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# Joy Through New Perspectives

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Joy of Living

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## **Abstract**

Over my time at Olin College, I've learned to see through new perspectives for my own benefit and the benefit of others. This skill has helped in my engineering design work and in my everyday life. In order to solve problems and change the world, we must understand the problems from many perspectives. It's easy to design for ourselves, but hard to design for others. Yet with that challenge comes reward.

## **Introduction**

Seeing a situation from new perspectives has been an invaluable skill for me throughout my education. In my engineering work, changing perspectives has heavily influenced my designs and socially it has inspired me to alter my interactions with others. The benefits to changing perspectives are limitless, and I have also found it intrinsic to my own wellbeing. Understanding how other people see the world helps me to understand the world. Why do we do the things we do? How do we interact with others? With machines? What do we value?

I have learned to empathize in difficult situations to show support for another person and shaped my work to best suit the needs of another. And in turn, helping others has helped me. Understanding how other people think and behave has given me insight into problems I face in my own life. For instance, designing a piece of adaptive or assistive technology for another person has made me realize that I can design adaptive and assistive equipment for myself. And this technology doesn't have to be complicated. Cardboard, fabric, and hot glue can be combined in extraordinary ways. You could be designing technology for yourself too.

Changing perspectives has allowed me to pursue and complete more fulfilling work for myself while benefiting other people in the process. It is an important skill I think everyone should learn, but it is also underutilized and forgotten. People joke about 'The Golden Rule' as a rule for children. "Treat others how you want to be treated." Yet it prompts us in the simplest way to consider the feelings of another alongside our own. I believe the world would be a better place if more people learned to truly understand how thoughts, ideas, and values change with context, environment, and history. Understanding the basis of another's actions or beliefs can inspire people to be more accepting and ideally supportive of differences. So why not practice this skill now? Come take a walk in my shoes through a few of my own experiences.

## **Entrepreneurial Experience**

### *Interning at Loci Controls*

In the summer of 2014, I worked at Loci Controls<sup>1</sup>, a startup company in Somerville, MA. Loci designs systems for optimizing gas collection at landfills. Landfills produce gases that can be harmful to the environment, but when collected can be useful for energy production. Currently, some landfills collect the gas produced by the decaying organic material underground and some don't. For the landfills that do, Loci's product can increase their energy production and profit while helping protect the environment. I was excited to work at Loci Controls because of the company's sustainability oriented goals.

Sustainability is a key factor in the quality of life of the general population now and in the future. Caring about sustainability means caring about the impact my actions will have on the world and caring about how I affect other people. Working now to minimize or eliminate our dependence on non-renewable resources will help reduce potentially catastrophic problems humans may encounter in our near futures. Unfortunately, it has become very clear to me that a sustainable mindset is less prevalent than I believe it needs to be. It is incredibly difficult to inspire someone to care about matters that they don't inherently care about. Sustainability is often one of these matters.

Though this realization has occurred to me in innumerable contexts, it was made particularly tangible at Loci. The company, which was in its early stages of development, needed to develop a plan for marketing to small and large landfills alike. It was during this discussion when I realized that the escape of methane into the atmosphere was of negligible concern to most landfill owners. In order to sell the system and improve the overall sustainability of landfills, Loci had to market the product in the context of landfill profit and earning potential. Benefiting the environment and general population for this project was contingent on understanding that sustainability was not the selling point for the customers.

It may seem obvious that one must appropriately market to their customers in order to sell a product. I would agree that this is obvious. But I also learned that our pursuits never exist in an isolated system. If there are not explicit reasons and immediately tangible benefits for a stakeholder, it may be difficult to influence them to adopt a product. Even when that product will indirectly benefit them, it sometimes has to be framed in a very different light for its acceptance. In this way, no stakeholder's perspective can be ignored, and pursuits of sustainability have a lot of stakeholders. These stakeholders contribute to factors that we don't have control over, and we have to work step by step to address them as they appear.

## Long Term Project, Global Awareness, and Entrepreneurship

### *Affordable Design and Entrepreneurship: Gari production in Ghana*



Through my senior year, as my engineering capstone project, I worked to develop low cost food processing equipment for rural women in Ghana in a class titled Affordable Design and Entrepreneurship<sup>2</sup> (ADE). The women produce and sell a food called gari<sup>3</sup> as one of their main sources of income, however the typical gari production process is strenuous, time consuming, and unsafe. The products designed in the class aid in this process, making gari an easier, quicker, and safer value added product to create.

Gari starts with cassava, a large firm root vegetable often sold in the USA as ‘yucca’. After uprooting the cassava, it is peeled and then grated into a fine mash. The mash is put into a bag and pressed until dry. The dried cassava is sifted and then fried. The resulting substance is flour-like and is eaten similar to porridge. This year we built off the work of a few teams before us to improve the design of an electric grater and mechanical press that replaces handheld graters and rock presses currently in use.

