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My Sets and Sexuality

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Synopsis

It was only with the application of set theory to my own personal life that I discovered my true identity and sexuality. In this exploratory, personal essay, I detail my own discovery of my sexuality through mathematics and how this math has become a lens through which I view the world. And, with new knowledge of literary criticism in hand, I can now retroactively describe the thoughts I had in this discovery process.

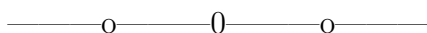
According to Fraleigh's *A First Course in Abstract Algebra* [1], a set is a well-defined collection of objects. What is a collection? A collection is an aggregate of things. What is an aggregate? This can go on and on. With this knowledge in hand, how do we apply sets to the real world? To a real person? To identity?

It was only with the application of set theory to my own personal life did I discover my true identity and sexuality. It was not some emotional epiphany, but a deliberate logical reasoning. But how do sets work when applied beyond the individual? To the overall population? Set theory, in all its beauty and cleanliness and organization, breaks down. Set theory and labels become shaky and ungrounded when used to categorize real people.

¹ Andres Sanchez is a Ph.D. student in English Studies–Creative Writing and M.S. student in Mathematics at Illinois State University, where he focuses on the implications of mathematical properties on text and culture. This essay originated as an assignment for Dr. Tara Lyons's Seminar on Literature & Culture at Illinois State University in Fall 2016. The author wants to express many thanks to her for the guidance in the creation of this piece.

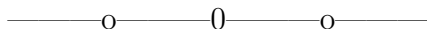
Just like trying to define a set, the definition keeps running into exception after exception after exception, without ever reaching an end. Even with mathematics, the set of people is unstable.

In this exploratory, personal essay, I detail my own discovery of my sexuality through mathematics and how this math has become a lens through which I view the world. And, with new knowledge of literary criticism in hand, I can now retroactively describe the thoughts I had in this discovery process.



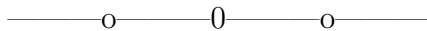
What is a set, my friends? We might say a set is a collection of objects. Well, then we might ask what is a collection? A collection is a grouping of objects. But then what is a grouping? And better yet, what are objects?

These are fundamental questions in mathematics, edging closer to philosophy of mathematics. Fortunately for us, it is not important right now to think about what a set is. For our purposes, we can simply adopt the notion that a set is a collection of objects. We can work with this definition for now. The more important thing we should do at this moment is think about what we can do with a set.

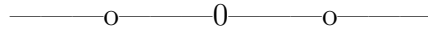


I first heard the term “gender” (in regards to the field of gender studies and not biological sex) in my first year of college. When my friend Elizabeth told me she was taking a course in gender studies, I tilted my head, unsure of what she meant. She explained to me what gender was; at least, I assume she did. It’s been years. But, I bet my reaction was close to: “You’re joking. You can’t take this seriously.”

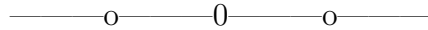
As a naïve, 18-year-old mathematics major, I could not figure out what Elizabeth was talking about. How could Elizabeth, a gifted fourth-year mathematician, believe this stuff about gender and sex being different? The idea was just frustrating my logic. But most likely, it wasn’t the logic that was being frustrated; but rather, the idea of gender and sex being two separate concepts was upsetting the nice little world I was brought up in.



In math, we make assumptions. And this is ok. You won't get made fun of or told, "You know what happens when you assume? You make an ASS out of U and ME." Mathematicians don't use assumptions that way. We make an assumption and follow it logically either to a contradiction or a proof of our claim. If it leads to a contradiction, then we've accomplished something. If it leads to a proof of our claim, then we must prove our assumption true. We don't build on assumption without proving it.



Throughout college, I remained closed-minded about gender studies. In essence, I didn't give a rat's ass about it. To be honest, I didn't care much about the real world at all. In my third-year at college, our Math/Stat building caught fire, and I wrote a Facebook status lamenting the fact that Math/Stat caught fire and not the Gender Studies building. Now, I recoil in shock/horror that I would write such a thing.



