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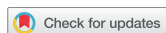


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INTERVIEW



Artist interview: JoAnne Growney

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ABSTRACT

The interview and the ten poems authored by JoAnne Growney presented in this article reflect on the various influences and events in JoAnne's journey through a life that includes both mathematics and poetry. The interview was conducted by Sarah Glaz in the summer of 2017 at the Bridges conference in Waterloo, Canada, where Sarah was present as the coordinator of the annual Bridges mathematical poetry readings, and JoAnne attended as an invited poet at that reading. This article is a result of the interview and several follow-up discussions.

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Introduction

Can a Mathematician See Red?

Consider the sphere —
a hollow rounded surface
whose outside points
are the very same points
insiders see.

If red paint spills
all over the outside,
is the inside red?

The mathematician says, *No,*
the layer of paint
forms a new sphere
that is outside the outside
and not a bit inside.

A mathematician
sees the world

as she defines it.

A poet
sees red
inside.

(JoAnne Growney [13, p 31])

Throughout history, the relation between mathematics and poetry has always been complex. In some periods of time they were considered complimentary and supporting disciplines, while at other times they were seen as conflicting ways of seeing the world. During the early to mid-twentieth century both attitudes seem to have coexisted with little perceived contradiction. This period of time saw the publication of two brilliant book-size essays: In 1929, S. Buchanan's *Poetry and Mathematics* [2] highlighted the similarities between the two disciplines; while in 1959, C. P. Snow's *The Two Cultures* [20] described and lamented the division of the sciences and the humanities into 'two cultures.' In our own time, many of us seem to have crossed the great divide and embrace the similarities along with the differences between these two disciplines in creative and joyful ways. This shift in attitude may be said to have started in France with the literary movement known as Oulipo — Ouvroir de Litterature Potentielle (Workshop of Potential Literature) founded by Raymond Queneau in 1960. Oulipo's members invented constraints that generate literature, many of them mathematical. Most founding members of the Oulipo group were French, but one of its few American members, the poet Harry Matthews, brought some of Oulipo's ideas home [16,17]. Another landmark occurred in 1979, when the first anthology consisting entirely of mathematical poetry was published. This anthology, *Against Infinity*, edited by Ernest Robson and Jet Wimp [19], is one of the two major factors that contributed to the creation of a community of people who write and share poems with strong links to mathematics. The second major factor was the establishment in 1987 of the *Humanistic Mathematics Network Journal* (HMNJ) by Alvin White. This journal – and the Humanistic Mathematics Network movement from which it sprang – advocated 'viewing mathematics as part of human culture' [15] and included mathematical poems in every issue. JoAnne Growney served as Associate Editor in charge of poetry for HMNJ from 1994 until its closing in 2004. JoAnne was part of the pioneering group of mathematicians who not only wrote poetry with strong links to mathematics, but also enthusiastically supported the cause of making mathematical poetry a visible and respected part of the collective creative work of both poets and mathematicians. She continues to do so to this day through her poetry and prose publications and through her blog *Intersections – Poetry with Mathematics* [11].

JoAnne Growney, (Figure 1), grew up on a farm in Pennsylvania. She completed a PhD in mathematics in 1970 at the University of Oklahoma and went on to a career as a professor of mathematics at Bloomsburg University. She retired from teaching in 1997 and in 2002 completed an MFA in Creative Writing (Poetry) at New York's Hunter College. JoAnne is author of a book in mathematics [6], 2 chapbooks [9,10] and 2 books [7,13] of poetry, a number of translations of Romanian poets' work into English and several papers on the connections between mathematics and poetry [12] and [1, Archives]. She edited the poetry anthology *Numbers and Faces* [8], and is coeditor, with Sarah Glaz, of the poetry anthology *Strange Attractors, Poems of Love and Mathematics* [5]. This brief bio is offered as a background to the article that follows. The interview and



Figure 1. JoAnne Growney.

the ten poems authored by JoAnne presented in this article reflect on the various influences and events in JoAnne's journey through a life that includes both mathematics and poetry. The interview was conducted in the summer of 2017 at the Bridges conference in Waterloo, Canada [1, Bridges 2017], where Sarah Glaz was present as the coordinator of the annual Bridges mathematical poetry readings, and JoAnne Growney attended as an invited poet at that reading. This article is a result of the interview and several follow-up discussions.

On the farm

Things to Count On

I want to say how beautiful it was – but it was not. Each animal, each shed, each acre was useful; we kept them with good care and counted them, counted on them. One hundred forty acres, seven sheds. A white frame house, eight tall rooms and bath, a cellar with a dozen shelves for canned goods and four lines for laundry, a truck room for junk. We five in three bedrooms, four beds. One extra room for guests – my aunts. Our dining room with seven doors plus closets. A shed beside the corn crib with space for three wagons and a Plymouth. The barn with two mows for hay, a third for straw, a granary, a bathtub for livestock drinking, and six private stalls. Nine cows with two for milking, which I did. In seven days no minutes to be happy, no hours to be sad — not even when my father died. My mother's a good woman, worth three good women. For sixty years everyone has thought so, and more than a hundred have said. I've stopped counting.

