The Choice: Science or Art

“Once Upon the Time” : In the Beginning

I wanted to start this with “Once upon a time,” but then you wouldn't take me seriously. This is a thesis, but though the topic is of great importance and quite complex, my goal is more storytelling than analysis, and I hope you will let it slide. Everybody has a life story formed over time by choices made along the way. The choice between following artistic and scientific pursuits is one that many have to struggle with at some point in their lives, and each person navigates this conundrum in their own unique way, somehow finding focus and balance at the same time. It starts for each individual during their time as a young child, with the question “What do you want to be when you grow up?” Often there is some sort of evolution that includes sports star or superhero along the way. My own “once upon a time” included a succession of dreams about becoming the prima ballerina, treating sick puppies as a veterinarian, creating marvelous fashions as a clothing designer, and performing delicate, precise, life-saving brain surgery.

As I grew into young adulthood my tastes, interests, and personality began to take on more solidity, and someone (I don't recall who, but thank you!) during my sophomore year of high school saw the person I was developing into and suggested I look into dentistry as a career choice. Sitting there in Dr. Veley's office going over full-mouth reconstruction cases after a full day observing was when it clicked that this was a field I could really get into: the years of nimble handiwork that I had enjoyed via hobbies such as knitting, jewelry-making, and sewing translated perfectly to the fine-tuned precision needed to utilize the dental instruments, my eye for design gained from art classes would
help me visualize and create beautiful smiles, my ever-deepening interest in the sciences showed up in every aspect of the field of dentistry from the biochemical processes that occur when anesthetic is injected to the materials that are used for binding a crown or filling to a tooth, and my taste for one-on-one interaction along with my ability to put people at ease led me to believe I could excel in the dental setting in which many patients are a bit apprehensive. It seemed to me that there were endless connections between my passions and abilities and those a dentist should foster. Six years later, that cross-over is still evident – so much so that the dental schools I applied to saw it as well, and I have recently been accepted for the Oregon Health and Sciences University School of Dentistry Class of 2015. Of course, this journey isn't going to be over for a very long while, so you will find no “happily ever after” at the end of this account. There's no guarantee, but there is more than a glimmer of hope for the future.

I’ve always wanted to do everything. I half-jokingly tell people that if someone would fund me, I would stay in college forever and explore all the nooks and crannies of the academic world. In high school I took all the classes I could cram into my schedule: Advanced Placement courses in English, calculus, physics, studio art, and history as well as Honors courses in Spanish and philosophy and so on. I left no stone unturned, and I was rewarded for my efforts by several large scholarships and 91 quarter credits transferable to Oregon State University. At first I thought that meant my undergraduate work could and would consist of three years of pre-dental preparation, in and out. Only later – with the prompting and advice of a favorite professor and mentor – did I realize the true opportunity of these years: freedom to pursue the applied visual arts minor, to take history and psychology and anthropology along with embryology and biochemistry, to
enter the world of ballroom dance. With a little work, doors were open to me, and it was exhilarating.

Then, my junior year, my world (I wanted to say carefree world, but it never is for a college student – it consists of tests and extracurriculars and papers and friends, work and hobbies – a whirlwind combination of laughter and tears) was rocked more than a little bit. I was taking intro to psychology, painting, and history of sexuality all at the same time – and I was acing all of them. Towards the end of the term each professor gave a not so subtle hint that perhaps I should make their major field of study my own. In art it was a pointed look in my direction at the final critique accompanied by “and some of you aren't in the right major yet.” In psychology it was an embarrassing moment of having my name put up on the screen with a few others and a note to “come see me after class,” which turned out to be a personal invitation to come talk psychology with the professor during office hours. In history it was “are you sure you want to go into dentistry?” as the professor praised my paper and bemoaned the lack of writing that is exercised in my chosen field. I freaked out. I wanted to do all three! And dentistry... and could I own a bookstore, and start a jewelry-making business, and be an OB-GYN too?! Little did my professors know their kind words and praise had tumbled their student into a life crisis of sorts. For weeks I questioned my every thought, my path, my dreams... My poor mother and girl friends had to endure long bouts of soul searching monologues from me. Then I got over it. I needed both art and science in my life, and dentistry was my perfect blend.

This was about the time when the University Honors College started giving me gentle reminders that if I wanted to graduate from their college I owed them a thesis. I was cranky about it, I'll admit. I told my friends, I want to do a little bit of everything –
how could I ever settle down and pick one thing to explore in depth? I was indignant. I didn't want to go the typical path and just report on lab work; I didn't want to work in a laboratory at all! I enjoyed my art classes but didn't want to create an art gallery show or anything along those lines. There was little I could do to further the field of dentistry with so little experience. I felt stuck. I started asking, exasperated, is anyone else having this problem?! And then I calmed down and I asked, is anyone else having this problem? It was problem of having to decide between art and science, of having to define yourself in a certain way to be able to fit into a niche in our educational system. I had found a way to balance my artistic and scientific interests as a pre-dental student, but did others have a similar problem and their own “perfect blend” to discover?

The word that kept popping up in my mind was intersection: the intersection between science and art in people's lives. I started to become curious about these little points on the grid of life where two seemingly disparate disciplines came together. Once I opened my eyes to it, I realized the two intersected in many places: in an activity, in an object, in a person, in a couple, in a project. Art and science interact on many levels and in many situations. So where was it happening at OSU, besides in my own little world where I had somehow managed to carve out time for both? When I brought it up with my friends and professors they got excited – everyone had something to say on the subject. The question did not go away, and it soon became the seed of my thesis project.

But who would guide me on this crazy adventure? I needed a mentor, but I am still to this day unaware of any professors who have appointments in both the art and science departments. I was looking for a species that seemed nonexistent. Everyone seemed so neatly tucked into their own disciplines. Knowing that it can't hurt to ask, I
started dropping hints to my favorite profs that I was looking for a very unique sort of mentor. There was one name that kept coming up – a certain Dr. Phil McFadden. A biochemist? Hmm, I wasn't so sure, until I saw his class offering in the Honors College catalog for the next term: Protein Portraits. I did my reconnaissance work by signing up and taking the class. A term of trying to create artistic expressions of the wonderfully diverse molecules we call proteins, while learning about their chemical and biochemical properties, convinced me that I had come to the right prof. After I mustered up the courage to ask if Dr. McFadden would be my mentor, I learned I had nothing to fear, because I could see his excitement brimming just as much as mine when I first described my somewhat out-of-the-ordinary project.

With a proposal under our belts, we set out to convince the Institutional Review Board that our project was worthwhile and safe so I could start asking people my big question “on the record.” However, as we looked at the application, we were stumped! As we tried to determine which boxes to check, we wondered if our project even fit under the IRB's definition of research at all. Cue many discussions between Dr. McFadden and I on what research truly is. Research in the sciences, even the social sciences, seemed straightforward, but what about research in the art world? After going in circles for a couple of weeks, we decided it would be best to consult the IRB on the issue, since after all, they were the ones who would be yea or nay-ing our project. With their helpful guidance (we were obviously overthinking the issue), eventually we were approved, and then the fun part began: the interviews!

