

Razor's Edge Research Scholars Program: Reflective Portfolio

Vanessa Cruise

Nova Southeastern University

Abstract

Table of Contents

Statement of Goals

Winter 2017 p.

Fall 2016 p.

Highlighted Experiences

Fall 2016 p.

Artifact Collection

Fall 2016 p.

Reflection

Fall 2016 p.

Statement of Goals

Winter 2017

The second semester is looking more complex and rich than semester one. We've made it past our general education courses, we've been introduced to the themes and content and ideas of our more specialized courses, and we've made it past the many obstacles that a college student faces living away from home for the first time. We've grown more accustomed to being on our own—we've learned what places to go to when we're hungry, what study spots are most suitable for what kinds of tests or for each of our varying classes, what methods are best to study for each test, how to handle doing our own laundry, what foods are good to stock up on when we need to pull long study sessions in our rooms, how much time it takes us to walk to different buildings, and more. We've built experience and now we are more comfortable handling our varying schedules and balancing all of our responsibilities, so we are looking forward to taking on more tasks to keep building that experience and knowledge. I can say I am really looking forward to this semester, and many of the reasons why are going to be covered as I share my goals for this semester. My primary goal, and to be quite honest, the goal I am most excited to work towards right now, is my research-related goal: successfully progressing through our university-based research project. I am really looking forward to that this semester because last semester, the research class was geared towards exposing us to theory and hypothetical situations so that we could build a strong base for what we are handling now—actually jumping into the research field by building upon an observation, formulating various null and alternative hypotheses, developing an experimental plan to test these hypotheses, and, where we are sitting now, learning and filling out the paperwork and forms needed to be able to conduct our research. The most exciting part about filling out these forms is that we get to reflect upon our experimental approach and we get

to read and reread our ideas, and by doing this we can review our plan at a more distanced and more objective stance, and through taking this stance we can see what parts of our experiment needs to be altered or revised to improve upon it. While these forms are being processed and completed, we are also learning more about the theory of design and how various factors and threats will affect our research, and how we go about dealing with such cases. So while we are making headway on getting ourselves into the field, we are building our field of knowledge so that when we actually get to dip into the research, we will have strong information and knowledge on what we are handling and how to handle it. The anticipation is building for me as we progress, and I cannot wait to see how the experiments result. My second goal for this semester is to successfully complete my secondary CEP rotation, and to draw from this opportunity an abundance of fresh knowledge and experience that I will be able to reflect upon and use in my future career in medicine. My rotation is in optometry, a specialty I have never been intrigued in for my future, but a field I have been familiar with since I was young as I got glasses at six years old. I believe this rotation will have a lot to teach me because I am used to being on the patient side, it will be interesting to see how things run on the physician side. My third goal for the semester actually has two parts, and one will be realized after the semester ends. My third goal is to one, successfully complete my Cleveland Clinic Summer Scholars Program Internship application, which offers participants 270 shadowing hours in the fields of their interest. The second part of this goal is, if accepted, to make the most out of this learning experience, to ask many questions about a career in medicine, specifically in the surgical fields I hope to be shadowing in, and to discover if surgery is really meant for me. The anticipation for this semester has just been building and I cannot wait to see how I grow as a person this semester compared to the last.

Fall 2016

When I started the year out, I came in as a student with a flurry of different ideas to research and with an excitement at the possibility to actually unearth new information in these areas. I also entered this year a biology major... but that decision did not stick around for long. It's funny how easily one can change his or her mind when one actually opens doors whose locks and keys were put away before even giving them a chance the first time around. But by the Friday of the second week of school, I had made an appointment to change my major to behavioral neuroscience, an area of science that appeals much more to my interests, my creativity, my soul. Coming into this program, I always thought I would do research in cardiovascular disease and regeneration, regeneration of terrible third degree burns, research in advancing all sorts of transplants, research in RNA and unlocking all its capabilities, cancer research, research for improving the healthcare system for the homeless, research for improving medical technologies and other such topics. Now one idea that had crossed my mind but not really stuck was doing research in the neurological/psychological aspect of science, so imagine my surprise when a wall of shock and realization hit me when I saw the neuro-immune lab at the new Center for Collaborative Research. With my new track of mind focusing on behavioral neuroscience and with the new knowledge of an Institute for Neuro Immune Medicine at NSU, one of my goals is to devote part of my focus, a larger majority of my focus, on neuro-immune research, in areas such as multiple sclerosis, Parkinson's, Alzheimer's and neuro-immune signaling, and more. My range of ideas has spread since the beginning of the year, and it's mostly thanks to the exposure I've had as an active student in the Razor's Edge Research Scholars Program. And if this is what I've seen only at the beginning of the year, I am itching to see what is in store in the future, and I am looking to it in great anticipation and enthusiasm. A goal for me outside of the research scope