(JoAnne Growney [13, p 30])

Sarah: When did you write your first poem?

JoAnne: It would probably be around age 13. I did write a few poems and stories in childhood, but I didn't save them. I took a creative writing course in college, but it was

prose, not poetry. My only C in college was for a course in modern poetry. Of course, I was not an English major — and the professor who taught the course was very exacting in the interpretations of poems. In the anthology that was the course's text (which I still have) my margin notes are full of his explanations of what the poem really meant. Since then, I have taken a little bit more on myself to decide on what poems mean. But it was very exacting in those days.

Sarah: For you, poetry started around teenage years. And mathematics, when did you know that you really loved it or had an aptitude for it?

JoAnne: I was always good in math in terms of grades. And I liked it. I got a science scholarship to allow me to go away to college and started out as a chemistry major. When I got to Organic Chemistry, I realized that I like math better and I switched to math.

Sarah: Which one of your parents influenced you in your interest in math and poetry? In your poem "Things to Count On" your mother seems to be the one with the most influence on your upbringing.

JoAnne: My mother was a teacher, and she went back to teaching when I was in 5th grade, after my father died. I felt she brought her classroom home with her, so to speak — she gave lots of instructions and she had lots of homework — and both of those made me think I didn't want to be a teacher.

Sarah: Your mother was a teacher. What subject did she teach?

JoAnne: She was an elementary school teacher, but the intermediate part of elementary school. For many years she was also a school principal and taught several subjects — history and spelling and math (and perhaps others) to 6, 7, and 8th grades. My father died when I was nine years old. I don't think that he read to me. But he had books on the shelf. He had rheumatic fever when he was a boy and, from that long illness, his heart was enlarged. The cure for lots of diseases at that time was fresh air. So, it was somehow decided that he would be the one (of six children) to continue the family farm. He didn't marry until he was in his early thirties after his mother had died. She kept house for him, and after she died he was free to look for a wife, I guess. There isn't really a history of advanced math in my family.

Sarah: And of poetry?

JoAnne: Or of poetry. Ruth, one of my aunts, probably the one that I am most like in interests and temperament, was a high school English teacher. I liked to read. My aunt Ruth became influential in the family as a helper to my mother after my father died. She and another of my father's sisters helped our family get on its feet. And my mother went back to work.

Sarah: She went back to work, but also kept the farm?

JoAnne: Yes, she kept the farm, but it became a rental property in terms of other farmers renting space in the barn for storage or using the fields for crops, and so forth. She said it was like a free place to live because the income from the farm paid the taxes and the maintenance expenses.

Sarah: Did she encourage you to go to college?

JoAnne: Well, from her own experience she saw that 'A woman needs a career to fall back on.' I was encouraged to learn a way I could support myself. In later years my mother told me that I had gotten too much education. That was not related to mathematics, however, but related to religion — I had moved away from belief.

Four teachers

The Ones I Best Remember

*Dedicated to the memories of Miriam Ayer,
Elinor Blair, Laura Church, and T. K. Pan*

1.

Chalk in hand,
she tosses her book,
strides across the room,
excited by trigonometry,
excited that we,
restless in our rows,
caught some of it.
Flamboyant, silver,
fearless woman.

2.

The geometer bends
toward the blackboard,
drawing quick sketches
that show how the one-form
is the heart of the matter —
the foundation for intuition
to build its new ideas.
Vigorous, prodding,
kindhearted man.

3.

Elegant in long flared skirts
when others have shortened theirs —
the one who loves Old English,
who points to the shadows
of Beowulf and Wordsworth
in advertising slogans
and late-night TV:
each thing is our teacher
if we watch and listen.

4.

Nervous in class and tough
to follow — she made errors
on the blackboard yet demanded
we write perfect mathematics
in perfect English sentences. This was not
an East Coast finishing school, and I hoped
she'd be lenient with the Asian students
even as fear made me work infinitely hard

on papers that she gave back bright
 with red-ink from her difficult hand.
 No one before or since has read my words
 so carefully.

(JoAnne Growney [11, January 10, 2011])

Sarah: Do you think the driving force behind your interest in both poetry and mathematics was internal, not connected to home or parents? How about other people?