For the longest time, I made many assumptions about people. The assumptions all stemmed from my use of set theory to categorize people. I assumed the subsets of the set of people are well defined. So, given a subset of people, a person is either in that subset or not. Seemed reasonable to me.

For example, say

$$W = \{x \mid x \text{ is person} \in \text{world}\},$$

$$I = \{x \mid x \text{ is person who attends college as a student}\},$$

$$Q = \{x \mid x \text{ is person who does not attend college as a student}\}.$$

Thus,

$$W = I \cup Q.$$

So,

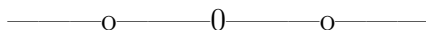
$$\forall \text{ people} \in \text{world} (\text{a person } x \in I \text{ or a person } x \notin I);$$

and

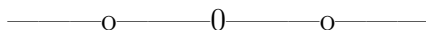
$$\forall \text{ people} \in \text{world} (\text{a person } x \in Q \text{ or a person } x \notin Q).$$

I assumed you could do this for every subset.

I applied this way of thinking to almost all aspects of identifying factors of humans. I can recall specific moments thinking that people were either in the set $\{heterosexual\}$ or not. Taking it further, I actually assumed everyone to be in the set $\{heterosexual\}$. Only if my assumption were proven false would then a person be in the other set of $\{homosexual\}$. This itself is faulty logic of course. And so I went about life using assumptions about people and sexuality the mathematically wrong way. As I said, you can't build on assumption until the assumption is proven true. Oh how naïve college-aged me was!



Entering grad school in 2014, my mind was set: I was a man who was interested in women who were interested in men.



During the first semester, I became interested in this girl Maggie who was a gender studies major. A mutual friend referred Maggie to me to help her with her gender studies paper. When she came to me and asked for help with her paper, I immediately told her I'm probably not the best person to ask for help, because I know nothing about gender studies, nor really want to know. She insisted I help her just with the logic of the paper. I said, "Ok, I can do that much."

I helped her not by engaging with the content, but by pushing the content of her argument into set theory and drawing up the logical path to proof. She thanked me.

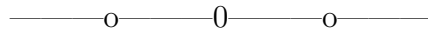
Over several talks with Maggie, some one-to-one and some in groups, I developed enough interest in her to finally work up enough nervous courage to ask her out for coffee. But there existed a slight hurdle. Maggie had once mentioned to a group of us that she was a lesbian. So, there goes that, I thought. However, on another occasion, she mentioned that she was also attracted to men and had previously been in a relationship with a man. I was so confused. My set theory was breaking down. What set did Maggie belong to? My friend Kerri, in all her wisdom, posed the simple scenario to me: perhaps Maggie is bisexual.

Hmmm, I had never thought of that. All my life, I had seen bisexuality as something foreign; something that went against my clean set theory of the well defined set $\{heterosexual\}$. I guess this was ok if she was bisexual, even though my sexual identity coming into grad school was one that stated clearly that I was interested in women who were interested in men. It didn't say women who were interested in men and women. What do I do?

The wise Kerri stated something I had never thought of: does it actually matter if Maggie is bisexual? Isn't the only thing that matters is that Maggie is interested in you at the specific point in time at which you are interested in her? When the moment comes that you ask her out for coffee, and she says yes?

Mind blown.

Logic boom.



Even though things never worked out with Maggie, my interest in actually learning something about sex and gender grew. I started asking my friends questions.

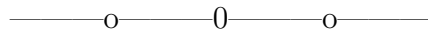
What is this cis- thing?

What does trans mean?

Wait, there's a difference between sex and gender? Please explain.

Through talks with friends and many visits to [Wikipedia](#), I started gaining a small understanding of the difference between biological sex and gender identity. Sex and gender are not the same set, but rather, two completely disjoint sets, dealing with completely different elements.

Elizabeth would be proud.



