Math in the Humanities?

Writing about a Non-Traditional Topic for a Traditional Audience

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Let's face it: there is a divide between the humanities and STEM fields. As an undergraduate at Johns Hopkins, I felt like I was on the losing side of a battle. I was a triple major in some very different fields: mathematics, creative writing, and French literature. However, this combination was not always well received by professors, and much less by administration. I still recall how the registrar's office spent an hour telling me how it was not possible to complete a degree with three majors, even though I had finished almost all the coursework and had the appropriate signatures!

As a doctoral candidate, I have been able to combine these interests into a doctoral dissertation about the mathematical methods of an experimental group of French writers, the *Oulipo*. While it's been a joy for me to investigate the subtle channels that lead from mathematics to literature and back again, for some hardcore literature scholars, using the word "mathematics" evokes fear and anxiety, which brings me to a big question: how do you write about one discipline to people who have been trained almost exclusively in another? More specifically, how was I to write about mathematics for people who took their last mathematics class in high school?

Below are some of the strategies I've found that help me deal with these challenges. Hopefully my experience can be beneficial to others who intend to fly in the face of disciplinary boundaries at some point in their studies.

Thesis

In my project, I have found that defining a clear thesis early on was key, and that the thesis had to be motivated not just by the interdisciplinary nature of the project but grounded in my own discipline. To use the magic thesis statement (MTS):

By looking at *the mathematical methods of the* Oulipo, we can see

1. *The historical reasons behind these choices and how the* Oulipo *situates itself within a literary tradition that precedes it as well as within the larger history of mathematics,*

2. *The way the mathematics changes the compositional methods of these authors,*

 and 3. *How this changes the reading experience, which most people don't see.*

This is important because it helps us understand:

1. *The* Oulipo*'s singularity among other 20th century French experimental groups,*

2. *The* Oulipo*'s influence on mathematics and computer science,*

and 3. *How mathematics and literature are complementary, and how one can influence the other.*

Motive

As you can see from how I divided my MTS, I found it necessary to break down my argument and motive into their constituent parts, not only because a doctoral dissertation is extremely long and therefore requires a more complex thesis, but to facilitate the reading experience for my audience. To that end, I have three main parts of the thesis:

1. History (both literary history and history of science/mathematics)
2. Compositional methods (rhetorical analysis, the heart and soul of literary scholarship)
3. And finally the reader (situating the *Oulipo* within a theoretical context)

In the last part of my MTS, I broke the motive down into three parts, again for my intended audience, which bridges disciplinary boundaries:

1. Why this matters for **literary scholarship** of 20th-century France (or Europe in general)
2. Why this matters for **historians of mathematics or science**
3. Why this matters for **larger disciplinary questions**

Orienting

This brings me to orienting. The primary reader of my dissertation is my advisor, who is unlike any other literary scholar in that he is not afraid of mathematics! As a translator, he had to learn a great deal about mathematics and the *Oulipo* to translate the works of Georges Perec, and he has continued to do a great deal of work on the group and mathematics. That said, my other readers are not well acquainted with mathematics, so I felt that I needed to assume a novice reader. Now the question was, how can I orient such a reader without talking down to him or her? Paradoxically, I came to the answer in preparation for my prospectus defense, during which I had to give a brief presentation about my work and answer questions from the French Department faculty. To get them thinking mathematically, I realized, they needed to *do* mathematics!

So I walked them through a proof, a simple one to say the least. Beginning with a mathematical anecdote to hook them in, I explained the mathematical reasoning that Gauss used as a child and how to abstract that into a theorem about sums of positive, consecutive integers. Then, I linked these notions of *formal language* and *axioms* to literature through the *Oulipo* and a few key texts. Mathematics is the study of abstract patterns, and literary sensibility as well depends upon a human capacity for pattern recognition. In that sense, the reader of my dissertation—regardless of his or her mathematical background—already possesses all the tools needed to decipher the *Oulipo*'s use of mathematics! It just requires a different kind of reading and—as I have learned—writing.

Bio

Natalie Berkman GS is a Ph.D. candidate in the Department of French and Italian in the final stages of her dissertation, which examines the mathematical methods of an experimental group of French writers founded in 1960. While originally from Buffalo, NY, she has enjoyed many homes—from her undergraduate years in Baltimore, MD, to her experience abroad in France, Italy, and Germany, and especially her time in Princeton. In addition to her work with *Tortoise*, Natalie is also a Writing Center Fellow, a Graduate Fellow of the Princeton Institute for International and Regional Studies (PIIRS), and a Resident Graduate Student in Wilson College.