JoAnne: Well, when I think of influences, I remember a couple of high school teachers I had, one whom I knew very well because her daughter and I had been good friends in kindergarten and first grade and her daughter was killed by crossing in front of a school bus. (This case became, I think, part of a campaign that eventually led to requiring cars to stop while school busses are loading and unloading students.) Later the mother became my high school English teacher. She probably was nurturing to a lot of students. She would come into English class and she would say, ‘Guess what I watched on television last night?’ And then she would start to tell something she learned from a TV show. The big idea that I got from her is that you can learn from everything that you do. I treasure that so much. She had gone to Vassar and tried to interest me in trying for a scholarship there but my mother and sister both argued that a Vassar experience would change me into a person they wouldn’t know. Another high school teacher – my math teacher during my junior and senior years – was a woman who had gone to Columbia and had come back to her home town to care for her mother and ended up teaching in my school. She was flamboyant and didn’t care what anybody thought about anything. Lots of girls from her classes went on to start a major in math, but most didn’t stay in math.

Sarah: Is this the one that you wrote about ‘Flamboyant, silver,/fearless woman’?

JoAnne: Yes, the two teachers are both in the poem ‘The Ones I Best Remember.’

Sarah: This is very interesting. You picked from the various people that crossed your path the things that answered to your inner need.

JoAnne: There is another woman in that poem, from the University of Oklahoma. My husband and I tried a summer at Oklahoma to see how it would be to live there before he took a leave from his job and we went there for degrees. We both took a topology class with a woman named Miriam Ayer. She was a stressful teacher. She wrote everything on the board, but if you watched carefully you saw her make mistakes. We students had to correct the mistakes. And when she graded papers, if you didn’t use perfect English, she would mark it up terribly. One of her rules was that you must begin every sentence with a word, never a number or a mathematical symbol. For example, if you wanted to start a statement with \forall , the math symbol that means ‘for every,’ you could not use this symbol, but had to write out the words ‘for every.’ It was the first time that I linked writing and math. I didn’t think of them as similar processes till I took her class. I didn’t like her. But I look back and see that she was very important to me.

Sarah: There is also a man in that poem.

JoAnne: Yes, he was from the University of Oklahoma. From him, as from others I observed later, I learned that a man who has talented daughters is likely to have a supportive attitude toward women. The man was T.K. Pan. He was Asian and he had three daughters. One of them was training to become a doctor. An interesting sequel to that story is that one of his granddaughters found the poem online and contacted me.

Sarah: This is amazing.

JoAnne: It was a sweet connection to make. She was googling the name of her grandfather and found the poem. I think that she was back in China.

Everything connects

Filling the Vacuum

In 1973

Billie Jean beat Bobby,
and abortion
became legal.

*

My high school physics teacher
liked trick questions —
he claimed embarrassment
would help us remember.

From “What’s inside a tennis ball?”
he wanted “Nothing” so he could
laugh and say “There’s air.”

Nothing is a vacuum —

the ball implodes,
sucked to its center
like dust into a Hoover —
touted as a time-saving

invention, but women
know it raised only
our standards for clean.

Vacuuming a fetus

from its womb is an ounce
of prevention. Unwanted children
quit school before physics,
are twice as likely to be bad.

(JoAnne Growney [13, p 47])

Sarah: Have you written poetry during your career as a mathematics professor at Bloomsburg University? How did you start linking poetry and mathematics?

JoAnne: Did you know Alvin White?

Sarah: Not personally.

JoAnne: I don’t know which came first, they were both, I think, in the early 80’s. I got a copy of the anthology *Against Infinity*, and I got also to meet Alvin White at one of the annual Joint Mathematics Meetings, and became acquainted through him with the Humanistic Mathematics Network. White produced the forerunner to the *Journal of Humanistic Mathematics*. One of the poets in White’s journal and also in *Against Infinity* is the Czech poet and scientist Miroslav Holub who often included mathematics in his poems. I was delighted to discover so many math-related poems — and I began to look for

more. These days, I probably cannot open a poetry collection without saying to myself, ‘I wonder if I’ll find a mathy poem in here.’

Sarah: Is there a time when you didn’t write poetry?

JoAnne: Oh, yes. From the time I was 20 to the time I was 50, probably.

Sarah: That is a big gap.

JoAnne: I got married. I went to graduate school, I delivered and adopted children. When the children left home, then I had time again.

Sarah: And this is when you went back to poetry?

JoAnne: Yes. A little bit before that during one of my sabbaticals, I developed a bibliography of Mathematics and the Arts (which was published in the *Humanistic Mathematics Network Journal*, in 1993). My interest in these connections became aroused partly by the location of my office. For a stretch of time, the Math Department and the Art Department shared an area at my University. And so, I became very much interested in visual art, for which I had never had opportunities before. I had been a reader. Then I learned a lot about art and artists. I asked questions and went to art exhibits.

Sarah: This is what sent you back to your previous interest in poetry?

JoAnne: Perhaps. If I were to find a theme for my own thinking it is that ‘everything connects.’

Sarah: Everything connects.

