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# JoAnne Growney's *Poetry-With-Mathematics* Blog: An Appreciation

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## Synopsis

Now is a good time to work on the boundaries of practice and theory, of art and science. We are seeing a rising tide of interest in these boundaries. Witness the growing Bridges movement, which has been exploring the connections between mathematics and the arts. Similarly, JoAnne Growney's blog, *Intersections – Poetry with Mathematics*, explores the connections between mathematics and poetry. Through this review, I aim to give readers a taste of what can be found in *Intersections* as a way of encouraging others, be they mathematicians, poets, or neither, to visit the blog.

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## 1. Introduction

This is a good time to be alive and working on the boundaries of practice and theory, of art and science, with the blooming interest surrounding these boundaries. Witness the growing Bridges movement, which has been exploring connections between mathematics and the arts.<sup>1</sup> Similarly, JoAnne Growney's blog, *Intersections – Poetry with Mathematics*, (<http://poetrywithmathematics.blogspot.com>, accessed June 26, 2012) explores the connections between mathematics and poetry.

In this review, I would like to give readers a taste of what can be found in Growney's blog as a way of encouraging others to visit. My hope is to incite interest in this subject and to expose both mathematicians and poets to the stimulating intersection of their fields.

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<sup>1</sup>See, for instance, <http://www.bridgesmathart.org>, accessed June 26, 2012.

## 2. A Bit About JoAnne Growney

Growing up on a farm in western Pennsylvania, Growney was a voracious reader with an interest in creative writing, particularly in writing poems and short stories. In order to continue on to higher education, she turned to science, a field in which she could obtain an academic scholarship. This path led her to a career in mathematics; all the while, though, she hoped to have some time to write “on the side.”

After many years, having successfully obtained several degrees, Growney eventually settled at Bloomsberg University in Pennsylvania and became a mathematics professor. Gradually her scholarly interests expanded beyond mathematics into the arts. She began to collect sources and materials of literary writing, particularly poems, that pertained to mathematics. Over the years she developed a considerable collection of poems with links to mathematics and brought many such works into her math classes. She put together many of the resources she found and shared them with colleagues as bibliographies in various venues, including the *Humanistic Mathematics Network Journal*, a precursor to the *Journal of Humanistic Mathematics*.

After retirement, Growney continued with an active and stimulating life. Among other things, she taught English in Deva, Romania, for several summers in the early 2000’s. Today she lives in Silver Spring, Maryland, where she writes poetry and is active in a number of poetry groups and conferences. Many readers will recognize Growney’s name because of her compilation of mathematical love poems, *Strange Attractors* [2], co-edited with Sarah Glaz.

Growney began her blog *Intersections – Poetry with Mathematics* in order to share her vast collection of mathematical poetry with others. The blog has allowed her to network with others and develop new contacts who have exposed her to more poems, helping to expand her original collection.

In addition to building an extensive collection of works by others, Growney has published some of her own poetry. Her most recent poetry collection is *Red Has No Reason* [4]. An earlier work, *My Dance is Mathematics* [3], is out of print, but the poems can be found online, at <http://joannegrowney.com/ChapbookMyDance.html>, accessed June 26, 2012.

### 3. *Intersections* and Mutual Inspiration

Blogs are dynamic enterprises that benefit from a sustaining question that, once posed, must be answered, especially when the process of answering it is like opening a rich vein in an uncharted mine. Two questions that sustain Growney's blog are "Where is the intersection between mathematics and poetry?" and "What are some examples of mathematics inspiring poetry, and vice versa?"

The interplay between poetry and mathematics has proved to be a fruitful theme for a blog, opening the way to explore a wide variety of poems and mathematics. Growney's blog has truly become a window into a rich and interesting world. Two years into the journey, the site now has some features, poets, and poetry forms that are often revisited. Yet the blog also affords the opportunity for readers to regularly discover new poets, forms, and even whole new dimensions of the interaction between mathematics and poetry.