This was a personal expedition, so I interviewed those with whom I had some connection, who seemed interesting, and who wanted to talk about their own experience.
Before I started interviewing, I had developed a set of questions to ask about the roles science and art took in the person's education as well as life outside the classroom, but the process was organic and each time I conversed with a new person, my own views would expand, and the questions would change. There is a place for taking quantitative data, and opinions on art and science could easily be obtained and analyzed through surveys, but this... this is a slice of life! It can't really be distilled. I found that the interviews almost spoke for themselves. Each story produced a new gem. This thesis could have been solely comprised of a compilation of the interviews and it would have been beautiful. Real. Writers strive to get a natural flow of conversation in their novels, including the hesitations, the hmms and haws, the dynamics and rhythm. I have included these little quirks as much as possible, in the hopes that you will be able to hear the voices of the students in a genuine way. I thought about giving you the whole, raw stack of one-hundred plus pages of interview transcripts, but this is more of an attempt to boil it all down.

College is the time when much honing is happening. All the resources available in college are there to draw students out and give them breadth, to focus them and give them depth, to pique their interests and give tangible application to their knowledge – to help them navigate the choices they must make, including the decision of whether to spend their time on artistic or scientific pursuits. These are the stories of fifteen people who call or have recently called Oregon State their academic home in their own words via personal interviews. These people are vastly different in their interests and self-identifications, but they are united by their place in a unique life stage. Maybe it's “adultescence” or “emerging adulthood” - or as Wil, a fine arts major, put it, just being in
a bubble. He noticed, “It is this weird section of people that you're talking to that are transitioning that are not sure what they are going to do with their lives.”

When I told him that I liked that place because of its vulnerability, he responded, “Oh, it's so vulnerable. You're asking questions that people probably aren't ready to answer yet.” Another caveat that sets this group of people apart is that though many would probably good-heartedly complain that they are “poor college students,” Adam stated something closer to the truth: “I have resources, I have time, I have money – my parents have money which they give to me. But, were I a student of low income or if I had someone – like a kid – who was financially dependent on me, I definitely would not pursue that (other interests outside his major) at all.” Some of us may not have savings in the bank, but we are rich in time and opportunity and are able to take risks and experiment because we live a life that includes many choices.

**Defining the Terminology Personally**

“Art” and “science” are slippery terms, so my first act as interviewer in each case was to ask for a personal definition of the two. Katy summed up the sentiment of the majority well: “They encompass two really broad different things. Art is a creative expression manifesting itself in a physical form and science is sort of systematic discovery or experimentation.” In my sample, the most prominent word associated with art was “expression” but others included: “replication of self-being,” “world-view,” “emotion,” “concept,” “medium,” “physical,” “human perspective,” “personal,” and “creative.” On the science side, descriptive language included: “defined,” “scientific method,” “advances,” “knowledge,” “impartial observer,” “concrete,” “answers,”
“pursuit of knowledge,” “understanding,” “systematic approach,” “factual,” “information,” “experimentation,” and “rational.”

A few people offered especially interesting definitions for the two terms. Michelle, an exercise sports science major, expressed her opinion that the science-art divide ran along the lines of objective and subjective, but with an interesting twist, maintained that projects in both realms start with inspiration of some sort, and maybe that's what ties the two together. Jessica, another fine arts major, deemed science as something repeatable, whereas art is non-repeatable. As she said, “You can never make the same painting again, ever...” Of all the responses, Wil's description is the one I found the most powerful: “To me, art definition wise is what you create with your heart and science is what you create with your mind, your brain.”

Sitting here now, I wish I would have written down my own thoughts on the two before my first interview, because these conversations have truly changed me. My definition evolved over the weeks these interviews were held. In early January I was just listening, soaking up the opinions of my peers, but by mid-month I started volunteering my thoughts on the matter. James got to hear my idea that I was “Thinking about how in science it's so observation heavy and you're looking at data so it's like taking in the world and making it make sense inside your brain and art is kind of like the opposite process of taking what you've seen and putting it out.”

When I spoke with Lauren at the end of the month, the idea was starting to take root and grow, and as I heard people's stories, thoughts of a cyclical nature kept popping up: “Something that I've been thinking about throughout this process is the idea of it as a cycle. And science is a lot about observation and taking in the world around you, and art
is about taking that and having output.” But it was more than just that. There was a transformation that happened to the information between the input and output stage. I think this was what Wil meant when he described art simply as what you do with your heart. By February the idea had formed enough in my mind that I could relate it to Caeli in a fairly coherent way: “As an artist you take that information and process it through the human eye and human experience then put it back out into the world.” An analogy comes to mind of scientists discovering, identifying, and purifying a piece of gold, and artists taking that gold and forming it into jewelry and coins and finery. The human experience is rich with culture and politics, emotions and dreams, fears and excitement, joys and sorrows. When the two sides are brought together, science becomes beautiful and art becomes meaningful.

So Which Are You?

After each person explained to me their personal definitions of the terms “art” and “science,” my next question was, “So, would you consider yourself more of an artist or scientist?” For some it was easy – Adam was “more of a scientist, definitely,” and Jessica was “definitely an artist.” Caeli and Michelle are both in exercise and sports science and attributed their science designation to the way their brains worked. Both feel that the way they view the world is primarily objective and analytical, and they have a harder time expressing themselves in an artistic medium. Brent left the door open for change and flexibility in the future: “I feel more like a scientist because I'm limited to what they set up for me in lab. I'm limited to running the experiment they want me to – I don't have a lot of free reign. But, the goal is to become artistic with the tools they give me.”
The idea of fluidity that Brent presented is key – people are always changing, never static, and as they grow, they often shift between disciplines. Two of the artists I spoke with made their way from science to art quite unexpectedly. James was in exercise sports science before he found his way to fine arts, and Katy was a biology-loving premed student until her liberal arts side took over in the forms of photography, newspaper writing and editing, and new media communications. Both James and Katy bring aspects of their former scientific selves into their new art worlds. James still prides himself on his knowledge of anatomy and stressed the importance of having a good grasp on the subject when you're drawing the human figure. Katy spoke about how science and art underwent a role reversal in her life – art was once her hobby and now is her career, whereas science has been relegated to the realm of hobbies, in her case bird-watching.

Since Katy is also a senior in the Honors College, we discussed her thesis project as well, and it's a good example of the intersection between art and science. She is taking the time to paint three inch by three inch square watercolor paintings of each bird on her “life list” of all the birds she's caught sight of in her lifetime, and plans to design an interactive gallery exhibit that allows the viewer to have his own identification experience. As she explains, the project consists of “blending the actual art and physical art of the paintings themselves which are very detail-oriented and intricate, because you have to identify which bird it is, and there are a lot of species that look very similar, with the educational, scientific aspect of it – trying to raise awareness.”

For artists Leah and Wil, their disciplinary orientation goes all the way back to childhood. Both had encouragement from their families that led to cultivation of the arts. Leah amazed me by telling this story from her childhood: “Whenever we drew on the
walls, we were never in trouble, it was just like, oh you should draw on paper instead. We weren't in trouble – we drew on everything, instead it was just explained, oh you should do this so we can save it.” Leah's dad was an artist, so she had the opportunity to watch him draw and paint, and of course there was always a plethora of art supplies laying around. Leah described her activities growing up as not very structured, where she and her sisters were given the freedom to do whatever they wished. For instance, if one of them dreamed up a big plan to redecorate her room, her parents would take a trip to the paint store with her to make the dream a reality.