Sets are defined by their elements, not by their labels. Labels are used as shorthand, a convenience. For example, if

$$A = \{1, 2, 3\}, \quad B = \{3, 5\}, \quad C = \{1, 2, 3, 5\}$$

then

$$A \cup B = \{1, 2, 3, 5\}$$

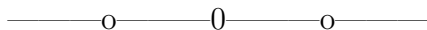
and thus,

$$A \cup B = C.$$

In other words, the set $\{1, 2, 3, 5\}$ has multiple labels. Indeed, it could have many more if we wanted to. So, we can't look at the labels of sets as their defining characteristics, but rather, we must look at the elements of the sets.

For a more “practical” example, let's look at the label *SOUP*. If someone were to ask me what I had tonight for dinner, say I responded with *SOUP*. Pretty standard; nothing much happening here. Now, what if someone else were asked what they had for dinner, and that person responded *SOUP*? Then, since we used the same label of a set, *SOUP*, it makes logical sense that we had the same thing. After all, $SOUP = SOUP$.

However, let's examine the sets the labels are labeling. Say my *SOUP* = $\{tomato\}$ and the other person's *SOUP* = $\{chicken\ noodle\}$, then $SOUP \neq SOUP$ because $\{tomato\} \neq \{chicken\ noodle\}$. Our labels are misleading here and don't actually convey the elements of our respective (dinner) sets.

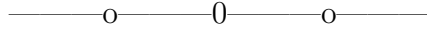


I became concerned about the use of labels of sets during the fall of 2015. In everything I wrote I tried to define sets in my paper when I knew I was going to use them. And when I defined them, I chose to use symbols as their labels and not words, so as to help the reader understand I'm not referring to some pre-existing definition of a word-label, but rather to the explicit set I used previously in the paper.

Towards the beginning of the semester, the first instance of my set theory getting frazzled by labels was by an event hosted by the LGBTQ Resource Center on campus. The event was called “Ask a Feminist Day”. Now, this in itself wasn't the frazzling. The description of the event where it said you can ask different people about their feminisms did the frazzling.

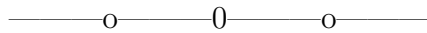
This simple line threw me off. Wait, how can there be different feminisms? Isn't feminism a label for a single set of ideals? Isn't feminism a word that has a specific definition? How can there be different ones?!?

Although I never ended up asking anyone this question, it was, in retrospect, an important moment where I realized that sometimes a set label is going to evade a solid definition, where the elements of that set will shift from person to person. And that greatly disturbed my set theory.



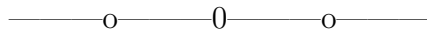
While my focus on set theory that semester kept being complicated and contradicted at every turn by the way the real world actually works, it led to some interesting discoveries. And of course the major discovery starts with another person I became interested in.

This person's name was Lin. They were a gender studies master's student, and I was really interested in them. And when you become interested in a person, you start to become interested in what they are interested in. In Lin's case, this was gender studies. In particular, how gender was a self-identifying concept. As you might've noticed, I've been using "they" pronouns for Lin because Lin identifies as agender, and Lin was the first person I ever met that I knew identified that way. And that was interesting to me. Because I liked Lin so much, I was quick to make the change to they/them/their and referring to Lin as a "person" instead of their biologically assigned gender.



Drinking with some friends at my apartment one night, I got into a deep discussion with my friend Christine about sexuality. And because I was drunk, I was more open than usual because, well, alcohol will lift those filters. I felt a good trust relationship with Christine. I mentioned how when I was in college, my friend Moira had said that although she was attracted to men, she was also attracted to certain concepts. Moira explained that she was attracted to the idea of biting. At the time, I just said ok, and never thought of it again. Then it all came back to me at my apartment with Christine. I looked at Moira's attraction as a union of sets: that a person can pick and choose what they are attracted to, and that's ok.

So, what am I attracted to?



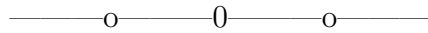
My best friend Lola had described Lin as a “Peter Pan” looking type of person. Which was interesting because when I talked to Lola about this description, we talked about how there are definitely historical instances of Peter Pan being played by a girl. So, it was as if the role of Peter Pan could be played by either sex.