Those skeptical about the existence of an overlap between poetry and mathematics might start with such structured poetic forms as the *sestina*, in which the last words in lines of successive stanzas appear in prescribed permutations. Let us consider the poem "Möbius Strip" by Heidi Williamson, highlighted in an *Intersections* post from August 19, 2011.<sup>2</sup> Williamson's *sestina* is about the making of Möbius strips, and the twisting nature of the stanzas parallels the content of the poem. The result is a pleasing and clever poem. Here is a sample - the second stanza:

However many times you turn it on its back  
 it holds its simple seamless shape like home.  
 The connection goes beyond the fragile join:  
 it feeds itself with endless seeming ends  
 that work their way beyond what you can see  
 and turn your mind in questioning quick loops.

An example of how Growney explores relationships between poetry and mathematics can be found in her October 12, 2011, post which highlights her poem "Like Poetry, Mathematics is Beautiful."<sup>3</sup> The finale shares her

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<sup>2</sup><http://poetrywithmathematics.blogspot.com/2011/08/half-twist-and-link-in-sestina.html>, accessed June 25, 2012.

<sup>3</sup><http://poetrywithmathematics.blogspot.com/2011/10/like-poetry-mathematics-is-beautiful.html>, accessed Jun 25, 2012.

... faint, enduring hope  
 that someday folks will see  
 mathematics to be  
 as lovely  
 as poetry.

On the way to this sentiment, the voice in the poem asks students whether they find mathematics beautiful or useful, and then asks them the same about poetry. The point, I think, is that despite the common beliefs that poetry is beautiful but not useful, and that mathematics is useful but not beautiful, the opposite may at times be true.

Several entries on Growney's blog reveal her love of the *square poem* as a poetic form. In a square poem, the number of lines is the same as the number of syllables per line. To obey this strict structure while achieving a pleasing, meaningful poem is quite a challenge. Growney says: "When I'm working on a poem that resists my efforts to shape what I must say, sometimes I turn to the square for a rescue" [5]. In other words, adding mathematical constraints like syllable counts may actually aid the artistic creation of poetry. Is there such a thing as an underconstrained poem, as there are underconstrained systems of linear equations? An idea for a future post perhaps.

A related challenge can be found in *Fibs*, where the numbers of syllables per line obey a Fibonacci sequence; here is an example entitled "My Dilemma," written by Growney (from the October 16, 2011, entry):<sup>4</sup>

I've  
 lost  
 the art  
 of careful  
 thought, asea in floods  
 of trivial information.

Growney has offered some wonderful square poems of her own on the blog. Below is one that speaks to the desire to see more women in mathematics (from the October 9, 2011, entry).<sup>5</sup> It is a topic visited regularly on the blog.

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<sup>4</sup><http://poetrywithmathematics.blogspot.com/2011/10/small-fib.html>, accessed June 26, 2012.

<sup>5</sup><http://poetrywithmathematics.blogspot.com/2011/10/counting-women.html>, accessed June 26, 2012.

But this is also simply a great square poem:

When I look around  
the room – if I don't  
know in one glance how  
many women are  
there with me, I smile.

It is a fun exercise to think of other ways that mathematics meets poetry. Poems can take on mathematical subject matter, such as doing or teaching mathematics, anxiety about mathematics, memories of a favorite teacher, or actual mathematical concepts. Additionally, poetic forms can be inspired by mathematics (e.g. syllable counts), or the poem itself can be used to pose a mathematical problem or puzzle. Some poems ruminate on intriguing results or areas of mathematics. Consider this as well – poetry can even play a role in the development of mathematics! In the 16th-century, for example, Nicolo Fontana, known as Tartaglia, used a poem to pass along to Cardano his “secret” solution of the general cubic equation [7]. Once you start looking, examples are everywhere, and Growney's blog does a great job of collecting examples and finding new veins to mine.

#### 4. The Blog as Resource

Like many blogs, *Intersections* arranges dated postings by month. Each post provides background on a poem or poet, and then it offers one or more related poems. Cross-links are provided for further exploration into the featured poet, the genre, or the poetic form. A search facility is available to quickly find items on any poet, title, genre, concept, or form discussed anywhere on the blog.

Mathematics teachers and others have in Growney's blog a quick and easy-to-navigate resource for poems about mathematical topics and mathematicians. Poems at this site can be incorporated into classroom lectures as illustrations or explanations. Carol Ann Heckman's poem entitled “The Calculus Road Not Taken” (included in the February 8, 2012, entry) is fun to share with Calculus students.<sup>6</sup> Below are the first few stanzas:

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<sup>6</sup><http://poetrywithmathematics.blogspot.com/2012/02/is-math-for-women.html>, accessed June 26, 2012.