Wil's grandparents nurtured his early love for art education in a slightly more structured way: “personally my grandparents were the ones that always encouraged art – from paints to private classes to museums.” Their stories brought back visions of the “craft closet” my own family always had growing up. My mom jokes that she's no artist, but always made sure my brother Andrew and I had the paper and wavy scissors and paints to explore our own artistic sides. We are still pursuing art in college classes and on our own time now that we've left the house, and as I look around at my own craft explosion (lacking a true craft closet, I have yarn mingled with my clothes, scrapbooking and painting supplies shoved in one corner, jewelry-making and fly-tying supplies colonizing my bookshelf, and countless charcoal drawings stacked under my bed), I now see it as a testament to nurture over nature. We knew that art, and our attempts at making art, were valuable because our parents put it on their walls and came to our art shows.

Others were more hesitant to put themselves in one camp. Matt, the song-writing, rock-climbing biologist, Lauren, the dancing, painting food-scientist, Kyle, the Shakespearean stage-acting, humanitarian biochemist, Stephen, the skiing, drawing
marine biologist, and Colby, the intercultural communications specialist all placed themselves somewhere in the in-between land where they did not see the lines between art and science as particularly distinct. When Matt explained his philosophy of biology to me, art seemed to play a huge role: “Art helps you see connections in different ways, cause when you think about just science ... it's a lot of just memorization and saying this happens because of this, but [having an artistic perspective] you can see more the why things interconnect and [the] fluidity.” Listening to him talk about the fluid relationship between art and science was like watching him rock climb – a phenomenon that is best likened to dancing on the wall. For Lauren, art and science were so intermingled, she didn't even have separate definitions for the terms: “Art and science are normally to people two separate ideas but to me they're completely overlapping.” She explained further by giving an example from the kitchen: “Art and science are a huge factor in everything in my life, from baking, which is completely scientific and composed of chemistry and understanding the different ways that components work together to create a food, to the display of the final product, and that is pure art.”

Kyle had a struggle similar to my junior year crisis when he was a freshman here at OSU. He wanted to pursue a career that would have a beneficial impact on humanity, and though he was on the science track, he wondered whether he would be able to find the deep meaning there that he had discovered in high school through writing projects he had done in English. After much inner conflict, he decided, “In the end, the impact that you have on people's lives in the human sense is all self-determined really. I mean, everybody has to work at it – nobody can guarantee it – I mean you can have an impact in the sciences and in the arts.” He's finding the human applications in his biochemistry
major and plans to make an impact with a PhD-MD after his time as an undergraduate at OSU is completed. Studying biochemistry demands a lot of time, and Kyle acknowledged that it's easy to become one dimensional if you constantly keep your nose in a science text book. He said he found that anything that breaks him out of his usual routine is helpful for maintaining a balanced life.

Kyle and I spoke about the Shakespeare comedy he's acting in this term with the Corvallis Community Theatre, and interestingly enough, he hadn't thought of his participation in the play as art: “I don't even think about it as art, it's like sort of practicing the expression of humanity and I think that that's definitely unusual in the sciences, because there are expressions of humanity but it's not usually a focus … but with this play, you are able to relate to people. We're doing a comedy, so we're tying to make people laugh. It's not about any particular knowledge or skill set you have, it's about being funny, and I don't know how you technically categorize that ... it's not quantitative, you can't count that – units of funniness – there's no scale.” We eventually decided that the unit of funniness should be the “giggle-meter,” and a really funny bit could be described and a megagiggle or even a gigagiggle, but silly science jokes aside, it fascinated me to hear Kyle's views on an activity I had always deemed “artsy.”

From Stephen's perspective, any activity could be experienced as either scientific or artistic, depending on how you looked at it. Stephen spends a good deal of time performing DNA extractions in a grass-seed research lab on campus, and through he loves how the chemical reactions that occur are a reflection of what he is learning in his organic chemistry class, he sees another side to his lab work as well: “You can watch as you do the extraction that the liquid colors change constantly throughout it – it goes all
clear and you add another chemical and it changes green and yellow or blue, that process of how it changes, so I feel like if you look for it it's art. There's an artist feel to it, but if you're just blind to it or just walking in it can be very task oriented.” The same goes for being up on the mountain on skis, hiking through the woods, or training his dog Koda – he believes that you can choose how you experience the world around you.

Colby on the other hand, says he feels lucky, because the two worlds of art and science are built directly into his field of choice. On explaining the role the two play in communication, he said, “The study is the science, but the practice is more the artistic side of it.” When I asked him to delve deeper into that idea, he revealed that in the communications department, “there's both qualitative and quantitative. What's kind of cool about comm is that it's one of the only schools that uses both objective and interpretive styles of thinking. The school is actually split right down the middle whereas you go to anthropology and it's all interpretive or if you're a chemistry major or biology or whatever it's all objective thinking.” This idea of having both art and science at your fingertips excited me – and stirred up a slight twinge of envy inside me. However, that excitement waned somewhat when I asked Colby whether he was still drawing as much as he used to and he replied that these days he expressed himself by “just talking – that's one thing that's great about the major that I have. I get to build a skill that is really valuable and I feel like I express myself a lot better in the way I speak ... part of the reason I did art a lot in high school was because I was bad at expressing myself and you do that to kind of burn off the frustration of not knowing how to express yourself. But now I don't have as much as that problem because I feel like I convey what I'm trying to more effectively.” His response made me think that maybe when you stop having to fight
for something, it loses its spark. I asked myself, could it be that having both art and science under one disciplinary roof made it too easy?

While most people self-identified in the way I would have expected, there were a few differences between where people put themselves and where I would have put them. With such a small sample size I'm not able to make any generalizations on this matter, but I did notice something interesting in the gender dispersion in my somewhat venn-diagram-like distribution of artists, scientists, and those in-between. Neither the sciences nor the arts seemed to be dominated by one gender, but there were many more men than women in the in-between category. My first thought was perhaps this was just because I associate with strong, decisive women, but even that seemed speculative, so I will leave the question open for further research.

**What About the Other Side?**

For those who found it easy to take sides, I inquired about the role that the side opposite of their dominant identification played in their life. The range of answers was fascinating. Though Leah retorted that she had never had any interest in science, as we dug into it, she admitted that the business emphasis of her second major, merchandising management, was “probably more of a science, because otherwise there wouldn't be all these starving artists – you know with heads for business they wouldn't be starving!” She was attracted to what she called “invisible jobs” for artists in the marketing world – from deciding on which design to stamp on a comforter to picking the right fire-proof fabric for children's pajamas. We even started to discuss the fantasy-science border – the place where imagination thrives. She expressed her frustration that scientists seem to be
"eliminating all of these different possibilities because you can't prove it, where centuries from now it might be super obvious." She brought up the idea that what science is changes over times and is different to each new civilization. Mentioning her interest in the zodiac and astrology, Leah noted that “today it's not really considered a science, it's more in the artsy, dirty-hippie world” but once upon a time, the ancient Babylonians along with many of the civilizations that followed included it in their version of science.

