage, depending on your poison) run and as you are sitting there - it comes to you.

It has been said that creativity is just the connecting of things. Even the most far-fetched concepts are usually just new combinations of things that already exist. For example, the Wright Brothers were bike makers. They took their designs for bikes and added wings. Johann Gutenburg was a winemaker. He took the idea for the wine press and applied it to a press that makes books.

Learn to do research, or anything for that matter, the correct way. You'd be surprised how many skills are transferrable between different types of careers and jobs. Work on those good habits now and you'll have a pretty useful toolkit on your hands no matter where life takes you.

Just because you may have an idea that goes against everything that you have been taught and has been thought to be correct don't reject it. The ability to attack problems as a beginner, to let go of all pre-conceived notions and being afraid to fail - that is, at its core, the key to being creative.

The most rewarding experience a researcher has is at the moment of discovery. It usually happens when you're doing some seemingly mundane task, when nobody else is around, maybe late at night and you look at the results of your experiment and see something that no one has ever
seen before. You're the first person ever, out of the 100 billion people that ever lived over the existence of humans, to make this observation. Those moments make all those other far-less-rewarding weeks, months and years’ worth it. And this is something unique to researchers. Salesmen don't get that moment, neither do chefs, nor farmers, or builders, or any other people who perform other jobs. They get different rewards, like money for example.”