If I had only conquered  
calculus  
this wouldn't have  
happened—the flood,  
the earthquake, the  
two hurricanes  
in succession  
  
I would have learned  
the secret  
  
I would have known  
the answer  
  
I would have succeeded  
on all counts  
and become  
wealthy and  
safe

Poems on the blog may also be interesting to share with colleagues in the instructors' lounge or by email. For a specific example consider Eveline Pye, whose poetry is always fun to share with statisticians. Two of her poems featured in Growney's blog are "Solving Problems", introduced in the October 18, 2011, entry,<sup>7</sup> and "Statistics," included in the April 12, 2012, entry.<sup>8</sup> Another statistically motivated piece, by Robert Dawson, is the centerpiece in the April 15, 2012, entry.<sup>9</sup>

Editors of newsletters and magazines for mathematicians will also find in Growney's blog a rich and ready source of content.<sup>10</sup> For a number of years, I have edited a newsletter for a special interest group of the Mathematical Association of America (MAA) focused on mathematics outside of academia

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<sup>7</sup><http://poetrywithmathematics.blogspot.com/2011/10/things-fingers-know.html>, accessed June 26, 2012.

<sup>8</sup><http://poetrywithmathematics.blogspot.com/2012/04/math-or-poetry-must-one-choose.html>, accessed June 26, 2012.

<sup>9</sup><http://poetrywithmathematics.blogspot.com/2012/04/statistics-lament.html>, accessed June 26, 2012.

<sup>10</sup>Growney uses Creative Commons licensing for her blog content; material found on the blog may be used for non-commercial purposes, as long as proper attribution is provided.

(BIG SIGMAA). Through the years, I have included in the newsletter several poems from Growney's blog, including one by Howard Nemerov, a poet whose works often feature mathematics. Nemerov served as an United States Air Force pilot in World War II, where he employed mathematics for navigation and guidance. His unique background made possible the poem "Figures of Thought", in which the logarithmic spiral is used as an illustration of how a mathematical entity can arise from separate and seemingly unrelated applications, featured in the August 16, 2010, entry.<sup>11</sup> Below is the opening stanza of Nemerov's wonderful "Figures of Thought":

To lay the logarithmic spiral on  
 Sea-shell and leaf alike, and see it fit,  
 To watch the same idea work itself out  
 In the fighter pilot's steepening, tightening turn  
 Onto his target, setting up the kill,  
 And in the flight of certain wall-eyed bugs  
 Who cannot see to fly straight into death  
 But have to cast their sidelong glance at it  
 And come but cranking to the candles flame –

Growney features Nemerov in several other posts; readers who are thirsty for more are invited to check these out, as well as Nemerov's own collected works [8].

## 5. A Sense of Fun

Occasionally Growney's blog entries highlight the fun side of mathematicians and poets by featuring lighter, more playful poems. It is like a mirror being held up to show an appealing feature shared by both disciplines – a sense of play. I expect many visitors to the blog will find themselves reflecting on their own perhaps barely-buried love of puns and puzzles.

Consider Growney's entry on June 7, 2010, marking the passing of the puzzle-meister and "occasional versifier" Martin Gardner with several short, playful poems by him, such as:<sup>12</sup>

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<sup>11</sup><http://poetrywithmathematics.blogspot.com/2010/08/poetry-and-applied-mathematics.html>, accessed June 26, 2012.

<sup>12</sup><http://poetrywithmathematics.blogspot.com/2010/06/celebrate-martin-gardner-1914-2010.html>, accessed June 26, 2012.



$\pi$  goes on and on  
 and  $e$  is just as cursed  
 I wonder, how does  $\pi$  begin  
 When its digits are reversed?

Limericks like Gardner's lend themselves to fun. Growney has provided many more examples of this form in her blog. Here is one from Philip Heaford's [6], featured in the March 29, 2010, entry:<sup>13</sup>

Said a certain your lady called Gwen  
 Of her tally of smitten young men,  
 "One less and three more  
 All divided by four  
 Together give one more than ten."  
 (How many boyfriends had Gwen?)

