

# Bringing Science and Social Justice Together

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## Bringing Science and Social Justice Together

As a liberal arts college, Augustana prides itself on its well-rounded environment and ability to produce ethical, critically thinking, community driven students. While I can see that the college does indeed *try* to create an inclusive and amiable environment and expose students to diverse, contrasting, interdisciplinary, and global perspectives, I also see the ways and areas in which the college could improve. In particular, Augie can make sure these perspectives are brought up in most, if not *all* classes. As a Biology and Women & Gender Studies double major, I have noticed that the science department fails to effectively connect science and social justice issues. If the college is to claim that it's students are exposed to differing perspectives in all of its fields, then we need to make sure that this is actually true. We should also aim to connect social justice and science in order to make the science department a more inclusive space for students of varying genders, races, classes, sexual orientations, sexes, or abilities, something that professors would very much like the department to be.

What is social justice? To put it simply, it's the idea that all people, regardless of race, sex, class, sexual orientation, gender identity, or ability, should have equal benefits and opportunities. Equal access to opportunities was the focus of Liberal Feminists like Betty Friedan, who argued that one of the most crucial things that women needed was the same access and opportunities as men. Betty Friedan, often regarded as the spark of the Second Wave, focused on white, college-educated, heterosexual, middle-class women and their persistent depression. She concluded that getting out of the personal sphere and getting a job/having a career was what these women needed; something that lower class women and women of color had already been doing. In her famous, *Feminine Mystique*, Friedan identified "the problem that

has no name”. While discussion of “the problem that has no name” was needed, it did ignore every other woman who wasn’t white, college-educated, heterosexual, and middle-class (Mann). From the beginning of the feminist movement, Liberal Feminists have tended to focus on equality and ensuring that everyone has access to all areas in society, i.e. politics, economics, and education, etc. However, they also tended to essentialise groups and overlook the many intersections and differences among groups of people that could keep them from that access. Liberal Feminists often continue to do so today. I find that this is also what happens when feminists (and non-feminists) focus on equality over equity; the needs and realities of other groups are ignored in light of the needs and realities of the more privileged. This is why working towards equality only works if everyone starts at the same place, socially speaking. When discussing social justice, many people tend to take a more Liberal Feminist approach and often focus on “equality” instead of “equity”, and that’s a bit of a problem. Many feminists and non-feminists use these two words interchangeably, but they do not mean the same thing. I want to make these distinctions in order to clarify exactly what I mean when I begin to use the terms “intersectionality” and “social justice”.

First, “equality” is more synonymous with “sameness” and making sure everyone has the same access to opportunities. “Equity” on the other hand, is more synonymous with “fairness”. Understanding equity means understanding that some people are at greater disadvantages than others. This is why, when discussing social justice, it is important to do so from an Intersectional Feminist perspective. “Intersectionality” is a concept developed by Kimberle Crenshaw in order to highlight the many ways that racial and gender oppression affect Black women and to make it easier to point out and discuss. Crenshaw notes that her concept has, “brought to light

the invisibility of many constituents within groups that claim them as members, but often fail to represent them” (Crenshaw). Intersectionality ultimately calls for us to acknowledge the intersection of identities that are often overlooked, and consequently bring harm to groups, and to keep those in mind in all that we do so as not to ignore the needs of underrepresented groups.

In contrast, Intersectional Feminism falls more in line with equity and being aware of people’s social status and how different groups will need more or less than others to be at a proportionate starting point. Liberal Feminism and equality, on the other hand, assumes that everyone is already at the same starting point and the only thing that everyone needs is the same access. However, as Blair Mann, the Director of media relations at Collaborative for Student Success, writes, “Yes, making sure all students have *equal* access to resources is an important goal . . . . But the truth remains that some students need *more* to get there (Mann).” The sad truth is that we still live in a patriarchal, heteronormative, racist, ableist, society that prioritizes one sex, one sexual orientation, one color, one gender identity, and one body over the others. The truth is that some people will require more help (and generally, less oppression) just to get on the same level as others in our society. So, to care about and fight for equality, we first have to strive for equity. If we don’t, we’ll be working towards a false equality; one that excludes and neglects the needs of underrepresented groups. What good is ensuring access to everyone if some have barriers standing in the way of that access that we refuse to even acknowledge?