would be to really immerse myself in my classes and my extracurriculars. I want the whole college experience; I don't want to look back one day and regret not having been more attentive and eager about my classes, or not having been more involved and motivated in the organizations with which I was working. I want to own the fact that I love my school and show my pride.

And so, my goals within these goals are: first, academic, in which I will try to get to know my professors more personally, form bonds, and build connections with them. So far, all of my professors have been amazing at teaching, have great and energetic personalities, have their own unique quirks, and are people from whom I can see myself drawing role model qualities. I will use their office hours to my advantage and take the process step-by-step. As for extracurriculars, I am excited about gaining experience in a variety of aspects through organizations like UNICEF, Pre-SOMA, HOSA, Best Buddies, Relay for Life, and Locks for Cause. And in the scope of jobs, I am extremely excited about my new responsibilities as a Shark Preview Leader, mostly because I know how much the leaders from my year inspired me and motivated me and I want to have an impact on the students I'll be meeting in a positive way. I can foresee myself growing a lot as a person from this position. My last goal is my most personal goal, and I am happy and comforted to be working through this goal with one of my suitemates. At larger universities like my secondary choice, NYU, we wouldn't have the opportunity to see often deans of the school, or the vice presidents, or the president, much less get to meet them and build a personal and close relationship with them. Here at NSU we have been given multiple opportunities to strengthen connections with such superiors, and we would definitely love to take the advantage this university has given us and get to know them more closely. We have already made an extensive connection with Dean Brad Williams, as he interacted with us on the day of the Razor's Orientation, and as we got engaged in a long and productive conversation with him

on the day of the Center for Collaborative Research Grand Opening. He seems like such an energetic, innovative, determined person who is really invested in inquiring about the life of the undergrads and how our careers are going, our ideas, our opinions and more. Another superior we have had the lovely opportunity of starting to build a closer connection with is Executive Vice President Jacqueline Travisano, as we attempted to pay her a visit at her office which resulted in a small but touching conversation, and we have exchanged a few words since then. She seems like such a kind, gentle, powerful and fun person, and it would be our honor to also connect with her more. This is our most personal goal, and we will be extremely happy and feel very accomplished if we can work towards building stronger relationships with superiors such as Dr. Williams and Dr. Travisano, as NSU has given us these opportunities, and we can't let them pass us by.

Highlighted Experiences

Fall 2016 Experiences

Razor's Research Class (1000R)

This semester's Razor's Research class has been nothing short of insightful, impacting, and different. I expected for us to discuss research, how to go about conducting it, rules and procedures, what is expected of us as scientists, and such. But I never thought about just how much you question research. The discussions we launched into at class were something unexpected, and it was amazing to have our minds opened in new ways. It was riveting to hear how others think and to compare it to what we hold to be true in our minds. One of the points that really struck me in this class is the fact that just because someone in a lab coat or someone in a business jacket publishes something, something that tens or hundreds of people cite, it doesn't mean that the research is always sound. The professors brought up an example of a published paper that had hundreds of citations... only to be recalled because the research wasn't solid. What I will take from what we were taught in this class is not only how to properly conduct procedures, how to minimize risks, how to find a proper sample group, but also, and perhaps most importantly, to question everything. When I am conducting research for anything in the future—in a lab, for class paper, for my budget, I will always remember to question, who is the source of this information? What benefit do they receive from giving me this information or how would they be harmed if the statistics went in a different direction? To be a great scientist I must be prepared to ask questions. And even when those

questions are answered, I must be prepared for the new questions I will ask from those results.