JoAnne: It is almost the way my mind works rather than something that I had seen.

Sarah: In connection with this you mentioned earlier a ‘vacuum poem.’ When I tried to look for a vacuum poem in your books, I found only one, the one about abortion. So how does ‘everything connects’ connect to this poem?

JoAnne: It relates through a project I tried during my MFA studies. While I was taking classes at Hunter College, I made a News Year’s resolution to write a poem a day. (I wish I could begin a year with that amount of commitment now.) Back then I needed ideas for poems and I was subscribing to the *New York Times*. One day when I opened the *Times* looking for an idea, on one of the inside pages, there was an article on the history of the vacuum cleaner, a piece about the anniversary of *Roe v. Wade*, and also one about Billie Jean King.

Sarah: And you put them all together.

JoAnne: I put them all together.

Sarah: And you put mathematics together with poetry, almost in the same way.

JoAnne: Often it is the case. Also, another quality seems to govern me. I don’t know if hyperactive is the right word, but I have a lot of nervous energy. One of the things that I do in my ordinary days is quite a bit of exercising. I try to jog three days a week. My condo building has an exercise room and I use some of the machines.

Sarah: I hope it is contagious.

JoAnne: My mother used to say she could remember me as a girl saying ‘I *need* to go for a bike ride’ not ‘I want to go for a bike ride’ or ‘May I go for a bike ride’, but ‘I *need* to go for a bike ride.’ I seem to need exercise to clear my head.

Sarah: And while you exercise your mind thinks?

JoAnne: My mind clears. Exercise has an effect similar to a good night sleep. The clutter gets cleared. I find it is true in the morning too. Sometimes, the thoughts you have been waiting for come together when you wake up.

Sarah: So, the best time for you to write is after you exercise?

JoAnne: Well, probably. Although right now I don't have a strict schedule. That would have been true back when I was working or taking classes at Hunter and writing a lot. I would exercise early then. Exercise and enjoy some creative time in the morning and use the afternoons for whatever else needed to be done. I also found that a good rule for myself is to go out every day and smile, at least, at one person. An interaction that gets me outside of myself — connecting with someone else.

Poems are made by erasing

How Did It Come to This?

Prints on exhibit walls —
 notions of a bull by Picasso,
 whose clear eye directed a deft hand.
 Careful likeness becomes surreal
 design then sketch
 and in the end
 a few fine lines.
 Poems also we make
 by erasing.

(JoAnne Growney [13, p 9])

Sarah: You finished a PhD in Mathematics and had a whole career as a mathematics professor and then retired early and started a different career with a MFA in poetry. Tell me something about the MFA.

JoAnne: I went back to school.

Sarah: I want to know a little bit more about your MFA experience. How did your teachers in the MFA program influence you?

JoAnne: One of the people I had for class was Sharon Olds [18]. It was a workshop rather than a lecture course and we were meeting for several hours once a week. At our last meeting, she brought one of her poems and said that it was a draft – and that it was ‘only fair’ that she share a draft with us since we had been sharing drafts with her during the entire semester. Her poem was about a bouquet. There had been recent illness or death in her family and somebody had sent flowers. She was remembering the person in the language of the flowers, as I recall. So, she read it aloud and after she read it, she said ‘That poem has one-third too many words.’

Sarah: It is amazing and reminds me of one line in one of your poems that I love ‘poems also we make by erasing.’

JoAnne: Yes, that is related to a string of Picasso prints that I saw. Perhaps it was at the Metropolitan Museum of Art. I am not sure.

Sarah: And I remember this line every time I read a first draft of one of my own poems, I think, ‘I am really attached to these words. It is a repetition of what I said before, but I really like it.’ But, ‘No, no.’ I tell myself, ‘Remember JoAnne’s line “poems also we make by erasing.”’

JoAnne: I was astounded by what Sharon Olds said. Not just saying that it has too many words, but assigning a number. Yet I have found that this happens to me when I read a poem aloud, that is when I get the feel of how many words may need to be eliminated.

And, generally speaking, early drafts have far too many words. Maybe ‘¼ too many words’ – or, more simply, ‘a few too many words.’ Olds’ statement made good sense to me after a while.

Sarah: She is an amazing poet. She is very explicit in every sense. A little too explicit sometimes.

JoAnne: She is not my favorite poet, but she is certainly a very good poet. She has a wonderful poem about a girl that is good at math entitled ‘The One Girl at the Boys’ Party.’

Sarah: She is not a ‘mathematical poet,’ although she mentions mathematics in a few of her poems. She is too explicit to be a mathematical poet. Mathematical language has a built-in ambiguity. It is strange that there is so much language ambiguity in such a factual and precise discipline.