According to the Common Data Set for Augie 2015-2016, there are currently 2,460 full-time undergraduate students at Augustana. Of those students, 479 (about 19.5%) identify as Hispanic/Latino, Black, American Indian/Alaska Native, Asian, Native Hawaiian/ other Pacific Islander, or as two or more races. We also know that

there are a number of students that identify as LGBTQ+ ; the 2015-16 freshman survey reported that 3.4% of respondents identified as LGBTQ+ and 8% of respondents said they were unsure of their gender identity. This data tells us that there are students on campus who fall into the category of “Other.” Simone de Beauvoir defined “Other” as “one who fills what is lacking in the dominant being...(Winchester)” and applied this concept to gender to show how women were described in opposition to men. Edward Said also used the concept of “Other” to describe how colonialism also produces categories of “Other” and the way that the West constructed images of the Orient (Moosavinia). Basically anyone who isn’t White, male, heterosexual, cis, etc. is “Other”; they are not part of the dominant group. People who are the Other are more likely to be forced to confront systems of oppressions because they are and will continue to be affected by things like racism, sexism, or ableism, no matter which field they go into; they *have* to learn to discuss and understand these issues, or at least find ways to deal with them. Basically, a white (wealthy, cis, hetero, able bodied) woman will often have to learn about sexism because that is what she’ll be affected by, but will not necessarily have to learn about things like racism, classism, or ableism because her privilege allows her to ignore these issues. However, a social justice perspective turns this idea around. The aim of social justice is to work towards a social or cultural shift; to change society's views or understanding of others’ lives in order to attain equity. This social justice perspective requires us all to notice our privileges. We should all aim to recognize and address social inequities, wherever they may exist. As it is, these social inequities take place everywhere; there is no area in life that is immune to them. As I will show later in this paper, Augustana, and specifically, the science department, is not immune to these inequities and social justice issues and can not opt out of addressing these problems.

In this way, it is our job as students and faculty to ensure that the science department is a space that is open to social justice.

Within science, there's the sentiment that "everyone can study science or do research". While this is a pleasant and optimistic idea, it's a very Liberal Feminist viewpoint; very ignorant to others whose experience states that they can't study science or do research. Liberal Feminists would argue that it is solely gender or sexism that keeps people from science. Many people have the same mindset; they focus on gender above all other oppressions. The White House's own page on "Women in STEM" focuses solely on gender and makes a *slight* mention of other systems of oppression: "The Office of Science and Technology Policy, in collaboration with the White House Council on Women and Girls, is dedicated to increasing the participation of women and girls- **as well as other underrepresented groups** - in the fields of science, technology, engineering, and mathematics...". This sentence (with my bolded emphasis) is the only time the page even recognizes that there are things besides gender that affect people's access to STEM. Even the White House fails to note how people can be oppressed by multiple systems. Again, this "everyone has access" sentiment and Liberal Feminist viewpoint of sexism as the only problem essentializes people's experiences and ignores the various other systems of oppressions that affect people's lives.

Intersectionality would require us to pay attention to *all* the ways that people are kept from science or limited within STEM careers. It's only with an intersectional perspective that we see that women of color face biases to a higher degree than their white female colleagues due to the intersection of gender *and* racial stereotypes. Simply saying, "anyone can do science" glosses over the fact that women, especially women of color, face social hurdles that discourage them from science. For instance, a