Wil was another artist who saw the science side of life in a somewhat unique way. In his own words, “sciences are what get you through the day, every day, like the backbone ... there's this whole, not just biological science, but math when you're going to the grocery store and you have to pick out food – figure out how much your budget is going to be. Trying to use that to figure out how much I can spend on painting supplies for the month or things of that nature – like basic day to day things.” He also employs science within the art realm to help him overcome barriers: “I have a problem because I'm color blind so I have to read on how to mix things – and it's all mathematical, you need this much paint and this much of this complementary color.” At the time we spoke, he had just discovered a new book on mixing paint colors and was excited that it was in words and formulas instead of the usual colorized wheel format – which is not so helpful for a person like himself who cannot distinguish reds and greens. Expanding on the idea of formulas in art, he told me about Oliver Jeffers, one of his favorite artists, who sets up paintings based on complex mathematical equations.

We've been discussing the relationship between science and art in people's lives, but when you look at Brent and Jessica the figurative becomes literal. Though each identified strongly with their own side of the spectrum, their strong friendship brought to
life the prospect of a happy co-existence between art and science. As Brent said of Jessica, “she's gotten me into art and I've gotten her into science – she's come to chemistry club with me – and she said, “I used to really like chemistry, but I've forgotten about it,” and I said, “I really like being creative and I've forgotten about it,” and it's great. I think we all have the capacity to learn something new and love it.” She inspired him to model for the figure drawing classes as well as start taking photos and exercising his creative skills through scrap-booking. He watched her excitement rise as the teacher at chemistry club mixed different chemicals to obtain phthalo blue, one of her favorite pigments to paint with. Their relationship is a good reminder that we are not individuals living in bubbles, but in community, surrounded by influences that could broaden our horizons, if only we would let them.

For the self-identified scientists, many of their artistic expressions were transformations of their usual mode from mere utility to medium of expression. Adam explained that although he has a lot of creative interests, he's not just sitting down and busting out a drawing from the top of his head. As a mechanical engineer, he appreciates the role of technologies, such as photoshop or vector-drawing programs, in helping a person convey a concept in an artistic manner. Explaining a personal project to me, he ended with: “if you want to call it art, yeah, it's the expression of one's self, but it's definitely the science and technology that aided my ability to create that.” I think Adam was being too modest, though, because I have heard about his experiments with encaustic wax painting, have seen with my own eyes his moves out on the dance floor during a west coast swing song, and know for a fact that his love of the French language and culture runs deep. In fact, I often joke with him that he is a modern Renaissance man, a
concept he defines by “thinking of the phrase 'a man of many talents' - having the ability to do a lot of things, to be comfortable in a lot of different environments, the skill sets to be adaptable to try different things out.” We can't all be the next Leonardo DaVinci, but perhaps, like Kyle with his acting, many of us are unaware of how deeply our lives are penetrated by activities and hidden talents other than the ones we predominately identify with.

Michelle and Caeli give an artistic orientation to their exercise sports science majors with their respective passions for dance and gymnastics. After anatomy class is over, Michelle comes home and we spend hours every week choreographing new dance routines for the kids we teach each Monday afternoon at the Boys and Girls Club. Their excitement is contagious, and we all enjoy getting out on the floor and moving our bodies in new ways that express the emotions of whatever new song we're dancing to. When asking Caeli about her experience with gymnastics, she said: “I would say that's the only thing I would consider myself an artist in, because I did express my feeling and emotions through it. I went through some hard times in high school and I took all of my emotions into that sport and poured my heart out – no one knew what was going on – they don't fully understand because they're not the artist themselves, but you look at it and say, wow this person is really into it.” The two are also known for their crafty endeavors – handmade seasonal decorations by Michelle always adorn our little house, and I have suspicions that Caeli's giant craft box under her bed contains supplies for a list of hobbies almost as extensive as my own. My overall assessment was that people don't realize how awesome and complex they are – it was fun to talk to my peers and help to draw out their “other sides.”
Bacc Core: Helping or Hurting?

Unless the conversation took on a life of its own, like the foray Leah and I made into flammable pajamas or Kyle and my creation of the giggle-meter, I then started to steer our talk towards education. Some of the questions I was curious about included: Were people getting the exploratory options they needed at OSU? Does having baccalaureate core requirements (from here on referred to as bacc core) help or hurt? What's missing? Well, let me tell you, if you ever want to get a group of undergrads at OSU riled up, I have found the way. Just the mention of bacc core got me rolling eyes, sighs, and frowns – it was obvious just from the immediate physical reactions of my interviewees that we had reached a touchy subject. I did receive more than body language in response, however, and my favorite has got to be Lauren's sweet: “I think bacc core means well – it has good intentions…”

Others were more frank, but before I get into the nitty gritty, I must give recognition to the one student, Matt, who claimed he found bacc core “refreshing.” At the opposite extreme were Colby and Katy, who both used the word “hate” in association with bacc core. They recognized that taking a variety of classes was important in creating a well-rounded student, and later, citizen, but the system just wasn't working for either of them. Colby intimated: “I hate the idea that my overall GPA that reflects my study as a comm student is affected by how good I am at physics or biology ... as I get close to graduating I just feel like some of this stuff is completely pointless. Like, my last term of college, next term, I'm going to be taking computer science, and I'm pretty good with computers already, it's not something I'm going to use when I go to do my job, it's just checking things off so we can graduate.” Katy's disappointment with bacc core runs along
similar lines: “I get really frustrated cause I feel like I'm at that stage in my life where I've already had a lot of experience with a lot of different subjects cause I was such a different major. I've done a lot of art and writing and then science. So right now when people ask me to take the classes really different from what I'm working on I just want to say, leave me alone, I just want to do photography, I just want to do new media. I don't want to take the other classes – I'm tired of it. I get frustrated.”

The words and emotions coming from these two were strong, but the truth that I heard underneath the frustration was not, “why do I have to take these classes?”, but rather, “why do I have to take these classes NOW?” I think this is where the main weakness of bacc core lies. The program entails the student picking one class to take from a each of a variety of categories, but doesn't designate a certain timeline for taking them. You just have to, as Colby put it, check them all off at some point in your undergraduate career to receive your diploma. Often that leads to students putting these courses off until their last year and wanting to scream as they sit in a 100-level class that is taking precious time and energy away from their 400-level major requirements. The problem is that coming in from high school, students have no idea how this system works, and more often than not, no one lets them in on it.

A good academic adviser would sit each freshman down at their first meeting and explain this to the student. Maybe they could even show them a short video made by seniors telling them that if take their bacc core first, they will be much happier students in the long run. Maybe advisers are too out of the loop to be able to give this advice to students. How about a senior mentor for each freshman? Set each incoming student up with a senior either from their major or an area of study they're interested in, and let the
advising and question asking begin! I don't think that's too idealistic, even for a big university.

Coming in with most of my bacc core requirements filled, I didn't have the issues with the program that other students had to face, but I can sympathize with them on the lack of advising. Somehow I managed to sign up for 400/500-level biochemistry course in my sophomore year... and no one stopped me! I had at least two advisers at the time, but no one saw the red flag that I was taking a class clearly meant for upperclassmen, without having taken the normal prerequisites like cell and molecular biology. I could go on, but the point is that as much of a free spirit as I might be, I now recognize and bow to the need for order in the educational realm. The bulk of exploration should occur before a student begins to narrow his or her studies, just as 200 and 300-level biology and chemistry should be taken prior to attempting 400-level biochemistry. This is where the wonderful, but elusive tool OSU has been concealing right in the open comes in, the diamond in the rough that is the Exploratory Studies Program.