JoAnne: I will mention just one more thing about the MFA. In the very first workshop I had the teacher was a poet originally from India, Meena Alexander. In the background of our writing we were reading a collection of poetry by Derek Walcott [22]. If I had just picked up two or three poems by Walcott, I would never have learned to love him. But reading his work week after week, 5 or 10 poems a week for 15 weeks, I came to feel the poems. He is ornate. That is not my favorite thing. But, by giving it a lot of attention, I learned to appreciate his poetry. Nowadays, I often will pick up *The New Yorker* or some other magazine and read one poem at a time. But much more of the time I spend reading a collection rather than reading individual poems.

Sarah: But you once told me that no one reads a book of poems from the beginning to the end. Of course, I actually do.

JoAnne: Well, I try – but I often finding myself reading by layers – I skim through the book, reading quickly, then come back and read more carefully and then, again, more carefully. And return to some favorites.

Sarah: I actually read it cover to cover in some order, but the order is not important. For example, I read in your blog a mathematical poem by Wislawa Szymborska ‘Confessions of a Reading Machine,’ from her latest collection ‘Map’ [21]. It was an intriguing poem and I went to amazon.com and bought the book. I already had several collections of Szymborska’s poems, and I didn’t think this new book would add much, but it really did. The other translations are different. They are just as good, but different, and in ‘Map’ there are many new poems. I am reading it now cover to cover, but from the back to the front. She is a magnificent poet.

JoAnne: I got a gift of a Polish edition of a part of that book last summer – from a friend whom I translated poetry with when I was in Romania and who is now in Poland. His name is Doru Radu. He and I have been corresponding recently. He writes some poetry. And he has translated some of Szymborska’s poems into Romanian. He loves her poetry so much and he has also heard her read. That was an exciting thing for him.

Romania

Sarah: An interesting phenomenon is that poets from countries that were, not long ago, behind the Iron Curtain, did not seem to see a sharp division between poetry and mathematics. Nobel prize poets, like Wislawa Szymborska, wrote several poems with strong links to mathematics. And we also mentioned here another example, the Czech poet and scientist Miroslav Holub. There are also a number of Romanian poets in this category. One of

them, Ion Barbu (Dan Barbilian), was creative both as a poet and as a mathematician. You have a connection to Romania, wrote about this country and translated some of its poets into English. Tell me a little about this connection. How did it start?

The Bear Cave

Twenty-five years ago at Chiscau, marble quarry workers discovered, trapped by an earthquake in a wondrous, enormous cave, bones of one hundred and ninety bears, *Ursus spelaeus*, (now extinct). Cold rooms of cathedral splendor now render tourists breathless while the insistent drip of water counts the minutes. There is no safe place.

(JoAnne Growney [13, p 18])

JoAnne: My travel there was through a tiny organization called ‘Teachers for Tomorrow’ which sponsored summer teaching-learning programs in India and Romania. The organizer of this group was Janet, a high-school classmate of mine who was an English as a Second Language (ESL) teacher with contacts with Romania through the Pearl Buck Society which arranged overseas adoptions. Janet helped the agency by travelling to Romania and bringing babies to the US for adoption. When she was in Romania helping the adoption agency and people learned she was an ESL teacher they wondered if she could help them learn English, and this led to her starting a ‘Teachers for Tomorrow’ program which arranged for teachers to help students learn conversational English in both India and Romania.

Sarah: And you joined the program. Where and what did you teach in Romania?

JoAnne: I spent three summer sessions in the city of Deva, working with students in Școala Generală Andrei Mureșanu. We offered English-language-learning sessions at the school in the mornings, which students attended without fee except to help with hosting the teachers, and then, during many of the afternoons, we were invited to a student’s home for a midday meal and often also taken on some sort of touring adventure – gardens, churches, monuments, etc. – seeing Romania. For textual materials for the students I mostly presented poetry, which we read and puzzled over and discussed. And some of it was English translation of Romanian poetry, found online. I much valued this chance to learn of Romanian poets. And I particularly delighted when I found a poem that related to mathematics. Nichita Stănescu was, and continues to be, a particular favorite.

Sarah: Yes, Nichita Stănescu is one of my favorites too. Tell me more about your translation projects, especially those involving mathematics and mathematicians.

JoAnne: One of the long-term friendships that has lasted from my time in Romania is with a young man, Doru Radu, who taught English at the school in Deva and who served as translator for us English teachers who visited. Doru loves poetry, particularly the work of George Bacovia, and he and I collaborated on a translation of Bacovia’s work. We also met with the poet, Ileana Malancioiu in Bucharest and obtained her permission and cooperation to translate her work [12, Romanian Poets]. In addition, I have worked with other

Romanian scholars in translating work by Nichita Stănescu, some of which contains mathy ideas, but the dilemma of how to obtain permission to publish from Stănescu's heirs has so far prevented publication. There is a link to some of my Stănescu co-translations on my website [12, Romanian Poets]. And, of course, you and I translated Ion Barbu's 'Ut Algebra Poesis' [4].