2015 study published in the *Harvard Business Review*, found that women face four major patterns of bias in STEM work and that women of color experience those biases to different degrees. The study also found that Black and Latina women face an added fifth bias. Researchers found that women, especially Black women, face a “Prove-it-again” bias in which women continually felt like they had to prove themselves and their abilities. They felt like their successes were minimized and that their expertise was doubted. The second bias women face is the “Tightrope”. Researchers found that women have to be masculine to be seen as competent, but are also expected to be feminine. The researchers write that, “women find themselves walking a tightrope between being seen as too feminine to be competent, and too masculine to be likable (Williams)”. This is especially felt by Black and Latina women, who have to contend with stereotypes like the “angry Black woman” or the “spicy/fiery Latina”. Women also face the “Maternal wall”, where professional women who decide to have children find that they “run into a wall” in which, “their commitment and competence are questioned, and opportunities start drying up (Williams)” and their time at work is seen more as a hobby. Another bias women face was the “Tug of war”, where women who have had to deal with discrimination early in their careers tend to keep their distance from other female colleagues because they felt that they were in competition with them. Lastly, women, especially women of color, felt “Isolation”, in which they felt that socially engaging with their colleagues would only harm perceptions of their competence. Some women of color even felt that their white colleagues were “afraid of people of color in a way” and thus avoided them. Researchers also found evidence of plenty of good ol’ explicit racial stereotypes. These biases are examples of some of the ways that women are limited within STEM careers. Note here, that without an intersectional perspective, most would say that

women as a whole face these biases so we only need to focus on improving gender disparities.

In the same way that many tend to overlook intersecting systems of oppressions, many also overlook the historical and present societal effects that systems of oppressions have on institutions. We must take a step back and look at the bigger picture. We have to look at science as an institution and look at the society and context in which it was, and continues to be, shaped. I feel confident in saying that it is common, though not often thought about, knowledge that science, like many other institutions, was developed and used mainly by White, cisgender, hetero, racist men. Consequently, it's not very hard to understand how science itself can harbor the views or ideologies of this dominant group. As Sandra Harding wrote in *The Science Question in Feminism*, "The selection and definition of problematics- deciding what phenomena in the world need explanation, and defining what is problematic about them-have clearly been skewed toward men's perception of what they find puzzling (Harding 22)". Basically, there is bias even in what we decide to study; what someone is interested in is shaped by their life experiences and views. Even the concept of "objectivity" in science is not without bias. Certainly, efforts to remain "objective" in science come from legitimate concerns for accountability of our claims and to be sure that they can withstand empirical investigations (Stone-Mediatore). However, objectivity is a myth in that no one can truly remove themselves from their position in the world and do research with absolutely no bias. This is not to say that having bias is always inherently bad. Bias, and being aware of bias, can help to be a source of new perspectives. For example, Emily Martin's famous *The Egg and the Sperm: How Science Has Constructed A Romance Based On Stereotypical Male-Female Roles*, shows how our cultural perception and biases of gender affect how we describe

scientific findings, which can then limit possible future research (not to mention uphold gender stereotypes). Our idea of “objectivity” is also similar to the Liberal Feminist idea of “equality”. Liberal Feminist’s idea of “equality”, as previously mentioned, tends to essentialize and ignore the voices of others. “Objectivity”, especially in academia, is a bit one-sided in that it is the dominant group in society who gets to decide what is exactly “objective” and thus, knowledge worth listening to, (i.e. empirical data). This isn’t to say that empirical data is not important or useful, but as Stone-Mediatore so pointedly writes, “...when we treat empirical data not merely as one element of knowledge but as the hallmark of objectivity, we favor the perspective of those groups who more often have their concerns documented in data and their worldviews institutionalized in the frameworks that structure data (Stone-Mediatore 59)”. Basically, dominant groups get to decide what is “true” knowledge and which experiences get documented. All of this is to say, if an institution is formed by White, cisgender, hetero, racist men, then it is more than likely that their concerns and views are at the forefront of that institution and that if we haven't really changed the institution or the way that it is practiced and thought about in a societal context, then of course, the institution will still hold those views to some degree.

To include social justice in science means that we need to address these various inequities and areas of possible bias. Acknowledging these biases and ingrained prejudices isn’t meant to discourage our use or appreciation of science, but to encourage our understanding of science in a societal context; to become more knowledgeable, less ignorant, and better citizens. Thinking about these biases also has the potential to change what questions we ask, what types of research we conduct, and how we interpret our findings. Integrating social justice into the Augie science department means that science students and faculty must constantly be aware of these

social inequities and actively combat them. I admit, it sounds a lot easier to continue to see science as as distinct from social justice; beginning to learn about all of these social inequities is often depressing and tiring, but addressing these inequities is not only right, but is one way that faculty might draw in underrepresented groups to science. Madeleine Schultz, a professor at Queensland University of Technology, also points out that, “Because scientists hardly shy away from difficult problems in their research or line of work, they should certainly not shy away from addressing difficult social issues in their teaching (145). To ignore these inequities and continue proclaiming that “everyone is welcome; everyone can do science!” is unrealistic and oblivious to people's lived realities and experiences. It is more realistic and just to say, “everyone *should* be able to do science”, while continuing to combat inequities.