I explained this Peter Pan idea to Christine. I started thinking that since these traits were sort of fluid, or able to be shared amongst sexes, then maybe I am attracted to not only women, but a union of sets: women and then whoever fits into this type of Peter Pan-like trait (short hair, slender face, slight build). And Christine said that was something that is totally possible.

But, I was positive that I was not attracted to men. So, with a person falling into the Peter Pan set, where the sex of a person is not necessarily easily found out, because Peter Pan seems to lend itself well towards a sense of androgyny, then what happens if the person I find attractive turns out to be a man? Am I then no longer attracted to them? That doesn’t seem logical.

If I find something attractive, then I find it attractive. It is only logical that I would be attracted to a man who is an element of this set $\{Peter\ Pan\}$.

This thought made itself clear when I was out to eat with my friends and they both noticed a guy going up to sing karaoke. And my back was to him, and my friends started describing him. I thought that the description was the same description I would use for Lin. These features of Lin that I found attractive were the same features of this guy. These features were what I found attractive, not the sex of the person.

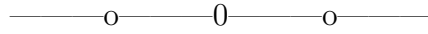


My sexuality: $\{women\} \cup \{Peter\ Pan\}$.

In particular,

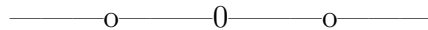
$$\{Peter\ Pan\} = \{\text{man or woman} \mid \text{man or woman looks “Peter Pan”-like}\}.$$

My sexuality expanded in one moment of logical reasoning, not an emotional epiphany. Since the logic was sound, I couldn’t really argue with it. It was “proven” to an extent.



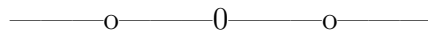
Of course, things with Lin didn't work out, because things never work out for me. But, come Summer 2016, I was in pretty good command of my sexuality set.

Well, at least I thought I was.



I work over the summer at a summer camp. At a staff-wide meeting, I saw someone across the large room. This person caught my eye quickly because they were really cute as they squarely fell into the set Peter Pan. I wondered who this person was. What's their name? It wasn't until a few nights later that I met this person with the nametag reading "G".

At a bar, after a few drinks, of course, and lots of talking, I learned that G was a transgender male. I returned to my cabin that night, and after a decent hangover the next day, I reflected on this person G. Reflecting, I realized I didn't care that G was a transmale. He was cool and interesting and I wanted to get to know him more.

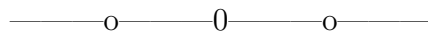


My sexuality: $\{women\} \cup \{Peter Pan\}$.

In particular,

$$\{Peter Pan\} = \{ \text{person} \mid \text{person looks "Peter Pan"-like} \}.$$

My sexuality expanded once again in a moment of real-world attraction, not algebraic abstraction. I never considered becoming attracted to a transgender person. But it was happening, and I found myself trying to fix my set theory as I went out on a few dates with this person who eventually discarded the label "G" and adopted the label "Gregory".

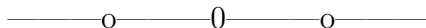


In the course of courting this guy, my coworker Mike asked me a question: “So, are you gay now?” I told Mike that I think it is more complicated than Gay/Straight. But that question led to important thinking.

What do I label this set $\{women\} \cup \{Peter\ Pan\}$? What is that? How do I fit it into already existing concepts of sexuality? I felt fairly confident that “bisexual” was not an adequate label, since I don’t like only men and women, but rather people also in transition from one gender to the other, as well as agender people. Gregory actually suggested the label “pansexual”. I didn’t think that was adequate either, because I am not attracted to everyone of the male sex, but rather a particular subset.

Another friend suggested “queer”. I had to ask my friend what that even means. She said it is an umbrella term, and doesn’t have a solid definition. That was not what I was looking for. I’m not trying to use a larger set to encompass my sexuality; I am trying to find the exact word to label and define my sexuality.

So, what label do I choose?



I got frustrated with the whole process. My sexuality is more complex than a label already in existence. I wanted to escape labels in general, since labels don’t define the set anyway. I decided on my own label of my sexuality: Δ .