Sarah: 'The Bear Cave' is very evocative of the atmosphere in the Carpathian Mountains of Romania. It is a wonderful poem that had been translated into Romanian, and it is also a mathematical poem.

JoAnne: Yes. Its structure is mathematical, it is an 9x9 syllable square poem, one of my favorite math poetic structures. The Romanian translation by Gabriel Prăjitura is linked from my website [12, Romanian Poets].

Math and poetry – the perfect blend

Looking for Mathematics in Hedy Lamarr

All my six husbands married me for different reasons.

Hedy Lamarr

Perhaps Hedy Lamarr married so often because six is a perfect number – the sum of all its proper divisors, “proper” meaning “less than six,” “divisor” meaning “a counting number that divides and leaves no remainder.”

After a perfect number of husbands, there is no remainder. Six is the smallest perfect number, the next is twenty-eight.

And twenty-eight is too many husbands.

(JoAnne Growney [1, Bridges 2017, Poetry Reading])

Author's Note: Although not a mathematician, in addition to her acting career, Lamarr was also an inventor – see, for example, https://en.wikipedia.org/wiki/Hedy_Lamarr.

Sarah: Now let's connect between your poetry and mathematics. How is mathematics reflected in your poetry? In which way it influences your poetry? Did your poetry change from the time that you were not a mathematician to the time that you came back to it as a mathematician?

JoAnne: Because I have a mathematical vocabulary and a mathematical thought processes, I bring something to my poems that many poets don't. I love the idea – as in the Hedy Lamarr poem – of using a word like 'perfect.' When I hear the word 'perfect,' I think immediately of 6 and of 28 and the condition they satisfy that makes them 'perfect numbers.' What is interesting to me when I see the word 'perfect,' or when I see another term, like 'identity,' is to play with both meanings, mathematical and non-mathematical. The

ideal poem for me is one that is correct mathematically in the use of terms. Yet, the person who doesn't know that mathematical term finds it a piece of art as well.

Sarah: So, the blend is perfect.

JoAnne: The blend is 'perfect.' There was a time, however, in my poetry that I did not focus on math-related poems. I was writing to find myself — for example, in poems about my mother. Trying to discover who I am. Trying to remember my father and wishing that I had saved more because I remember so little. I could have saved memories of special moments, but I didn't know that I would need them.

Sarah: It happens even if you have your parents for a long time. You would end up saying 'Why didn't I ask? Why didn't I save more?'

JoAnne: What I discover when I look back at my poems, is that a lot of them use mathematical terminology just because that was part of my vocabulary. Now that I am writing a blog, I try to include math in all the poems I offer there. I don't try to be personal in that poetry, but I am more frequently playing with form. I don't think I write very many good poems these days.

Sarah: I think that the Hedy Lamarr poem is quite good. Humor has a place in poetry. They don't all have to be about tragedy and about finding yourself. It helps to clarify what you think about something and write it down, but it doesn't have to be only about this.

JoAnne: Sometimes it happens, perhaps accidentally, you are writing about one thing and something else is there too.

Sarah: Yes, there is a therapeutic effect even when you don't intend it to be.

Counting the women

JoAnne: Right now, I find I am very concerned about opportunities for women and women's roles. I have granddaughters right now.

Sarah: How many granddaughters?

JoAnne: Eight grandchildren, seven of them granddaughters.

Sarah: Do they all like math?

JoAnne: Yes. At least they tell me they do.

Sarah: Anyone of them also writes poetry?

JoAnne: Yes. One of my granddaughters who lives in England writes quite a lot. Every so often I get an email with one of her poems.

Sarah: That is really nice.

JoAnne: This summer she had a role in a play at the end of the school year. She is in Drama Camp right now. Maybe she will write something for Bridges some day.

Sarah: That will be something. We will walk with a cane to hear her talk. If we are around.

JoAnne: One of my poems has to do with a visit to the Baltimore Art Museum with a friend, Toni Carroll. I was in my 40's when she came into my department and I realized what I had been missing by not having any women math friends. The revelation was wonderful because we had become good friends. But she didn't stay — she had a non-tenured position so she moved on to Michigan with her husband. We stayed friends, but it had been especially nice to have a friend right down the hall.

Sarah: Mathematics is a man's world. You learn how to live in it. Not quite like a man, but in terms acceptable to men. Yes, it is not easy. It is nice to have more women

Intersections -- Poetry with Mathematics

Mathematical language can heighten the imagery of a poem; mathematical structure can deepen its effect. Feast here on an international menu of poems made rich by mathematical ingredients gathered by JoAnne Growney.

SUNDAY, OCTOBER 9, 2011

Counting the women

The stimulus for this posting appeared a few weeks ago in the *Washington Post* -- in [an article](#) that considers the loneliness of women in STEM fields (science, technology, engineering, math).