So, why should we care if the Augustana science department effectively integrates social justice perspectives? One could argue that science students could just take a WGS or Sociology or Anthropology class of some sort to understand the social justice perspective. I admit that this is true. I’d argue however, that doing so isn’t *specifically* connecting science and social justice and as a liberal arts college, Augustana should strive to ensure that students and faculty are able to make connections to other disciplines, regardless of which field they are in. It has been my experience that WGS classes have a lot of worthwhile knowledge that can benefit many science majors, but even with learning perspective requirements, it’s relatively easy for science majors to miss this information. For example, while I was taking a Gender and Sexuality course, one student voiced that they valued learning about intersex individuals because they were a pre-med student and had never heard about them. Would this student have ever heard of this other sex if they hadn’t taken this class? Are many pre-med students missing this kind of information? This is one example that has lead me to believe

that our current science curriculum must improve and that we should have science courses that relay this kind of information to students, instead of merely relying on other disciplines to.

Requiring this sort of total interdisciplinarity in all Augie classes is supported by Augustana's own learning outcomes and stands to benefit Augie students. One learning outcome, Intercultural Competency, written on the college website, reads: "You will relate well with others. You will become aware of similarities and differences among cultural groups, recognize the value of multiple perspectives, and appreciate and celebrate difference (Augustana)". I can think of no better way for science students to "*recognize the value of multiple perspectives*" than to integrate social justice into science classes. I will describe how such a class would look later in the paper, so I won't go in detail at this point, but I'd like to point out that teaching science from an intersectional social justice perspective *requires* students to look at an issue from multiple sides and viewpoints. Science students should encounter multiple perspectives and differences in their field, and I don't just mean competing scientific theories and arguments, but more specifically, how science will affect and has affected different groups. The next learning outcome, Creative Thinking, reads: "You will push beyond the status quo. The liberal arts are not only the arts, and creativity is not reserved for artists. Augustana students learn how creative thinking leads to progress by advancing the current thinking and methods in any discipline (Augustana)". The very first sentence, "*You will push beyond the status quo*", describes the aim of intersectional social justice. Even by just learning about the different inequities that exist in society, students are pushing back against the status quo of our society that claims that these inequities don't exist; that we live in a post racial, post feminist society and that things are just fine the way they are. The third

sentence in the description, “*Augustana students learn how creative thinking leads to progress by advancing the current thinking and methods in any discipline*”, honestly describes my intention for this project. I want to see the science department advance and progress in its ways of thinking and seeing itself in a societal context. The last learning outcome, Ethical Citizenship reads: “You will respond to the needs of others. Augustana students develop a sense of responsibility towards themselves, others and the world. You will be concerned with issues beyond your own self-interests (Augustana)”. This is, in my opinion, one of the most important learning outcomes and reasons why we must integrate social justice with the science department. Intersectionality and social justice call for us to care for others; to bring attention to underrepresented groups whose voices have traditionally been silenced or ignored. Incorporating social justice and intersectionality within science classes will push students to think beyond their work and instead, think of the broader implications that their work will have.