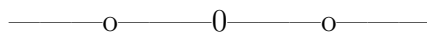
Δ is the Greek letter delta. Delta denotes change. And I was certainly going through a change in my life.

Delta is also the shape of a triangle. The three points that determine a unique triangle also determine a unique plane. That is, a stable plane.

$$\Delta = \{\text{people I find attractive}\}.$$

Thus, my sexual orientation is the set of people I find attractive.

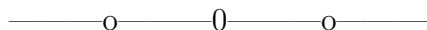
I am not attracted to all men, nor all women. I am attracted to a particular subset of each. This set Δ is well defined. A person is either in the set or not. This set is unique to me, and to try and label it as anything more would not rise to the level of rigor that a mathematician such as I requires.



However, as soon as I came to embrace this idea of Δ in my life, it started losing meaning once again. As much as Δ is relieving as a way to identify my sexuality, it is a label. And one that can shift its meaning quickly. When I vocally say my sexual identity is “Delta”, you cannot possibly know whether I mean Δ or δ . There are different implications between Δ and δ . δ is not as well known as a symbol that represents change. Also, as time passes, my sexuality will not be considered to have “changed” in my life. It will be something that stayed consistent over time.

δ is also not the shape of a stable triangle.

Most importantly, Δ did the one thing I wanted to avoid: it labeled my sexual identity! I can’t escape the labeling of my own sexuality nor can I come up with an identifier that doesn’t shift meaning. What am I to do?



Entering Fall 2016, I was ready once again to attempt to use set theory in my thinking. But as we started reading theory in my Literature course, I started realizing that I’ve run into some of these situations in my life before.

Why did my early set theory fall into the assumption that all people were in the set $\{heterosexual\}$? We read about Adrienne Rich’s compulsory heterosexuality. It finally started to make sense to me why my assumption set was the way it was. And now with this knowledge in hand, I can try to start with a new set. But what new set?

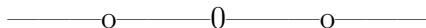
Why do I have trouble with the way people label things? Why do labels constantly shift? Why aren’t sets well defined when talking about the real world? Why isn’t $SOUP = SOUP?!?$

Deconstruction gave me a framework with which to view my set theory-label problem: the signifiers and the signified were not as tied down together as I had expected them to be. Sets and their labels are not necessarily tied together. While math is unique in that it can simply define things to be other things, the world, unfortunately, doesn’t work like that. Meanings shift. Labels shift. We may never know.

As much as I want to view the world in the elegant beauty of set theory, I cannot use it as a problem solving technique. The reason: quoting Eve Sedgwick from her book *Epistemology of the Closet*, the chapter (nicely mathematically) titled “Introduction: Axiomatic” [2] states

Axiom 1: People are different from each other.

And if people are all different from each other, then, well, my friends, we’re stuck with two options: either we work with a very large number of sets where each set contains a single person, or we work with one set that contains all people. Neither option is ideal for trying to solve problems about humanity.



So, what is this lowly mathematician supposed to do? How do I adjust my set theoretical view of the world to the realities of the world?

One suggestion I’ve heard from a mathematician friend of mine is to look into what is called Fuzzy Set Theory, where the sets are “fuzzy”, meaning that the elements of the sets have different grades of membership. So, the elements are not necessarily exclusively in or not in a set. Hopefully, fuzzy set theory can be something I pursue further in my studies as a Creative Writing student. (Because, as we all know, Mathematics is a core tenet of Creative Writing education.)

As I start to leave rigorous set theory behind, I must give many thanks to all the structure set theory has provided me in the search for and clarification of my identity. Set theory discovered and solved questions I had never thought of. But the questions will continue, unending: infinite and uncountable.

References

- [1] John B. Fraleigh, *A First Course in Abstract Algebra*, historical notes by Victor Katz, 7th edition, Addison-Wesley Pub., Reading, MA, 2003.
- [2] Eve Kosofsky Sedgwick, “Introduction: Axiomatic”, *Epistemology of the Closet*, University of California Press, Berkeley CA, 1991.