Developing a product in any context requires a core understanding of the customer or main stakeholder. In contexts where the designer is similar to a product’s target audience, this may be easier. In this project the team was challenged to gain an understanding of the lives of women who reside in a different continent, speak a different language, work a different job, and have different values. Even before answering the question of how to deploy a product or run a business in a completely new environment, we had to answer basic design questions dependent upon the context of the products’ production and use. As I have worked mainly on the press, I will use it as an example through this reflection.

The most widely used current method of cassava pressing is to stack enormous rocks precariously atop a bag of grated cassava. It’s incredibly difficult for one woman to do this, and men from the family often must help with the lifting. The pressing process also takes multiple days with rocks, so a woman must find help for a number of days in a row. Our press is meant to be empowering and allow a woman to work easily on her own. The idea of independence is key to give her more ownership over her own business. We learned that gari producing women place a lot of value on these businesses and their ability to run them. A low cost option to advance their business is desirable and we have found that the demand for presses is high.

A mechanical press is a simple device, but a small-scale version of the press as a consumer product does not exist in Ghana. There are larger presses similar to our double lead screw

press, which suggests that our design may be more adoptable than less familiar designs. We saw this assumption in action when we tested a ratchet strap based press. The ratchet press is simple to source and manufacture in Ghana, but was less well received than the more familiar double lead screw press. This suggests that though there may be a number of solutions to a problem, people tend to pick the solution they are most immediately comfortable with. This makes absolute sense, but it means that the most desirable design from a designer's perspective is not necessarily the most desirable design from a consumer's perspective. This in turn suggests that good design, once again, starts with understanding the main stakeholder.

Outside of design or products, development work requires an extra level of empathy and understanding over typical consumer design. An all too common failure of work in less developed regions is the tendency of development workers to break relationships or trust when they are doing work for their own benefit. We often hear stories of wealthy westerners that "want to give back" by working in development, but their stories often end in broken machines and broken trust. Considering that we enter each village as foreigners asking people to spend valuable amounts of time with us without true immediate compensation, we need to build and maintain trusting relationships for everyone's mutual benefit. Considering codesign is no small process, each codesign must be seen as a gift to us for which we must return some other kindness.

When we traveled to Ghana in January 2015, I was further pushed to develop my perspective on the project. For two weeks, I lived and worked in Ghana. Though I will never fully understand what it means to live in poverty, I was at least given a glimpse into an alternative lifestyle so driven by income. I was reminded of how privileged my lifestyle is and how differently the rest of the world lives. I felt better about the value of my work by seeing the impact that it could make and I was further motivated to work on similar projects. Designing for an underserved population in completely new contexts is work that I find meaningful and challenging. Working on this project has shown me how my engineering skills can be used in a generally positive and responsible way. I've watched machines that I have built with my own hands change a woman's life. That has been a powerful experience and inspired me to continue working towards projects that I find meaningful.

## **Service Learning**

### *Olin Peer Advocates for Sexual Respect*

Though I have participated in a number of service opportunities over the past years, one project stands out most prominently to me. In my senior year, I participated in a new program on Olin's campus. The program was titled Peer Advocates for Sexual Respect<sup>4</sup>, and was described by Kate Maschan, the founder, as "a student organization at Olin dedicated to providing safe and confidential support for survivors of sexual misconduct and partner abuse, students who have had unwanted or confusing sexual experiences, and anyone else in the community." I decided to apply for the role because I believed that a sufficient resource was not yet available on campus for survivors of sexual assault and other experiences. Specifically, all established resources on campus were mandatory reporters. In becoming a Peer Advocate (PA), I have learned and practiced empathy in situations that have been life changing for individuals.

It cannot be denied that sexual assault is a big issue, especially on college campuses. It also seems to be a topic that many people find difficult to talk about. When we are uncomfortable having the discussion about sexual assault, we create environments that are not supportive to survivors of sexual assault. Our discomfort from talking about the topic is a small price to pay for trying to raise awareness of the problem. When we say, "This is not the venue for a discussion of such a heavy topic", or "This isn't the time or place to have this conversation", we are silencing a conversation that needs to happen and we're ignoring the problem. We're giving our own comfort a higher priority than someone else's because it's easy for us to do. I've chosen to write about this topic as part of my service learning partially because I am passionate about the topic, and partially because the topic is not being addressed. We're comfortable ignoring the problems that don't directly affect us, and in doing so we forget to understand how these problems affect other people.

