My Sets Are My Foundation

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Synopsis

You might be wondering, what the hell does set theory have to do with writing? I'll tell you a secret: everything is built on sets. Sets are things of beauty. They are great ways to conceptualize, compartmentalize, and classify the world and everything it encompasses. And now I know I've danced around the question of what sets have to do with my writing. So, here is my answer: I use set theory as the foundation for all of my writing.

A set is a collection of objects. Plain and simple. Now, you might be asking yourself, "What is a collection?" Well, a collection is a grouping. Well, then what is a grouping? We can continue this questioning on and on, but it is not the point of my paper. What I want to start with is what all mathematics starts with: sets.

You may be thinking that mathematical sets have to do with numbers. Well, yes and no. Mathematics in itself does not always deal with numbers. Mathematics in its purest forms deals with concepts, structures, and rigorous, logical reasoning. Sets behave the same way.

You can have a set of numbers, a set of chairs, a set of emoji, etc.

Sets can be denoted by a left brace {, followed by the *elements* of the set, followed by a right brace }. So, the set

$$\{a, b, c\}$$

consists of the elements a, b, and c. To make writing and referencing somewhat easier, we can label sets. So, we can assign the set $\{a, b, c\}$ the label A. We usually write this as

$$A = \{a, b, c\}.$$

Sets don't always consist of numbers or the letters that those of us feared in high school algebra. Sets may consist of anything. This is a set:

$$\{\text{¢}, \square, 12, \text{®}, f\}.$$

This is a set:

$$\{5/8, 7/2, \text{asf}, \text{they}, 89, \text{☺}\}.$$

This is also a set:

$$\{\}.$$

That last one is called the empty set: the set consisting of no elements.

We can do operations with sets. We can take their intersection $A \cap B$, which is the set with all the common elements between A and B. We can take their union $A \cup B$, which is the set with all the elements of both A and B. And there are other operations with sets as well.

Now, you might be wondering, what the hell does any of this have to do with writing? Well, I'll tell you a secret: everything is built on sets. We use set theory in our day without realizing we are using it. When I go to teach my students, I say I have to go teach my class. My "class" is just a set label assigned to the set consisting of the twenty-three students I teach. See, sets are things of beauty. They are great ways to conceptualize, compartmentalize, and classify the world and everything it encompasses.

And now I know I've danced around the question of what sets have to do with my writing. So, here it is: I use set theory as the foundation for all of my writing. Whether I am writing poetry or essays, I map out my ideas in sets and then proceed with mathematical logic. If the logic doesn't work, I don't write it.

But what set theory, and math in general, have taught me to do is be very specific in my wording. Mathematics has to be specific in order to prove things. Rigorous logic requires it. We can't be hand-waving and assuming the proof will come out correct. A proof demands exactitude. This precision carries over into writing out arguments.

I use lots of words and phrases that give myself wiggle room. Phrases such as "not necessarily," "perhaps," "maybe," "I think but am not sure," etc. I use these phrases when I am making an argument about, say, some line in a poem. I am not 100% certain that my argument is correct. I cannot *prove* it, because poems don't work that way. So, I feel compelled by my mathematical training to express this uncertainty in the words I choose.

I remember in high school learning about not writing "I believe" at the beginning of sentences. I've also taught this over the years as well. Just state what you're trying to say. But now, I use "I believe" a lot in my writing. This is because I cannot state as fact the argument I'm making. So, I have to say, "I believe" to make it honest, because there's nothing worse than lying to my reader.

But this will lead to problems in my writing of arguments about things that are not math. Because I work try to work in strict logic, as I do in math, I often cannot come to any real conclusion. Because I want to use set theory, I cannot find sets that accurately describe the problems of the arguments. Because I cannot *prove* anything, my papers tend to be wishy-washy and very conditional. I merely suggest conclusions to problems set forth.

Where set theory and math falter in my argumentative papers, they excel in my poetry. Since I am creating poems, I don't care about argument or logical reasoning. I am using mathematical concepts to produce new text.

The main way I use math is through algorithms to create poems. I have a simple formula that I plug a long text into, and *voila*, I have a new randomly generated poem. Sometimes the poems make sense; most often, the poems are complete nonsense. But that is fine. The point of these poems is not to necessarily make sense or defend an argument. The point of my poems is to create new text.

A very simple example of this math-poem creation process is what is called N+7. You take an already existing text and a dictionary.

You replace every noun in the text with the noun that appears seven entries later in the dictionary.[2]

For example, take the poem "In a Station of the Metro" by Ezra Pound. The poem is two lines long.

> The apparition of these faces in the crowd;
> Petals on a wet, black bough.

The N+7 version might be

> The appendectomy of these facings in the crucifer;
> Petermans on a wet, black bounce.

But even this math-poem is not rigorous. It can turn out completely different if you're using a different dictionary!

I have used other types of math to create text. Sometimes the pieces are more mathematical than others. Sometimes the poems are more inspired by math than actively using math in their creation.

Now, these two aspects of my writing, essays and poems, are not the only ways I use math in my writing (or, perhaps writing in my math). When I do math, I have to actually write it out. Unlike common perception, math is not about jotting down long equations and trying to solve some really long division. I am a mathematician (-ish), not a calculator. So, when I do math homework, I don't write out long lists of numbers. I use words to explain concepts and proofs. I remember in one math class in college, our professor told us to use words and not just symbols. He wanted us to write in paragraphs.

Mathematical proofs can be written in a multitude of ways. Some people like to use mostly symbols; some people like to use mostly words. I like to use a healthy balance of both. If I use too many symbols, then I can lose context of what the symbols are representing. Then, the proof is hard to understand. On the other hand, if I use too many words, it can become over-bearing with text. A symbol is great for condensing down a complex concept into smaller characters. So, having a balance between these two is where I like to position myself as a writer in math.

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[2] This process was first invented by the French poet Jean Lescure, one of the members of the experimental poetry group Oulipo.

Math and mathematical thinking have appeared in my writing in many ways over the years. Whether it be the logical basis for my thinking in essays, or as the method of creation in my poems, or writing the math itself, math and sets have played a vital role in my history as a writer. And I still use math now, as it is my focus whenever I do research. And math will always be there, because remember: everything is built on sets.