**Exploratory Studies?!**

Michelle enlightened me to the benefits of the Exploratory Studies Program, which I knew in the back of my mind existed, and I thought might be located in Waldo Hall – it is – but otherwise was foreign to me. Her story: “I switched my major four times so I definitely got a taste of the different majors... one of my advisers … was in the exploratory studies program, and he was awesome. He was willing to do whatever I wanted to try, and he kind of was like hey, you should try out this class and see if you like it, and I was like thanks, yeah, I need help figuring it out. And he gave me some people to
talk to go figure out and narrow down what I wanted to do. It was searching around in that way [which helped me] to find out what I wanted to do specifically.” She continued later, saying: “When I came to OSU I thought you had to pick a major and just do it – no one had told me about the exploratory studies and so I picked biology, and I sat down in the biology 200 class and had an anxiety attack the whole time and went immediately to my adviser and told her this isn't working – and the biology advisers led me to the exploratory program. I was so relieved – I thought to myself that every freshman should be in it – it was nice to be able to talk to someone that said hey, it's okay that you don't know what you want to do yet, but here are some options. Here's what you need to do to figure it out.”

As the first person to attend college in her extended family, Michelle was in a position where she needed more answers than some, but every new student coming to college is going to need some similar guidance. First, despite coming from one of the best public college-prep high schools in Oregon, and taking all the AP and honors classes I could get my hands on, I was overwhelmed those first couple of terms at OSU. I agree with Michelle – 200-level biology is hard! Second, there is a lot the university has to offer in the way of major courses of study, and there is no way a senior in high school is going to be able to comprehend all the options by just looking in the catalog. When she began, Michelle had probably never heard of the major she ended up in: exercise sports science with a pre-physical therapy concentration.

In my interview with Katy, she noted that she and I had similar experiences getting settled into the right major during our freshman year. With respect to college seniors, she determined “there are two classifications: people who have absolutely no
idea what they want to do in college and people who say I want to do this, I know I want
to do this, so I'm going to do this. And ironically people like that, like you and me who –
you started off as an engineering major freshman year, blah blah blah, engineering, and I
was like I want to be a doctor – biology – this is what I'm doing, this is my life, and then
after one term of that or two terms of that we were both like, this is not right, this isn't
happening. So I feel like an exploratory program would benefit both sides – even people
who think they know what they're doing often change their minds.”

In fact, out of the fifteen people involved in this study, the range including third,
fourth, and fifth year students, as well as those who have recently graduated, fully ten,
including me, changed their major at least once early in their college career. For me, the
transition to general science with a concentration in pre-dentistry from pre-
bioengineering was super rough and paved with tears. I had entered into the program with
the preconceived notion that bioengineering was actually biomedical engineering, and
would be a great path towards dentistry, maybe even including research in dental
materials! A quick look at the curriculum should have told me this was not the case
(Bioreactors? Fluid dynamics? Electrical fundamentals? No thanks!), but dreams die
hard, and I felt like I was giving up and letting people down by swiching to the “easier”
general science.

Years later I realize that the switch is what freed me up to pursue my wide variety
of academic interests, but I wonder what might have happened if I had been given the
same advice as Michelle: that it was okay to not know which specific college you wanted
to study in when you came to school. During my interview with Leah, she told me the
story of a friend who ended up dropping out, and ended with a proposal: “I think if there
was any way that OSU could improve, it would be helping people figure out what they're passionate about, because I think a lot of people give up on their dreams or what they're really interested in, because they don't think it's a viable option … and I think that's really sad because why would you want to spend the rest of your life doing something that doesn't make you happy?”

**Limited Options**

Since we are on the topic of options, I want to swing our discussion back to the idea of bacc core to look at another frustration students voiced about the program. Once you do finally arrive at the university and get a good idea of all the neat options out there, the majority of them are taken away. The words that people associated with bacc core were tinged with disappoint and it's a cruel joke to say that our university has all these exciting courses and then make you choose from a short list to fulfill what seems like an arbitrary requirement. Want to add in a couple business classes? No, you need to be a minor for that. Dying to try your hand at sculpture? Good luck getting into that even if you are an art minor. Katy was jumping for joy the other day when she finally found a business class that she was allowed to take – via the honors college, which is not an option for all. Brent related his frustration to me: “bacc core-wise you have your writing and your whatever when you're a science major, but it's on me if I want to take a drawing class, and then I'm blocked off to some photography classes and such because those are for majors only.”

It is tricky to navigate the world of restrictions and prerequisite courses of the university's online registration. I felt that Stephen's story was very poignant in this regard.
Not only was he kept from exploring his interests in art and sports medicine, but even in his own branch of science – biology – he was blocked from exploring the different facets that interested him. He told me, the frustration apparent: “I feel really restricted in actual ability to take courses ... especially in the biology field, which is weird for me to think about because I would think that [within] biology you can go to any branch of biology and explore it – like animal behavior or marine ecosystems, to jungle habitats or a river habitat. But ... if I wanted to take animal behavior I'd actually have to switch my degree to animal behavior in order to take some of those classes. You can't take marine biology classes unless you're trying to be a marine biologist. They have it set up where you essentially get your bachelors of biology degree and from there you take little branches out into specialty fields, but you can't just – they don't really make it easily accessible to explore one field and another at the same time. You kind of just have to choose one and hope it's the right one. And it's really kind of a pain and hard, but I guess that's how it works – that's the best way for everyone...”

Everyone who complained recognized that the problems stemmed from lack of funding along with the need to first serve students who were majors in each field. The consensus seemed to be that art was the most severely underfunded. For artists like Jessica, this translated to a perceived lack of support: “I would have preferred more art history support, more gallery support – cause I'm really out of touch with the conceptual art world – all the galleries and artists. They really do try to bring in artists here but we don't get enough funding for it. We don't have the resources we should. I would love to use some new techniques and new tools, but they don't provide those for us, there's not enough money.” She went so far as to say if a student was seriously interested in fine arts
they should not come to OSU. The reasons she stayed after switching from the graphic
design program were a complicated tangle of personal ties and emotions.

The underfunding of art seemed to be a problem for everyone, not just the artists.
If they aren't getting the support they need, there is no way the program will have surplus
spots in the studio courses to offer to interested non-majors. Wil admitted to me: “I feel
like it's a little one-sided. Not in a bad way for me because I reap the benefits of it, but so
many of the art classes you have to be majors only or at least a minor – but I could take
any math class I wanted to take for any extra credit I wanted to take just for elective. But
it's not reciprocated at all. You have to make a huge commitment by just getting a minor
to see what it's like in the art department. And for people who just want to expose
themselves to a workshop class it's not the same, or going to an evening long pose
drawing class is not the same – you're not getting that one on one with a professor.”
Perhaps voices like Wil's are beginning to be heard, because I was recently informed by
art professor Julie Green that basic drawing classes are now opening up to non-majors.
This is a step in the right direction, but there is a long way yet to go.

A New Core?