Center for Collaborative Research (CCR Grand Opening)

The Razor's Research Class was lucky enough to get a tour of the CCR long before it was even open. We were able to see the boxes of unpacked equipment; we had the opportunity to see the layout of the labs long before anyone stepped into it to begin research. That was an amazing way to start the first week of college. But the moment when the CCR really hit home in my heart was the day of the CCR's Grand Opening. Before this day, I had been extremely excited at the idea that one day we would have the opportunity to work inside the halls of this amazing research center. But when touring it for the first time, I had no idea in which direction I would want to steer in research-wise. I was very open to every idea, but now I realize that it wasn't just openness, it was also me not having a clue what my interests were. Then came the day of the Grand Opening, where two of my roommates and I had a chance to volunteer as the representatives of the Razor's Edge Research Scholars Program. Not only did we get to see the equipment finally unpacked, but we also took a different route than the one we had taken at orientation. And what did we run into? The neuroimmune research section. I had just switched my major from Biology to Behavioral Neuroscience, and once I saw the word neuroimmune within the CCR, I finally had a research goal. So now with the countless doors open to me thanks to this Razor's Program, I will try to steer myself through the doors that will eventually give me the possibility to do research in this category.

Human Anatomy and Physiology Conference 2016

I have become extremely engaged in various college organizations, events and activities, and thanks to this involvement I have had the opportunity to be a part of many incredible occasions. One of these incredible occasions was the Human Anatomy and Physiology Conference. Two of my roommates, a few other friends and I had the opportunity to be volunteers at this conference and help out with guiding people to rooms for different sessions, as well as keeping time while being lucky enough to participate in the lectures. While waiting for the conference to begin, our little group wandered over to a table that had a synthetic human body lying on the table. We conversed with the young man representing the company that had made the stunning model that lay before us. He told us of the materials that made the model look and feel so realistic (but to be honest I forgot exactly the names of those materials), who would have the opportunity to work with the models, and how they would impact the future in an innovative way. What I realized after this event is that even though the idea of doing research in the neuroimmune field is my goal, I won't limit myself to only that field. I want to dabble in various areas apart from my major interest. So when I begin to have research opportunities, I will remember that even though I am extremely interested in neuroimmune research, I will also be open to the idea that I will find interests in other areas, and that I can work towards getting to research in those areas as well.

Artifact Collection

Fall 2016 Artifacts

Midterm Paper

Small note of my paper: I love how this midterm was not just strictly focused on proper research procedures, the statistics involved in research or such— I love how this paper had us take a perspective of science from the texts we've read and argue a theory based on it. It may not have been how we supported the theory using our own words, but it taught us to open our minds and take on the mindset of the perspective we chose and argue it from that viewpoint.

My paper is attached below:

True Science, Non-Science, and the Whole Shebang

Vanessa Cruise

Seminar in Research Implementation and Design I Midterm

Science is a domain that has several points that must be hit for something to be declared a true science. True science works to bring forth different ideas and perspectives about not only this world, but of other worlds as well, that hadn't been included in the scope of discovery before. For science to be true some form of qualitative or quantitative data that is raw, real, and unaltered must be acquired via observational or experimental methods. That data then not does not work to expand our field of knowledge (a common misconception in my eyes is that some hold the belief that science only works to add to what we know... it works to achieve a goal that

happens to encompass information expansion, but is not limited to only that outcome), that data works to *alter* that steaming pot of numbers and figures, charts and visual evidence, notes and tables, hypotheses and theories. True science not only works to add to what we know, but it works to broaden the scope of what we know by rejecting, expanding, shifting, and transforming data as well. True science works to ask questions, make observations, test hypotheses, discover and define theories, and when need be, revise them in the presence of new evidence that can discredit, expand, or redirect said theory.

The aforementioned are qualities that are required for science to be true science, but sometimes, the purpose of true science yields an outcome with an added bonus that motivates the sphere of change and growth. Real science may not only work to comprehend the mechanics of the world, but can also sometimes branch out to use those observations and the data gathered to help make improvements and impact our community, in most scenarios, positively—and I say in most scenarios because regrettably some purposes are not for the greater good, and can in some cases be detrimental to the masses. All in all, true science may yield data that whether unexpected or anticipated, impacts the world through change.

