The Theory Headed Poem

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Abstract

Often in mathematics theory is a starting place while in poetry theory is often seen as antithetical to the process. In the series of experiments in this workshops writers will begin with mathematical theory as well as sensory experience and see where it leads in the creation of poems.

Workshop Goals and Exercises

The workshop will consist of writing games, exercises and discussion of techniques for creating future work. Participants will experiment with mathematical writing games and develop an understanding of techniques to create mathematical writing exercises for themselves and their students. Furthermore the presenter will discuss how she developed these ideas through working with high school and adult students.

Initial Experiments. For the first segment of the workshop, students will write simple syllabic poems including HayNaKu (1, 2, 3 words or syllables), Haiku (5, 7, 5 syllables), and American Sentences (17 syllables.) To start these we will focus on objects within the writing space and its immediate environs.

Theory Poems

How to Solve It Poem. For this poem, participants will first list three concerns of theirs. For example some might consider the challenges of travelling, a family dilemma, and a project they are working on. Then each participant will list 6-10 mathematical words, and share the words with each other. During the sharing, participants will be allowed to "steal" others' words, and add them to their lists. The next step of the process is to choose two lines or phrases from George Polya's *How To Solve It* [1] Summary. Then participants will choose one of the initial challenges they listed and use the words and phrases in writing about the dilemma.

Combinatorial Poem. Participants writing to this prompt will choose two lines from Eileen R. Tabios' book, "*Murder, Death, Resurrection*[2]," which was designed as a book for readers to approach as a combinatorial text. They will then choose two lines from a math text, either a book they teach from or another example book. They will be asked to put these lines in any order, and as they are playing with the order write 4 to 6 additional lines of their own.

Discussion and the Creation of Exercises

Participants will consider further model poems. Then while discussing the topics they study and teach in mathematics, they will brainstorm new exercises for themselves and their students.

Example Poems

Note. The *How To Solve It* poem, and the *Combinatorial Poems* were written by students in the author's IB Math SL2 class at Berkeley High School.

A light-hearted *How To Solve It* poem.

Can You See It At A Glance? [1]

I need to pick the best
mango
to make the best
smoothie
It has to be the most
prime and
just right.
I know I need to
factor in
ever perfect characteristic.
The base needs the
parabolic curve.
The too-hard and the too-soft
can only be differentiated
with a slight squeeze
to prove
one's ripeness.
I've been looking for too long.
I need a sine,
a solution.
Maybe the perfect mango
is not in my
domain.
It is
imaginary.
I'm just being
obtuse.

– Isabel Gerrard

Two examples of *Combinatorial Poems* with italicized lines quoted from Eileen R. Tabios[2].

"If"

"If" is a daunting word, the
beginning of every nightmare.
"If" spirals me into my
subconscious worries.
If aliens come to earth
and conquer this world,
If sea levels rise
and drown our land,
If monsters are real
and walk into our school!
I forgot the glue of if's
If an unknown appears
as an exponent!

– Mayaan Ziv

"I Forgot"

I forgot whether love was relevant.
Every day, waiting
Waiting for something
To make a change.
Nothing.
Time stretches on forever,
Stuck in a vicious cycle;
How long does it take for the wheel
To complete a full cycle?

– K.G.

A prose poem that encounters theory:

Compass Rose in San Francisco[3]

Forgot that North Beach was filled with live nude neon (I navigate by bookstores). "Tacos?" I ask but Compass Rose wraps her hand my waist like a latitude line and swivels me 45 degrees (according to her protractor boutonniere): "West, west, to the sea!" "Dead seagulls," I say. "Graffiti. Nudists. Fog," but the N Judah arrives. Compass Rose presses her nose to the glass, lectures about zoning. "I love your urban form." I finger the creases in her suit, the same pink as the painted lady atop the hill.)

We walk along a path of broken sand dollars. "When does west become east?" I ask. "That's not the question." She traces an angle in the sand with her heel. Bioluminescent organisms make it glow. "Ask me how to represent a sphere in two dimensions."

– Rebecca Landau

Summary

Through writing a series of mathematically based poems, participants will begin to see ways to incorporate mathematical writing into their own writing practice and their classrooms. Participants will also be able to create new exercises for themselves and their students.

References

[1] Polya, George. *How to Solve It.* Garden City, NY: Doubleday, 1957.
[2] Tabios, Eileen R. *Murder, Death, Resurrection.* Dos Madres Press, 2018.
[3] Rebecca Landau. *82 Review, Issue 5.3, 2017.