Being a bit of a dreamer, I mused with a couple of people about what the ideal
equivalent to bacc core might look like. To Brent I proposed: “what if they said, we want
you to explore what interests you and we're going to give you the opportunity to take
seven classes outside your major – just take anything that interests you?” He was unsure
of how students would respond, suggesting maybe they'd just take seven classes in
astronomy: “I don't know how that would work, I don't know if a kid who was a science
or art major would just go into 20 different subjects, I doubt it. I know I wouldn't, as a chemistry major. If they said go take 10 different classes, whatever you want, they would be science related – they would be marine biology, you know, astronomy, it would be science related, and I would probably take a photography class, but I would avoid sociology...”

With Colby, my proposal was no grades for your bacc core classes, and at first he liked the idea: “I took Native American flute and his teaching style that was traditional for him when he was living on his reservation is he didn't assign very much homework and the important thing is that you were there and you were trying. I think he might have been a little too lenient with his students sometimes, but it's all cultural, our ideas of what is acceptable. For them, it's more important that you get people engaged – it's more group oriented, you want people participating, but it doesn't matter if you're wrong or right, whereas we're very task oriented, it's very impersonal – the relationship we have with our professors – and we have multiple choice tests, everything is just get it done, get it done.” But he couldn't see a way around not having traditional tests, especially in a class of 300 people or more, which is a fairly common occurrence at OSU. Again it was an issue of funding.

Talking to Adam, I borrowed the idea of students self-selecting from one of my favorite books I've read this year – Zen and the Art of Motorcycle Maintenance, by Robert M. Persig. I didn't pose the question in a very graceful way, but the gist of it was: “I was thinking about some system you could have where people kind of self-select or something – if they have a desire to be there, they'll be there. Like the idea of almost not having grades, so then people who all that matters to them is getting a grade aren't going
to show up to class and they're going to drop out of school, and should they have been there in the first place? ... but if people who are there to be educated and because they care will go and not care about the grades, I don't know.” He had trouble imagining what the system would look like, but liked the idea, saying: “I would definitely go … I'd just go to school for the rest of my life ...Study linguistics, math maybe, who knows what next.”

What would such system look like? It's a good question. I see it as a place where papers are written and rewritten until the student and professor both agree that it has reached its goal, rather than the student putting it aside as soon as she is satisfied with the grade. Grand art projects would be launched from radical ideas, with no fear of the teacher grading down. Math and physics would cease to be the cause of dread, and would bring the world to life for students in new ways. Discussion in science classes would go beyond the basics, and experiments in the lab would actually produce understanding. Call, me an idealist, but I think one day this could become a possibility in our public universities, and not just in the funky little liberal arts colleges.

**Art and Science Appreciation**

The ability for a person on one side of the science and art divide to appreciate the work of a person on the other side is certainly not a new issue. Surely it goes back to ancient times, and has been popularized since C.P. Snow's 1959 Rede Lecture “The Two Cultures” addressed the issue of the increasing lack of communication and respect between the sciences and the humanities (Snow). Snow's lecture was given in a different time and place, but the general concept of trying to build a bridge to the “the other side”
is still relevant at Oregon State today. From what I've gathered, it's all about exposure. Wil and Leah spoke about the tendency for art people to exclude themselves. Wil quipped that “All the art people I know are just so cliquish – I mean you're constantly being praised for how original and unique you are – it kind of goes to your head. You become a little god of your own world. You don't have respect for other artists and it propels you farther and farther away from science.” Leah's observations weren't too far from Wil's: “I know all these art people who always hang out with art people. And all these merchandising management people who only hang out with their apparel friends. And it's just weird because I'm a part of both … I like being part of all three – the art people are fun to hang out with, and also the merchandising fashion people are a lot of fun, and then I hang out here [at home] where no one is art, and we have other things in common besides what we do.”

Kyle noticed that it's not just the art world where this phenomenon occurs: “I think this happens in all cases – people tend to associate with similar people … I really can't draw too broad of strokes but in general I like to study alone and I know a lot of other people like to study alone and I think with the majority of those people they don't tend to socialize as much. I think the more you confine yourself to that isolated study space, you become very good at doing what you do, but you're not practicing that capacity to share it with other people and to explain to them why it's important. And I really try my best to connect with other people – that's really what appeals to me – to be able to figure out why something is cool then also to be able to explain that to my friends.” It's easy to get into a groove and not look around to see what your fellows are up to. James brought up the idea that if we find a subject difficult, we might equate that with
disliking it: “I think an unfortunate thing is that when people encounter something that's difficult for them, they dismiss it as something that they might want to do. But you know, looking back, I may have gone with something more sculptural, something more hands-on, more physically intensive than drawing and photography were.”

It seems counter-intuitive, but the more something bores you or challenges you, the deeper you should go into it. Gretchen Rubin, author of *The Happiness Project*, brings up the idea again and again on her blog. The more you learn about something, the more interesting it becomes to you (Rubin). Jessica and Kyle revealed to me that they both have the same exact problem, but in reverse. Jessica told me the issue was: “people who don't know what it is to be an art major. I tell people – they're like, oh, what's your major, and I say art, fine arts, and they say oooooh. What does that mean? Are you the person who when I say that thinks, oh that's nice for you, or are you the person who's generally interested in the fact I take art, or are you the person who thinks you must not be a very good artist because you go here?” Other artists had similar woes; James thinks artists are viewed as lazy or somehow less valuable, and Leah lamented: “Whenever I tell people I'm majoring in art they're like, oh that's fun. They picture me as a housewife like painting watercolors in my spare time or something.”

Kyle said he felt there was a similar problem in biochemistry: “when I talk to people, just random encounters, and I tell people I'm in biochemistry, they say, oh I could never do that, or I don't understand it, or oh, I think people just make all that up … I think there are artists out there who appreciate science, but maybe it's the demographic that I'm interacting with – the students, the young people – they don't really care or have much of an appreciation for it.” It seems like when you aren't directly involved, it can be hard to
see the impact or importance of a field outside of your own.

It seems like the solution would be to get people out of their comfort zones and involved. In fact, as Wil put it: “You have to be extremely motivated to go and try these new things, get involved in different activities that are available, but no one pushes on you, and people are lazy. So that's the problem, I feel like most people would rather go to parties than go to like a music class on jazz. It's more of a society problem than a university problem though.” Lauren and Adam both cited that the drive to do extracurricular activities outside their scientific studies such as painting or joining a dance team had to come from within themselves. Lauren explained: “I had to really pursue them on my own. As for the art aspect of my life – I did painting on my own, I got baking experience on my own, and then I joined dance groups on my own through Oregon State – but I had to decide.” Where there is a will there is a way, and most people look outside the classroom to some extent to fill in the cracks, but when the goal is attempting to amplify appreciation for unfamiliar subjects, students need some direction; they are not likely to seek out something on their own time that they don't yet appreciate.