From practicing scenarios and conversing with others during training for my role as a PA, I learned that it is incredibly easy for one of these serious discussions to go horribly wrong. Take for example a student, Sam, who has just had a traumatizing experience and goes to a friend, Riley, for support. Riley, with the desire to help, asks Sam to recount all the preceding experience as to piece together information to understand the situation. Sam is now being pressured to relive a traumatizing scenario shortly after it has occurred. Sam feels vulnerable and the need to validate the story. Sam is being questioned as if proof of pain is necessary. All Sam really wanted was to sit down with a friend and sort silently through thoughts.

Simply by considering survivor's feelings, especially during times of heightened emotion, a person can have a conversation that can make a survivor feel more in control and empowered after a scary situation. Learning to empathize allows discussions to become positively impactful and helpful instead of accusatory and insensitive. Looking through another person's perspective is crucial to supporting them. It's fairly simple to attempt to think from another's shoes, but habit often forces us to live in our own minds.

Having this empathy can make a huge difference in a person's life. Feeling like they have some level of support and validation can prevent longer term feelings of isolation and guilt. It can allow a person to regain control over and ownership of their own lives and experiences. Active listening and empathy alone can improve another's quality of life extraordinarily. Yet all of these positive outcomes are often discarded when a person chooses not to have the conversation with a friend in need and when they chose not to have a conversation about how to support a survivor. And so often these conversations do not occur, because someone is made uncomfortable by hearing another's struggle.

I've taken the skills I've learned through the PA program and have applied them in a number of ways. Listening, understanding, empathizing, and supporting have value in all interpersonal interactions. I want to use these skills and encourage others to use them as well, especially when confronting topics that are difficult or make us uncomfortable. Instead of avoiding the 'heavy topics' or 'deep conversations', we should embrace them. I've found my role in these discussions and I want others to have a role as well. Problems like sexual assault will never be addressed if we're too afraid to talk about them.

## **Interdisciplinary Experience**

### *Investigating Normal: Adaptive and Assistive Technologies*

In the spring of 2015, I participated in a design class that changed and influenced many of my previous beliefs around design and disability. I've always viewed the world and the things in it as reasonably designed, but this class suggested that the world has been designed for a single average body of average capability. Podiums are designed for tall people, and school desks are designed for able bodied kids. In this way disability is not inherent in atypical bodies or minds, but is perpetuated by the poorly designed environments surrounding them.

In this class, titled 'Investigating Normal: Adaptive and Assistive Technology', we discussed two different types of design. The 'A' side of design is often the style of engineering design. It answers questions and solves problems. 'A' design allows people to function in the environment they are in and encourages current norms. A prosthetic arm made to look like a real arm falls into the category of 'A' design. The 'B' side of design asks questions. It inspires us to reconsider current norms and makes a statement about them. It seeks out problems that may not otherwise be apparent and puts them in a visible location. Decorative eye glasses, as a common example, may dip into the 'B' side of design. They're not necessarily solving a problem, but expressing a style or idea. Formerly pieces of assistive technology, glasses are now worn without prescription as a fashion statement.

The class inspired me to design beyond what I thought I knew. I couldn't assume that I had the answer to any question and had to research and discover what I previously may have taken for granted. In addition to this, I learned that every piece of technology can be viewed as assistive technology. There is currently a stigma around assistive technology as something designed for atypical or disabled bodies alone, however all people use technology to assist in day to day tasks.

This concept was important as we began the group project for the class. Three other students and I worked to design and build something for children with sensory processing disorder (SPD). To even decide what to design, we needed to understand the effects of SPD on children who are either hypersensitive or hyposensitive to different stimuli. We were looking to understand difficulties that may not appear in our own lives. Even after these problems and our area of opportunity were identified, we learned that the details of our design mattered in ways we had never previously considered. We were designing a tool that would be destroyed, may be 'weaponized', could not look like 'assistive technology', and would need to be easily reproduced. We were constrained by materials, skills, and money. In order to create a design that would benefit anyone, we had to follow requirements defined by the project's context and stakeholders.

Our final design was a structural fabric seat surrounding. It blocks a student's visual distractions, but is soft and welcoming. The structure had to be stable and versatile while looking attractive and interesting. It defines the space that a student exists in and is

comfortable and calming when stimuli can be overpowering. The design meets needs that we could not have understood without putting ourselves in another's shoes. The meant understanding what equipment a child will voluntarily use and what tasks an occupational therapist is capable of completing in recreating the design. Engineers often design for themselves or people like themselves, but we will not truly solve problems until we can design well for others.

## **Conclusion**

In conclusion new perspectives open opportunities, improve designs, inspire work, and give joy. I'm lucky to have worked on projects that I find meaningful that can improve the lives of others. Engineers solve problems, but it's rare that engineers solve problems that don't affect them personally. It's easy to design for yourself and it's comfortable not to think about the flaws and inequalities in the world we live in. In order to make change, we have to understand a problem. And in order to understand a problem, we have to address it and acknowledge its effect on others. Looking at situations with new eyes teaches us and helps us to become better engineers and better people.

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