But this idea is just a bonus, as mentioned before. Science doesn't have to affect the community for it to be true science. Let's just say for argument's sake, the data doesn't impact anyone but one, or not even the one person. Let's imagine for a second that the world has died and only one person alone is left on the face of this earth. Now this person has decided to conduct experiments out of curiosity, or just to pass time. Is that then still considered true science even though no one but the one person is there to observe the information it yields or be impacted by said information? The answer is yes, because in the simplest of definitions, science

is a domain with a process that seeks to alter perspectives and the base of knowledge about the natural world.

Sometimes discoveries are stumbled upon by accident... that is not true science, but it does open a door that leads to it. How one would then turn that into a manifestation of true science is by taking the discovery and identifying intent to gather knowledge from that unexpected event, which is then used to broaden the scientific database, with experiments following to provide hard evidence and support, and to test its validity and replicability.

Now let's discuss what isn't science. Science is not religion, science is not art, and science is not technology. These are all different domains expressing qualities that disqualify them from being a form of true science. Art has opinion and expression... true science doesn't hold room for ideas like these because they can lead to bias and drive the process away from hard, reliable evidence. Art can distort things in order to cast a creative twist, so it can be unrealistic—the opposite of what science works to capture. Science isn't led by emotion—it is driven by facts and evidence. Science isn't technology—discoveries made by science can aid or better the creation of pieces of technology, and technology can return the favor through facilitating the research progress in the way of providing a means to make the process more efficient... a sort of catalyst to the procedural part. Science is also not religion—religion demands belief and faith, and in science one cannot jump with their eyes closed under the confidence that a higher form will be there to catch them. In science, one has to make certain that there is some device that will allow them to catch their fall and deliver no injuries, and before jumping find some resources that can afford them the means of being testable subjects for the jump. However, science can, and often does, align and work with these domains to foster improvement.

Empiricism is a theory of science that knowledge arises and arises only from the world of experience. Empiricism is constant with the definition of true science elaborated on above in the sense that experimenting not only helps gather knowledge and data, but it helps earn experience, the root of empiricism. From the empiricist point of view, science is defined as the best means to investigate and know our natural world, and the stated goal of true science is to discover the world and worlds around us (Godfrey-Smith, 2003, p. 8). The empiricist point of view aligns with the mentioned definition of science as experience is something concrete, and parts of art and religion are abstract or indefinable without some form of blind faith. It also supports technology being a form of non-science, as the empiricist task in the sphere of science is to garner experience through the acquisition of data stemming from questions about the natural world and its processes, while technology is a domain in which devices are the currency in trade, not information. There are, however, complications with the empiricist point of view, thanks to a form of science known as junk science. Experiments and data are obtained alongside the experience earned whilst conducting the means to obtain said information. However, some statistics are, and these can hurt the empiricist science because the experience is there, but it is tainted by falsified figures that one may not realize aren't reliable—they may trust the validity of the information they are sifting through and collecting, so science is most secure when one does not only rely on the sources from one theory, but of many combined in an effective way. Empiricism does not necessarily align perfectly with what true science is and what non-science is, and that is why it must go hand in hand with other theories.

Science doesn't have it all figured out. And that is the point—to leave room to advance. Even if we answer a question, more questions arise from that answer. And if nothing branches out from the former? The only thing one needs to do is change their perspective and ask the right

contrasting questions, and the path to the fruitful inquiries are more effectively reached if one is knowledgeable on the distinction between true science and non-science. True science works to find the ultimate truth about the world, and the scientific community works towards that by unearthing revolutionary discoveries that motivate new scientific expeditions that bring us closer to defining what that is. As for me, the ultimate truth is still not defined, but I hope that with this research program, over the next four years I will be able to define what ultimate truth of science is within me.

Citations

What is Science? (n.d.). Retrieved October 23, 2016, from
<http://www.gly.uga.edu/railsback/1122science2.html>

What Science Isn't. (n.d.). Retrieved October 23, 2016, from
<http://www.gly.uga.edu/railsback/1122science3.html>

Ancient Alien Theory: From the Eyes of Empiricism

Vanessa Cruise

Seminar in Research Implementation and Design I Midterm

The empiricist view— the only source of real knowledge about the world is experience (Godfrey-Smith, 2003, p. 8). Empiricists believe that science is triumphant because it manages to be orderly in its processes and is receptive to experience—it takes it into large account, as scientific data is considered incompletely supported and therefore not valid if there isn't the experience, the evidence, to render it not only justifiable, but a principal of science. The ancient alien theory stands to claim that a species of extraterrestrials with superior knowledge have encountered the likes of earth before, and that by crossing paths with our species, have set forth a

chain of events that have changed the course of earth's past, present, and future, events that can only be explained by extraterrestrial beings.