**Accessibility: Walking the Walk and Talking the Talk**

People talk about cultivating your taste for good beer or cheese, but I had the thought, what if you have to cultivate your taste in the sciences and arts as well? The way to make this happen is by creating opportunities for DOING. Even with the most interesting and informative lecture, the amount of information you retain past the exam is likely to be dismally small. As Colby argued, with bacc core, sure “you learn some interesting stuff, but the stuff I retained I could have gained just as easily reading a
science magazine or something.” If the information doesn't come to life in a real, tangible way, it'll be in one ear and out the other, as Stephen claims it would be for organic chemistry if he wasn't applying it to his work in the laboratory: “in Ochem we talk about extractions and how to do them, so we talk about the very molecular concept of what's going on, so when I do it in the lab it's very this chemical goes in here and this liquid comes out and supposedly this is what's happening – where in my class we actually break down and see molecularly what's happening – how the protons are being put on, how the extractions are pulling these certain parts of fungus away from these plant materials, so it's kind of cool to be able to relate those to each other. So that way I am taking that knowledge from class and applying it to work.”

Stephen's case is somewhat unique, but some institutions are taking this kind of hands-on method of learning that directly translates to doing and making it the norm. Bard College in New York is giving science experience to their whole liberal arts student body through a three week intensive course during the winter break of a student's first year called Citizen Science. The freshman split their time between labwork, discussion, computer modeling, volunteering in the community, and attending lectures, with the hope that if they are introduced to science in a real way early in their careers, they will not only lose their disdain for the subject, but they might actually get hooked on it (Foderado). DNA becomes a lot more interesting when you are inserting it into a bacterium with the micro-pipette in your own hands than just staring at a drawing of a double helix projected onto the wall in bio101. Whether or not there is a dramatic life change following the intensive, the ability to comprehend and discuss a scientific article will forever make science less daunting and more accessible to these students.
A lot of the accessibility problems seem to stem from the problem of language. Each discipline has its own jargon that sets outsiders scratching their heads. Colby informed me that they're called “speech communities” and they aren't just found in the academic world. He explained: “so lingo and the non-verbals and unwritten rules that you find when you go into a group would be their speech codes, so like maybe you go to some bowling club and they all have their own secret handshake – that's one of the speech codes you'd have to pick up on – it's just kind of a part of being the “in” group … if you go to a different country you're going to experience different traditions and rituals and a different set of social norms.” When I brought the topic up with James, he retorted, “that's kind of the point of education – cause you learn those things that you wouldn't learn outside of an educational setting – that's what makes your major different. The roadblocks, because you have to push through that in your education – that's kind of the point of education, to expand your mind about what you're most interested in.” Michelle and Jessica seemed to agree – it's exciting when you can finally read through that technical scientific article or a book that goes in to depth about camera obscura.

Katy and Lauren both acknowledged that the media seems to be carrying the torch to some extent in respect to creating accessibility to the science world. Katy shared her observation that “art is more outwardly accessible, but science via media is becoming more accessible – the new media ability to read Wired magazine or Scientific American, or watch the Discovery Channel – all these things that are going on... Planet Earth – shows like that – science disguised in these beautiful ways that are very enticing where you don't really realize you're getting this big dose of science when you're watching it.” Lauren brought up the point that “They're trying to make it entertaining too. You see
these things that are funny that have to do with science. Like... [the sitcom] The Big Bang Theory ... It's so cool to be a nerd. And it's cool to be a nerd in either direction. Just being super into something – having that passion for it – not just being surface, but really having it be an integral part of your life.” Lauren also predicted that the intersection between science and art is only going to increase in the near future: “I think that the really interesting thing that's going to happen in the next decade or so is that there is going to be a lot more crossover between the two, and I don't think they'll be thought of as hard sciences or light sciences or real art versus not real art anymore. There's so much going on in so many different directions that they're both going in. If you go in to the Museum of Modern Art you'll see things that you didn't really think were art in the first place. So it's changing like crazy.”

Is it possible that the university could offer synthesis classes where people could learn some of the language and speak intelligently across the barriers? Brent spoke of a desire for a class that has within it the marriage of art and science, since his eventual goal of fragrance development is such a blend, but he hasn't seen it at Oregon State yet. Listen up though, OSU, cause we have some ideas! Stephen proposes a drawing course for biology majors: “I tried to register for drawing – just sketch, drawing, pencil classes and canvas questions but I couldn't because I didn't have a minor in it. In order to take these classes you have to take all these other minor classes that I didn't want to take. I just wanted to draw – that's all I wanted to do was sketch and get a better artistic ability to sketch – which I find is important cause if you're making journals – scientists you know – you want to be able to draw what you see as best as you can so later when you're analyzing it it is as accurate as it is. So you think they would allow that, or have some
sort of journal, scientific journal class, where it's just an art based class where you just
draw animals and cells and all that because it would help you in your field, but they don't
– they don't offer them. So it's – I almost wanted to go above and beyond and make
myself better in my field but I wasn't allowed to.”

In the fine arts corner, James suggested anatomy for all artists, with the reasoning
that the knowledge of anatomy is important especially for drawing the figure: “When
you're explaining something to somebody about what is going on – if you have a posed
model or something – it's good to make it seem like you know what you're talking about.
Not just like, oh, yeah, that's this area, and that's this area, you can put names to things. I
think a problem with the art world is that it kind of loses credibility a little bit because
people assume that people become artists because they don't know anything else.”

Just these two courses would promote understanding and camaraderie between the
artists and scientists. I mentioned before that I had the unique opportunity to take a class
with a similar goal; Protein Portraits was a hybrid of sculptural representation and
biochemistry. Another experience that helped me appreciate the value of the synthesis of
art and science began two terms ago when I noticed in the weekly Honors College
newsletter that the Special Collections at the OSU Valley Library was hiring for student
positions. As a former public library volunteer and die-hard bookworm, I sent my resume
in on a whim. Somehow the powers that be (Cliff and Chris, to be precise), decided that
I'd be a good addition to the team, and I've spent many hours since then pouring over the
extensive collection (about half a million pieces!) of papers, diaries, correspondence,
books, travel plans, you name it belonging to two time Nobel Prize winner Linus
Pauling..
My task at the Special Collection was to research Pauling's travels around the world, but what stood out to me was his inability to see the lines between the disciplines. First he was in chemistry, and now engineering, but what about medicine? And why should a scientist stay tucked away in his lab? He felt he had the obligation to promote world peace, and wasn't afraid to do it, especially during a time when nuclear warfare threatened the safety of people world-wide. If I had the opportunity to sit down and interview Pauling, he probably wouldn't call himself an artist, but he was keen on visualization. He built glorious sculptural molecular models out of everything from paper and balloons to plastic and metal. Before Pauling came along, chemistry was a list of formulas in a book – his freshman text, General Chemistry, was among the first to include images. Pauling recognized the importance of a student being able to see these tiny molecular structures in his or her mind's eye, and teamed up with an artist – and scientist in his own right – Roger Hayward, to produce texts accompanied by elegant drawings. Here was a man who appreciated the role of art in science.

Application seems to be the key to making it through the tough classes. Caeli struggled through several major changes until she found exercise sports science where the classes actually seemed to lead to applicable knowledge. When I asked her whether the switch had helped give her life the balance she needed, her response was enthusiastic, to say the least: “Yes, thank God ... this term I'm taking two [exercise sports science classes] I believe, and they both have labs. I love labs because I'm a kinetic kind of learner so I can move things around and it's great fun. But with those classes it's just so direct – I'm taking therapeutic modalities, which teaches you how to use special equipment to help progress injuries or whatever, make them better, heal not faster but properly I suppose,
and the lecturer ... talks directly like “in a clinic this is going to happen,” or “on the field” – because he's an athletic trainer – “this will happen.”” Before that, she was constantly trying to reassure herself that her boring classes were helping her obtain background knowledge that might be helpful later on. It seems like somewhat of a bleak outlook, but I'm sure most can relate to it.