As both a Biology and Women’s & Gender Studies major, I feel very passionately about this subject. Science and social justice are both topics that I am deeply interested in. My experience in the science department as a WGS major, as a Mexican American woman and as a first generation college student, has been valuable, frustrating, constructive, negative, and valuable all at the same time. My experience is what has led me to this SI project. After my four years of taking science courses I’ve noticed some that there are too many science students that can’t (or struggle) to connect science to social justice issues. I recall in one class discussion, the question, “Is there racism in science?” (or something to that effect) was given. To me, this was an extremely laughable and incredulous question. Racism is everywhere; of course it can be found in the science field! Yet, many students believed this to be a hard

question that they really had to take time to contemplate. I found myself explaining (to my small discussion group) what microaggressions were and how (conscious/unconscious) biases are very much a real thing. While I do quite enjoy discussing these sorts of things, I do not think that it is my responsibility or job as a female student of color to educate everyone on these matters, especially when attending a college that proclaims to promote diversity and interconnection between the disciplines. This is exactly what I want to help the science department improve on. I want students and faculty to be able to understand and discuss these social issues. I also want science students to understand how science affects society and how society can affect science. At the same time, I want to make sure that future science students don't feel the same discomfort that I have. I chose to interview other science students of color to find out how their experience was similar or different than my own. Before going on, I'd like to note that the experiences that I mention in this paper are not representative of all students of color in Augie's science department. However, these experiences do show that there is a need for improvement.

Many students of color agreed that there was a sort of gap in science courses regarding social justice. Quite a few of the students that I interviewed expressed the feeling that many science students are not open to social justice issues (and thus, not open to some of the problems we face). One student, Carissa Thalmann, wrote, "...it is discouraging to see a lack of attempt at understanding the experiences that students of color have in both the science department and the campus in general. Many people in the science department seem to passively interact with social justice issues, falsely believing it does not pertain to them, unlike the humanities...". Another student, Ruchira Laroia, wrote, "Racial minority students go through a different experience than other students-that's a fact....To not talk about the differences in experience....is

to not acknowledge the differences. And not acknowledging the fact does not erase it. Lack of recognition just makes the truth more uncomfortable to live with....To blame the lack of discussion to ‘well, that’s just not the nature of the sciences’ is to invalidate a liberal arts education....”. Clearly, there are a various concerns that students of color have. Still, when asked if that there were gaps in the science department in regards to its knowledge of social justice, one student replied,

“I think this is a tricky question because this is a major that doesn’t really have race incorporated in its knowledge. I think it’d be hard to implement compared to social sciences for example, as that’s actually a part of the knowledge and major itself (Student)”.

I find that this a sentiment that many other students express. I admit, the question of how to connect social justice to science is at first, difficult, especially if your main focus is within the natural sciences. And this isn’t a challenge only students have; faculty are also a bit stumped. Dr. Brian Katz, an Associate Professor of Mathematics and Computer Science, mentions that integrating social justice into courses is especially hard for many fields, like math, where the material being taught is less discussion based. I think that what’s important for these cases where the classes simply cannot incorporate social justice into the material, is to still let it be known that the class (and overall department) is an inclusive space with people willing to discuss these issues. Through interviews, I’ve found that some professors are already doing this work and I think that it would be imperative for other professors to follow suit. Dr. Katz recounted that he works hard to let his students know that his classroom is inclusive and open. He does this by asking students which pronouns they go by, discussing microaggressions should they pop up, and strives to connect Symposium Day topics to class. Another professor, Dr. Tallitsch, a professor in the biology

department, says that he actually allows for an open discussion at the beginning of his classes. These discussions allow students to bring in issues that they've been thinking about or that have been troubling them. I think this is an excellent way to bring in social justice issues to classes. Students and professors often close off discussion of any outside material that doesn't seem to directly connect to science, but having these discussions serves as a way to remind students that we don't live in a bubble; that things that are happening outside of the science building can and do affect us. Dr. Tallitsch asserts that bringing social justice issues into the science department is about more than changing classes; it's about having open and frank discussions with students and working to ensure that the department has a comfortable and open atmosphere for everyone. Another professor commented that, "The classroom should be a setting where students should feel comfortable bringing up these issues...(Professor)". I agree wholeheartedly with this notion. We should be working towards an environment that recognizes the realities and needs of Otherized students so that they don't feel out of place in the science community.