According to the empiricist point of view, the ancient alien theory is not true. Following the guidelines of this standpoint, there is enough evidence to put the ancient alien theory of the table of possibilities, but with the empiricist train-of-thought the ancient alien theory is not a true science until it is an event experienced by the community. And the community isn't defined as a small group of people that happened to "experience" an alien encounter because such groups can be guided by irrational fears, delusions, misled convictions based on misperceived incidents, and more. Now if someone wants to get tricky, the empiricist point of view could support the ancient alien theory for an individual who happened to witness an alien encounter with earth, but that isn't believed by the rest of the community, because the empiricist domain holds value in sensory experience ("Ancient Aliens," n.d., para. 1).

But in the sense of the scientific community, the ancient alien theory would not be supported in the empiricist point of view because the scientific community defines experience as more than sensory experience—it defines experiences as an array of repeated experiments that renders solid evidence that would undoubtedly set the ancient alien theory in stone, or at least while it remains the best fit explanation for the phenomena it covers (meaning no new data to modify it or contradict it or reject it comes along).

While there are pieces of evidence that open the ancient alien theory up to further scrutiny and inquiry —Easter Island, the Baltic Sea Anomaly, the Stonehenge, and more— the lack of experience created by an orderly system that is composed of an array of replicable experiments and hard numbers and figures is enough to have empiricists rejecting the ancient alien theory from being an absolute (or at least, a temporary absolute truth, because in the realm

of science, almost nothing is purely absolute) truth. Maybe sometime in our future we will finally be able to accumulate the evidence necessary to make this theory a principal of science, but as for the present, in the eyes of not only empiricists, but of the scientific community, it is not.

Citations

Godfrey-Smith, P. (2003). *Theory and reality: An introduction to the philosophy of science*.

Chicago: University of Chicago Press.

Ancient Aliens - Ancient Alien Theory - HISTORY.com. (n.d.). Retrieved October 23, 2016, from <http://www.history.com/shows/ancient-aliens/articles/ancient-alien-theory>

Two of my roommates and I volunteering at the CCR Grand Opening



Human Anatomy and Physiology Society Conference



Reflection

Fall 2016 Reflection

I always believed that being a researcher meant that I had to be in a white coat in a lab, donning lab goggles and working to find a miraculous cure to some incurable disease. But after this semester I have learned that we are all researchers—we're just undercover. We're the Clark Kents, and the researchers with the white lab coats and the dangerous chemicals are the Supermans. In Razor's Research it was exciting to brainstorm a novel project with the aim to help out college students. Even though we didn't get to work with any subjects this semester, even though we didn't get to set our hands on lab equipment, even though we haven't applied our research project to our University yet, we still had to conduct a mountain of research, drawing from knowledge we had collected from previous classes we took and from research articles. We created a research project from which we believed our university and its students could benefit. It's going to be interesting to get to the actual research phase, and hopefully we will be able to yield results that will be worthy of display at the Undergraduate Student Symposium. This semester being my first in college, it was a bit of a journey to get adjusted. It was fun and exciting to feel this sort of semi-adulthood responsibility, but it was also scary. I live 20 minutes away and it was still nerve-wracking! I believe I felt this way because even though I am so close to home, I am still growing up, and this semester really showed me that I don't know myself entirely. There are still so many parts of me I've yet to learn about, and college will really be about discovering who I am. That's why I've switched majors twice, and added a minor, and joined different clubs, and tried new things. These organizations, these events I'm involved in, the acquaintances I forge, the mistakes I make, the triumphs I achieve—they'll all help me build my character. The classes I take, this program... they won't only help me become a better

researcher, but they'll help give me an identity. Based on how this semester went, I stand by what I said in my interview: I will find a little bit more about myself as I ask questions, as I become a better researcher. With finding myself, I will become a more passionate scientist, one who really applies herself, enjoys it, and makes a positive impact in this world.