For me, it was never a conscious thing -- the counting. It simply happened. The numbers are small and you know, if you are a woman and a mathematician in a room full of mathematicians, how many women are in the room. Any room. It is a small counting number. Sometimes it is 1.

When I look around
the room -- if I don't
know in one glance how
many women are
there with me, I smile. (5 x 5 syllable-square poem by JoAnne Growney)

During this month of October, many television stations across the country are celebrating the life and work of an outstanding mathematician of the 20th century, [Julia Robinson](#) -- and here are links to information about [the film](#) and its [broadcast schedule](#)

Related to this post and of possible interest is the [6 December 2010](#) posting, "Are all mathematicians equal?"

Posted by [JoAnne Growney](#) at [10:04 PM](#)

Labels: [counting](#), [counting women](#), [Hilbert](#), [JoAnne Growney](#), [Julia Robinson](#), [mathematician](#), [square poem](#), [Washington POST](#), [woman](#)

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Figure 2. Intersections – Poetry with Mathematics, Counting the Women [11].

mathematicians. I really appreciate your support of this issue, putting it into your blog and writing about it in your poems. I particularly like the poem in which you look around the room and if you can't count how many women are there, you smile (Figure 2).

JoAnne: Yes, exactly.

Sarah: It doesn't happen that often, though, in mathematics conferences.

JoAnne: No, but it is interesting. At this Bridges Conference, poet Alice Major and I were talking with a woman who is a mathematician and a weaver — and she mentioned that it is so wonderful to be looking around the room and not being able to count the women.

Sarah: She remembered your poem. It is really a memorable poem. Tell me a little about your poems that feature women mathematicians. Some of them, like 'My Dance is Mathematics,' about Emmy Noether, have almost become classics [9, pp. 14–15].

JoAnne: I have also written a poem about Sophia Kovalevskaya [3, p 42], and several 'found poems,' poetic rearrangements of, for example, the words of Vera Rubin, Mary Cartwright and Grace Murray Hopper. All of them and more can be found in my blog and in my recent article appearing in the *Journal of Humanistic Mathematics* [14].

Intersections – poetry with mathematics

Sarah: Let's talk about your blog. You started the blog in 2010 and it has to-date over 800 postings all of which feature poetry with connections to mathematics. Tell me how you started this blog. What were the stages that brought you to the blog?

JoAnne: One of the stages that brought me to the blog, rather than to publishing an anthology, was our joint work on the anthology *Strange Attractors* [5]. That was hard work, a lot of it unrelated to the actual poetry. Lots of formal hurdles to work through.

Sarah: Too hard to be repeated? It was great that we didn't kill each other in the process and ended up, after a little bit of friction, real friends.

JoAnne: Yes. The blog came about because in the last 10–15 years of my teaching career, I had been collecting math-related poems. Many of them were useful as outside readings or discussion-starters for students. It seemed to me when I was cleaning up files that I shouldn't throw them away. I should share them. I tried the blog and it just kept on going because 'everything connects' to something else and now I have more poems collected and not yet included in the blog than I did when I started.

Sarah: You put together a small anthology of mathematical poetry, *Numbers and Faces*, before we coedited *Strange Attractors*. That is how I got to know you. I mailed you two or three dollars to buy one of your books of mathematical poetry, I think it was *Numbers and Faces* or maybe another book.

JoAnne: When you connected with me, I looked you up on the internet and found that you are from Romania and thought, 'A math person from Romania – TWO excellent qualities – I want to get to know her.'

Sarah: I was already collecting mathematical poems at that time. So, when I considered editing an anthology I thought, 'I don't know many people like me, but I do know one person, JoAnne Growney. Why not try to edit the anthology jointly.' Something good came out of it, better than each of us could have done separately.

JoAnne: It was mostly a pleasant process.

Sarah: Yes, mostly a pleasant process and it is pleasant that after 8 years it still sells.

JoAnne: Yes, and it is an e-book now.

Sarah: Let's return to your blog. We both want to make readers aware of it because it does something important. It makes mathematical poetry more welcome and more visible. It also raises other important concerns, like the scarcity of women in mathematics, which we already talked about, and contemporary environmental issues. The square math problem in the image of your blog's Earth Day, 2011 posting (Figure 3) is just one example of the poetic and mathematical way you take on environmental issues. What attracts your attention in a math poem and makes you include it in your blog?

JoAnne: Mathematical terminology. If I see it in a poem, I found that it makes me scrutinize it more carefully. If I really like a poem, sometimes I can see the threads of a mathematical idea under it. Perhaps a pattern like recursion. Structure, too, interests me – permutations of words or lines, as in pantoums or sestinas. Also underlying counting patterns attract me.