The blog invites each of its visitors, implicitly and quietly, to try their hands at fun or word play. One of my favorite posts (dated January 10, 2012)<sup>14</sup> gives a poem by Dan Kalman entitled "Ode to a Triangular Matrix" (from a poetry reading at the 1992 Joint Mathematics Meeting, hosted by Growney and Alvin White, who founded the *Humanistic Mathematics Network Journal*)<sup>15</sup> There is a sense of fun in Kalman's over-reverence for this special class of matrices. Here is the fourth verse:

But you, three sided paragon,  
 disdain such rank duplicity;  
 declaim your true intentions;  
 show every multiplicity  
 the measure of your heart, your soul,  
 your innermost dimensions.

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<sup>13</sup><http://poetrywithmathematics.blogspot.com/2010/03/mathematical-limericks.html>, accessed June 26, 2012.

<sup>14</sup><http://poetrywithmathematics.blogspot.com/2012/01/is-your-favorite-poet-mathematician.html>, accessed June 26, 2012.

<sup>15</sup>**Editor's note:** White's *Humanistic Mathematics Network Newsletter* (HMNN) and *Humanistic Mathematics Network Journal* (HMNJ) were inspirational for and motivated the foundation of the *Journal of Humanistic Mathematics*.

## 6. Favorite Features

Reading Growney's blog feels like she is taking you by the hand and saying, "Come with me, friend. Here is something that I think you will like." A wide variety of poetic forms (such as the braid-like *pantoum* from Malaysia, introduced in the April 9, 2010, entry,<sup>16</sup> or more familiar Western forms such as the *villanelle* or the *sonnet*) are showcased. Growney also introduces her readers to a variety of new poets. Who knew that the Irish mathematician Hamilton wrote poems? Growney's entry for October 13, 2011, shares a sonnet by Hamilton about the French mathematician Fourier.<sup>17</sup>

We also learn of well-known poets writing about mathematics. Thus we get to enjoy "A Large Number," a poem by Pulitzer Prize winner Wislawa Szymborska in the February 24, 2012, post honoring her life and career shortly after her passing.<sup>18</sup> We get to witness Wallace Stevens explore a popular topic in his "Chaos and Order" (featured in the February 28, 2012, entry).<sup>19</sup> And who among us cannot relate to the couplet [1]:

We dance round in a ring and suppose,  
But the Secret sits in the middle and knows.

Robert Frost may not have intended it, but as Growney points out in her May 19, 2010, post, "his lines sing true for mathematical discovery."<sup>20</sup>

There are also some beautiful poems that pay tribute to teachers. In "Sonnet for a Geometry Teacher" from [9] (featured in the January 30, 2011, entry),<sup>21</sup> Ronald Wallace describes his teacher "Mr. Glusenkamp." The second and final stanza reminds us of the lasting power of great teaching:

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<sup>16</sup><http://poetrywithmathematics.blogspot.com/2010/04/braided-lines-form-pantoum.html>, accessed June 26, 2012.

<sup>17</sup><http://poetrywithmathematics.blogspot.com/2011/10/hamilton-mathematician-poet-irishman.html>, accessed June 26, 2012.

<sup>18</sup><http://poetrywithmathematics.blogspot.com/2012/02/universal-and-particular-szymborska.html>, accessed June 26, 2012.

<sup>19</sup><http://poetrywithmathematics.blogspot.com/2012/02/chaos-and-order-stevens.html>, accessed June 26, 2012.

<sup>20</sup><http://poetrywithmathematics.blogspot.com/2010/05/discovering-secret.html>, accessed June 26, 2012.

<sup>21</sup><http://poetrywithmathematics.blogspot.com/2011/01/sonnet-for-geometry-teacher.html>, accessed June 26, 2012.

He didn't go for newfangled  
stuff – new math, the open classroom.  
And yet he taught us angles  
and how lines intersect and bloom,  
and how infinity was no escape,  
and how to give abstractions shape.

## 7. Conclusion

It would be a fun exercise to list all the wonderful things you can find at JoAnne Growney's *Intersections* blog. I thought, however, that it is better to give just a taste and leave the exploring to you. I hope this review has not only given the impression that Growney's blog is a great resource for mathematicians and poets, but has also opened your eyes to how the intersection of math and poetry is a rich and fun area to explore. When you visit the site, I hope you find most of what you are looking for, but not all. Thus, you will be left with more reason to pursue your own poetry, mathematics, or ideally, mathematical poetry.

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