But we know that this is currently happening: some students don't feel like they necessarily belong in the science community. It is the current reality that some students of color have felt like they can't find a piece of their identity in the science community. I admit that it often feels like the community is more willing to take on that Liberal Feminist lens and discuss gender issues, but not race. I acknowledge that this inability to discuss race issues points to a greater societal problem so I can't expect Augie to somehow fix that; however, this leaves students of color in a difficult place. As mentioned earlier, this places students of color in a position where they have to teach other students about social justice issues. However, knowing that many science students lack the knowledge of intersectionality, students of color find

themselves having to weigh out whether or not it's worth their time and energy to bring up these issues in class because we are unsure of how other students will take it. Some students can react in a hostile manner in response to discussions on racism. This was most disconcerting for Ruchira Laroia, who happens to be a Pre-Medicine and Neuroscience student. A big component of an intersectional lens is being able to empathize with those who are different than you. Ruchira mentioned that it was so baffling to notice how science students weren't open to social justice issues because she knows that premed students *must* learn to have some sort of empathy as they'll have to deal with patients.(although I'd argue that empathy is needed in any job where one works closely with people). Norman Daniels, a Mary B. Saltonstall Professor of Population Ethics and Professor of Ethics and Population Health at the Harvard School of Public Health, has written that social justice is very important for bioethics and health providers. He suggests that bioethics look at social justice issues because they pertain to population health. Daniels submits that systems of oppression, like race and class, actually contribute to illness. Because these sorts of things contribute to illness health providers *have* to understand the social justice perspective because they *have* to look at all the things that affect people's health and how illness continues to affect people's health (Daniels). If students aren't learning about the specific ways that social justice issues relate to science, they are missing out on key education.

So,we know there are some issues that students are facing within the science department. The question that remains is, how can we make Augustana's science department more intersectional? I believe that there are several things that we can do to advance the science department. First, I think that some amount of faculty training would be beneficial. All faculty members could stand to learn how to discuss social justice issues and many mentioned a willingness to learn. Many of the faculty that I

spoke to noted that there was a general fear of speaking on these issues during class because they don't want to say something offensive. This is a common and understandable fear for people who are new to speaking on social justice issues. This is why we need training. I believe that the best way to set up this training is to go through the Center for Faculty Engagement (CFE) in order to provide a sort of development workshop. The CFE is run by faculty members and offers development training for all kinds of skills in order to help faculty grow and become better teachers. We should provide a workshop where science department faculty can learn about social justice issues and feel safe to ask questions and develop their ability to talk about these issues. If we want greater numbers of Other students in science, professors should learn at least basic terms and concepts in order to talk about social justice issues. Doing so will make the department more inclusive and inviting to students of underrepresented groups; because we'd be acknowledging their lived realities and experiences. I believe that it would be beneficial to have a workshop at the beginning of a school year and to have "check ins" a couple of times throughout the year so that professors can track progress, share ideas and concerns, and to continue to ask questions in a safe environment.

Secondly, we can work to improve current classes. There are a few classes that could be improved with just a bit of change. The first class we need to improve is BIOL 150: Becoming a Biologist Seminar. Right now, students taking this class go over biology careers, necessary qualities and skills, study or learning strategies, and inquiry and reflection. I think that there is a fair amount of room to incorporate social justice issues and intersectionality. This is a class where students could be introduced to the idea that science and social justice do actually connect. This would be a class for students to learn a little bit of the history of science, biases in science, and the way

that society and culture affect our research. Katayoun Chamany makes the argument that, "To prepare students for these future careers, the curriculum cannot simply 'talk about the science', it must require students to engage in scientific problem solving and experimentation within a social context (Chamany 55)". I think that this class is just the one to introduce science students to social justice and to get them thinking about societal issues. Professors who teach this class wouldn't even necessarily need to become a social science expert, so to speak. Many faculty members seem to be willing to guest lecture, so a social science professor could come in and help to co-lecture. There are plenty of ways that improving this class could look like.