Sarah: Something that you feel has a math connection, even if it is not direct, after all pantoums and sestinas are classical forms of poetry, not quite 'mathematical' enough in themselves.

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THURSDAY, APRIL 21, 2011

Earth Day, 2011

My father, a farmer, was respectful of our earth's resources. *Replenish what you take*, he taught. But some of us consume without replacement as if the earth is infinite in its capacities.

When growth is exponential, we may not see its consequences before it is too late. (Have we already destroyed the balances of nature?) The following 8 x 8 syllable-square poem restates a oft-used math-textbook question -- and reminds us that little time may be left to solve environmental problems.

Square math problem by JoAnne Growney

Quietly the dark creature starts--
It drinks a quart of the water
from our reservoir. Then each day
it gulps twice as much as the day
before. If no one notices
this monster's thirst until one-fourth
the water's gone, what time is left
to arrest the vast consumption?

Environmental concerns also are found in these postings: [7 October 2010](#) and [22 April 2010](#).

Posted by [JoAnne Growney](#) at 11:47 PM

Labels: [Earth day](#), [environment](#), [exponential growth](#), [JoAnne Growney](#), [mathematics](#), [poem](#), [poetry](#), [square](#)

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Figure 3. Intersections – Poetry with Mathematics, Earth Day, 2011 [11].

JoAnne: But math influences the structure. In an earlier conversation you mentioned Oulipo and I am trying to think when I first learned of them – probably around the time I started my blog, maybe a little before. I have come to learn from Oulipo the ways structure – sometimes silly and sometimes evocative – can help a poem come to be.

Sarah: Actually, I think that I learned about Oulipo from you. You told me about *Oulipo Compendium* [17]. I went online and found that it is out of print, but I managed to get a used copy. And now I have it. It is sort-of an encyclopedia on what is structurally (mathematically) possible and also what is not possible, but may be worth trying.

JoAnne: Harry Mathews was an American Oulipian — most of them were French. There is a poem of his that is waiting in my blog's queue. I think again about the idea of 'everything connects.' Every time I see a poem, I look for, among other meanings, the mathematical ideas in it, the mathematical words that have several meanings, that I ought to be able to use in my own poems. In my mind there is a lot of back-and-forth between my poems and the poems of others I have been reading and considering for my blog.

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MONDAY, JULY 17, 2017

➔ **A CENTO from BRIDGES 2017 Poets**

A *cento* is a literary work made from quotations from other works -- most often it is a poem, assembled from lines by other poets. Below I have created a cento from lines written by the poets who have been invited to participate in the [July 30 Poetry Reading](#) at the [2017 Bridges Math-Arts Conference](#) in Waterloo, Ontario. A wonderful program is planned -- it's not too late to [register and join us](#).

All is number, mysterious proportions
Like Egyptians burying gold with the dead
Golden Fear
that divides and leaves no remainder

Two loving solar numbers wind about . . . hand in hand
That math could be starburst discovery
one surrounded by billions of its kind
They are the shape and cardinal of freedom.

Maybe mathematics is your sanctuary
Counting each and every step
the profundity of math
coming towards us changing everything

[This link](#) introduces the participating poets with brief bios and the link with each name below leads to the poem from which the line above was taken. Poet's names are listed in the order in which their lines appear.


[Sarah Glaz](#), [Carol Dorf](#), [Kaz Maslanka](#), [JoAnne Growney](#)
[Marco Lucchesi](#), [Robin Chapman](#), [Alice Major](#), [Emily Grosholz](#),
[Dan May](#), [Mike Naylor](#), [Marion Cohen](#), [Eveline Pye](#).


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Figure 4. Intersections – Poetry with Mathematics, A CENTO from Bridges 2017 Poets [11].

Sarah: Another good thing about your blog is that it acts as a meeting place for people who like poetry and mathematics. Because if a related activity, like, for example, a conference, a poetry reading, or the publication of a book take place, you write a post about it that includes math poems. I am really thrilled by an example of such a posting: The Bridges 2017 Cento. Not just because it is about this event we both participate in, but also because it is a fine poem and the poem itself acts as a meeting place for the poets invited to this reading. I will conclude this article with The Bridges 2017 Cento posting (Figure 4).

JoAnne: I'd like to follow up on your comment about the blog being a meeting place – and to express my gratitude to those who read my blog and offer feedback and friendship through ongoing discussions of mathy poems, often suggesting poems I have not yet seen. These are many, and most active among them are Gregory Coxson from nearby in Maryland, Francisco José Craveiro de Carvalho from Portugal and Erica Jolly from Australia — these three have been particularly thoughtful in sharing with me their interests and new math-related poems. And, for those readers who would like to connect with a math-poet —

I am in Silver Spring, MD and available for connection through my blog [11] or by email at japoet (at) msn.com.

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Disclosure statement

No potential conflict of interest was reported by the author.

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