**Specialization: All in Good Time**

I confessed to Caeli that I had a fear of going too deeply into one subject and losing all that wonderful breadth, but it seemed to me that the depth was exactly what she needed to make it click. She agreed: “Yeah, I needed that connection. Without it I just kind of glaze over. I like going in depth about things I'm interested in – I love learning. Love love love learning, but if it's beyond my reach I give up.” Others also made my fears of specialization seem silly. The conclusion was similar to that of the bacc core issue – explore and get your breadth first, and then settle down and start going deeply into one subject. Kyle explained it well: “For me it's important to have a lot of depth in my biochemistry and stuff – and I feel like I'm basically getting that at this point – I'm taking the same classes as graduate students in the biochemistry program and that's really good for me. But I also really want to have a broad scale of exposure to liberal arts and everything. I took anthropology – physical anthropology – last year and it didn't get really into depth but it touched enough so I was really able to get a feel for the field and it gave me. It was really interesting and I gained an appreciation for that field and why it's so important and why it's so cool. And I want to do that with as many subjects as possible. I know I can't get as in to everything as I am with the sciences right now, that's a fact of
life, time, but I like to have a broad perspective and also have an intense narrow focus in a chosen area.”

The image of walking down a long hallway symbolizing my undergraduate education and closing door after door until only one was left and I walked through it to professional school honestly scared me to death. Remember the crisis I had back in junior year with the psych and the painting and the history? I suppose this door-closing fear lingered from that incident. When I expressed this to Michelle and wondered whether she felt the same, she said no way! She was thrilled at the prospect of her learning honing in on the field of physical therapy when she began graduate school the following year, and as for doors closing? “I think that I can still have other things on the side that I’m interested in and want to do, but I don't think doors are closing because I will keep opening them.” In my fear I had forgotten the second half of the popular saying about opportunity – sure, one door closes, but another always opens.

I talk a lot about the divide between art and science, but the space in the middle is not some sort of waste land. In fact, a lot of disciplines are in-between. Engineers, graphic designers, and architects all fall into this wide category twixt one and the other. Though I was able to glean some insights from discussing engineering with Adam and communication with Colby, this is the area I wish I had explored more. What about the civil engineers and the people in interdisciplinary studies? How about the business majors and the anthropologists? With the idea in mind to explore the choice made between art and science, I had focused on those in the more traditional science and art fields, and once I compiled my research I realized there were many voices missing. The choices made at each end of the spectrum might be more dramatic, but decisions had to be made
in the murkier waters of the in-between as well.

I asked many people for their thoughts on the designated names for different disciplines: You have fine art, language arts, theater arts, liberal arts, and you have hard science, social science, political science, and so on. Most people said well, that's just the way it is, or that's just how the fields developed, but Kyle's response made me think: “I sort of agree with the term the softer sciences, because basically, the more you work with people the harder it gets to quantify things. You can't quantify emotions, but emotions govern so much of the human experience, you have to take that into account somehow, and I don't really know how you do that. Maybe that's why we need artists because they're the scientists of the human condition.” Artists are scientists and scientists become artists in a fluid dance between discovery and creativity. As I said to Kyle, “Structure is important, but breaking structure is important too. I'm having this picture of inside the cell and how you're constantly building molecules and proteins and how you're constantly breaking them down again and it's just this symphony – a balance of outside and inside. And this other picture of scientists taking in the world around them and describing it, and artists taking that and putting out from themselves this explanation of it that's been processed through human emotion.” Whatever the choice a student makes, it is not one made in isolation – we are a community of scholars here at OSU, and it takes all kinds interacting and learning from each other to make that community not only function, but thrive.
A Proposal or Two

When I began this adventure, the goal was to discern the different ways people defined science and art and how they saw themselves fitting into the two different disciplines both on campus and in their lives at large, but what started as a couple of questions about flexibility and accessibility in the educational system here at OSU became a huge indicator that the baccalaureate core program needs major revamping. Although the bacc core was not the focus of my initial project, the frequency in which it came up leads me to propose that a deeper look should be taken in this area which gets students and professors alike so riled up. There is a need for a curriculum which lends itself to a community of collaboration and understanding, along with mutual respect and appreciation, which also allows students to become proficient in their own discipline. There is a fine balance that must be struck between a “watered-down” course of study and one where a narrow focus shuts out connections between fields.

My interviews have identified that the problem exists, but further study must be done to ask students and staff what the details of a possible solution might include. It might be fruitful to conduct a study on how our current system for baccalaureate courses was set up. Were students involved in the process? Who made the initial decisions about courses included in the bacc core options? Who continues to monitor the system? Where can students lodge complaints and offer suggestions for alterations?

Although they are far from comprising an inclusive list, three main areas that are causing frustration include timing, advising, and options. Timing is an issue because uninformed students are given free reign to choose when they complete their bacc core. As mentioned above, this often results in students putting off bacc core classes until late
in their college careers, when they would rather be focusing their time on their major courses of study. A solution might be to give students more of a rigid timeline where baccalaureate courses are taken in the first two years, rather than a simple checklist where classes just have to be ticked off sometime before graduation. This would expose students early to the breadth of study areas across the university, the knowledge of which could promote interdisciplinary collaborations further on in the student's undergraduate career, as well as beyond. Perhaps if students develop an early appreciation for disciplines outside their own, interactions with others in the future will be smoother and more effective.

This problem of uninformed students has to do in part with a deficit in the advising arena. Advisers must be trained to fully understand the baccalaureate system, as well as how the core fits into and complements a student's major course of study. A question might be, how are the advisers currently being trained? They must be informed of bacc core options to be able to pass on pertinent information to students. I only have my own experiences with academic advising at OSU, and small glimpses of the experiences of my peers, but to me, the ideal adviser would act as a pivot point to providing students with helpful resources on campus and beyond. Possibilities include facilitating a mentoring or buddy program between freshman and upperclassmen like the one I mentioned above, introducing students to professors and researchers within their field who could help get students involved in a hands-on way in an early stage, and providing information about forums where students of different disciplines could unite on campus and in community projects.

A lack of course options is another large complaint among students. Perhaps as an
OSU community, we can seek ways to open up such restricted areas of study as art and business classes. Student voices are the ones which will have the most power here, but we all must work together to see our wishes become reality. Along with the synthesis type courses like anatomy for artists and drawing for biologists proposed in my study, students attending the dissertation defense brought up even simpler requests such as a genetics course that is at a low level and can be taken without a handful of prerequisites. In all courses, but especially those outside a student's major, an emphasis on interactive learning helps keep each learner engaged and cultivates their interest in the subject. Sitting in a lecture learning about the classification schemes of insects is apt to cause all but the most avid entomologist start to doze, but say you are challenged to examine an insect at your seat and walk through the characteristics on the dichotomy until you discover the bug's classification on your own. This is just one small example of putting education into the student's own hands. Students come to college with open arms ready to embrace the knowledge the university has to offer, as a community let's continue to create and revise a curriculum and environment at Oregon State that provides them with the tools to build a future we'd all like to see.