Another class that could be improved is BIOL 308: History of Biological Thought. This class has a lot of potential to touch on and effectively discuss social justice issues. As it is now, students leave this class without a deeper understanding or take-away of sciences ties to social justice issues. With enough structure and input from the professor, I think that students can effectively learn not only about great biologists, but also about the societal contexts that those biologists were in and how that shaped their lives. I think that the biggest thing missing from this class is a profound and deeper connection or tie to social justice issues. Other classes can be improved just by better acknowledging social justice issues. Dr. Kevin Geedey, a Professor of Biology, mentioned that for some classes, like BIOL 310: Evolutionary Biology, BIOL 380: General Ecology, and BIOL 385: Applied Ecology, he could probably work to identify social justice issues (when they come up in class) a bit more clearly than he has been. Even this, I feel, would be beneficial because while the professor might realize and understand the further societal issues connected to their material, students might not make that same connection.

We can also work to create new classes or new Learning Communities. Now, as a Biology and Women & Gender Studies major, I'll primarily focus on BIOL and WGST classes because they are what I am most familiar with. Starting with individual classes, I want to note that there are already many classes about social justice and science being taught at other institutions. For example, Kalamazoo College, in Michigan, boasts many different connected courses on its Science and Social Justice page: *Advanced Genetics- Race & Racism*, *Biology in its Social Context*, *Biomedical Ethics*, *Disparities in Public Health Care: The Effects on Race, Gender, and Class*, *Environment, Science & Society*, and *Ethical Issues in Health Policy* are just a few of the classes offered to students. One Augie professor, who used to work at another institution, was kind enough to share their syllabus for a class they once taught. This class, *Race and Gender in Science*, is an example of the kinds of classes I would like to see available at Augustana. The course description reads as follows:

“This course is designed to explore the intersections of race, gender, and science by taking a multi-directional approach. Using sociological, biological, and historical perspectives, we will discuss issues such as the over- and underrepresentation of certain races/ethnicities in science, the challenges faced by women in science, historical cases of discrimination in science, and the definitions of race and gender themselves as biological or social constructions. We will also explore common race- and gender-based perceptions or stereotypes from a biological perspective. Throughout this course, students will be expected to think critically and question their notions of race and gender (Professor).”

This class requires students to read texts like, *Sexing the body: Gender Politics and the Construction of Sexuality* by Anne Fausto-Sterling, *The Immortal Cells of Henrietta Lacks* by Rebecca Skloot, *The Mismeasure of Man* by Stephen Jay Gould,

and *Medical Apartheid: The Dark History of Medical Experimentation on Black Americans from Colonial Times to the Present*. These texts cover topics that can easily place science in a societal context and exhibit how culture can affect scientific research. Topics like Social Darwinism, eugenics and forced sterilization offer direct ways to discuss things like race, gender, and class in science.

Thinking back over my years as a Biology major, I know we covered some amount of Social Darwinism and eugenics. However, I think that we merely scraped the surface of this awful and troubling topic. Social Darwinism is “an application of the theory of natural selection to social, political, and economic issues (What)”. Developed by Herbert Spencer, Social Darwinism follows the idea of “survival of the strongest” and was used to promote the idea that the White race was superior to all others. We often look at Nazi experimentation and how people used science to meet their racial biases, but I think that it’s important to take a deeper look and examine our own country’s dark history. Following along with Social Darwinism, eugenics uses the principles of genetics and heredity to try and improve the human race. Under Social Darwinism, eugenics was regarded as a way to improve the White race and get rid of others through sterilization and “good breeding”. Many do not know that the US had its own eugenics movement, led by Charles Davenport in the early 1900s and by Paul Popenoe later in the 40s. This movement became very popular in the 1920s and 30s and focused on eliminating “undesirable” traits: being poor, disabled, mentally ill, an unmarried female, or a person of color. To get rid of these “undesirable” traits, eugenicists pushed for forced sterilizations of people within these groups. Eugenicists did so well, that California’s eugenics program is said to have inspired the Nazis (Ko). Now, while the movement did die down a bit in the 40s and shattered after WWII and Nazi Germany (Rivard), eugenics and forced sterilizations are not a thing

of the past. When we discuss Social Darwinism and eugenics in our Biology classes, we often speak of it as something that *used* to happen; something bad that science used to do, but now we know better so it doesn't happen. However, we know that forced sterilization is still commonplace. For example, in the late 1960s and early 1970s Mexican and Mexican-American women were forced to consent to tubal ligation at the Los Angeles County-USC Medical Center. We also know that, "In 2010, it was discovered that women in California prisons were sterilized against their will, while last year a Tennessee judge offered probation to a woman in exchange for sterilization (Reyes)". Again, we do not live in a post racial, post feminist society, so it is crucial that science students learn how to look at science in a societal context.

Generally speaking, I believe that case based classes are an excellent way to bring social justice issues and science together. I find that this is one of the easier ways to integrate social justice into science classes. There is a broad range of cases to discuss in relation to race, gender, class, and other systems of oppression. Cases like that of HeLa cells, which were named after Henrietta Lacks (Henrietta) and the Tuskegee syphilis project are excellent avenues to discuss bioethics, racism, classism, and gender. These kinds of cases can also emphasize the need to place science in a historical or societal context in order to fully understand what made scientists' actions so wrong (Brandt). Other topics, like the gendering of breast cancer (and other diseases) would be especially helpful for premed students. D. Skinner, an assistant professor at Ohio University, explains that identity and cultural biases are important for medical professionals to understand because they basically determine the kinds of care that patients will seek, be offered, or even encouraged to go after (74). Ultimately, case based classes can effectively bring social justice topics to the forefront in a science and are able to place science in the past and current societal context.

Improving Biology classes are not the only way to make intersectional science classes. I think that there is definitely room to improve the WGST structure. A case based class like the ones I just described, could also stand as an intro WGST class. A lower level WGST class with an emphasis on science would create another lower level class for non WGST majors to take, thereby keeping upper level WGST classes open for actual majors. It would also help to interest science majors and possibly bring them into the humanities.

I also believe that creating new Learning Communities between Biology and WGS classes could be greatly beneficial. As mentioned previously, I'll primarily look at BIO and WGS classes because those are what I'm most familiar with. I do acknowledge that creating LCs between these two departments can be a bit of challenge what with Biology's large class size and WGST's small faculty size, but if it is anyway possible, I think it would be worth it. Some BIO classes that I see as potential LCs are BIOL 120: Ethnobotany, BIOL 180: Fundamentals of Ecology, and BIOL 225: Local Flora. Each of these classes contain topics that could easily relate to WGST topics. For instance, Local Flora class description states, "field and laboratory identification of plants common to the Upper Mississippi Valley with emphasis on Illinois". This class could be paired with a WGST special topics class that could cover topics relating to Native Americans, looking specifically at the history and experiences of local indigenous groups in Illinois, as well as an emphasis on Native American flora usage. I'm certain there are more natural science classes that could easily pair up with WGST classes (not to mention Sociology or Anthropology or History classes) besides the three mentioned in this paper. As long as faculty are willing, I am sure that they can endeavor to identify the places in their material where a social science perspective could be linked or brought in.

Obviously, there are a lot of ways to bring science and social justice together, especially at a liberal arts college like Augustana. However, as I begin to end this paper, I want to discuss my objective in writing this paper. I'm sure that some people could read my claims and assertions and reply, "Well, fine. We can talk about gender or race more than we do now". But, that is a great generalization and misses the bigger point that I'm trying to make with this project. I don't want people to read this and merely acknowledge that social inequities occur, though that is part of the point. Ultimately, this SI project is not just about including race or gender in science, it's also about being active and intersectional. This project stands as a call to action; for science students and faculty to *care* about the experiences of Otherized students and *work* to ensure that their concerns and experiences aren't pushed aside and seen as an off topic. Otherized students need both faculty and students to understand that science does not exist in some kind of bubble; systems of oppression that affect our lives do not cease to exist as we enter the Hansen Hall of Science. We need faculty and students to be more active in becoming aware of these societal issues and begin working to correct them. As I have mentioned previously, I recognize that many of the issues that the science department is facing are also a part of a bigger campus issue that diversity statements and emails have yet to properly address. In general, the Augustana campus struggles to acknowledge and discuss problems pertaining to things like race and gender. I believe, however, that attempting to address these issues as they emerge in the science department is a step in the right direction. Hopefully, this project will inspire administration to begin to make changes and progress the Augie science department (and overall campus).

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