

## Shaping Poems . . . with Visual Forms and Counting

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### Abstract

Since books and computer screens make poetry accessible without memorization – not so in the early days of verse – rhyme, a memory aid, is no longer necessary. Furthermore, visual accessibility means that word patterns may rely on the eyes as well as the ears to achieve recognition as poetry. Herein, we examine shaped structures such as the square stanza, the snowball, and the Fib and consider their adaptability to a variety of poetic situations. It should be observed that format constraints in poetry – constraints as basic as counting syllables – may lead a writer to unexpected arrangements of words and a richness of meanings unavailable without them. The article ends with a nod to the Bridges Archives and its rich selection of articles that feature poetry – and offers a variety of weblinks for those who wish to explore math-poetry similarities.

Many of us began our relationship with poetry through poems that rhyme. That pattern that we could hear – and tap our fingers to -- identified a poem. As in these lines by Robert Louis Stevenson (1850-1894) [12]:

Faster than fairies, faster than witches,  
Bridges and houses, hedges and ditches;  
And charging along like troops in a battle  
All through the meadows the horses and cattle . . .

Some of us have gone beyond enjoyment of rhymes in adjacent lines (as in Stevenson's stanza above) to greater complexity of forms – enjoying, for example, the sonnet with its lines measured in five-heartbeats and one breath and its various rhyme schemes. Some of us also have explored and come to love the permutation patterns and repetitions that enable villanelles and pantoums to delight our ears. (Readers who would like to review the defining characteristics of “sonnet,” “pantoum,” or “villanelle” – or other poetic terms, including those introduced below -- are invited to visit and SEARCH the website given in [6]. Examples also are provided at that site.)

Before printed copies of poems were widely available, verses often were memorized and transmitted orally-- and the patterns of rhyme and repetition aided memory. Eventually, however, widespread availability of books meant that the design of a poem on the page could be part of its art and twentieth century poet E. E. Cummings (1894-1964), who began his career with sonnets, later created arrangements that varied much from ordinary text -- like this opening stanza from “Songs, 1” [4].

the  
    sky  
        was  
can dy lu  
minous  
        edible  
spry  
    pinks shy  
lemons  
greens coo l choc  
olate  
s.

Easy access to computers has vastly increased the variety and popularity of poems with special spatial arrangements. (For example, the poetry reading at Bridges 2017 will feature poems by Kaz Maslanka and Mike Naylor that rely importantly on spatial displays of their words [2]. Sarah Glaz' 2012 article, "Mathematical Pattern Poetry," shows some of the variety that has become available [1].)

An organization that has greatly influenced the forms poetry may assume is the *Oulipo* (*Ouvroir de Littérature Potentielle*) – a group of writers and mathematicians who first gathered in France in 1960 and challenged themselves by choosing constraints (such as writing without using the letter "e") to focus their efforts [9]. One of the Oulipo poetic forms is the snowball in which line-lengths increase or decrease by one unit at each step. (The interested reader may search [6] for more information on the contributions of Oulipo.) Here is a simple growing-melting snowball of mine:

I  
  am  
   low  
    down  
 first  
  then  
   get  
    up  
   I

And here is a growing-only syllable-snowball (also mine) in which the structure and the content complement each other:

One  
added  
forever  
joined by zero,  
paired to opposites--  
these build the integers,  
base for construction of more  
new numbers from old : ratios,  
radical roots and transcendentals,  
transfinite cardinals--constructions bold!

A Los Angeles writer, Gregory Pincus, celebrated the opening of National Poetry Month in April 2006 by sharing this six-line, 20-syllable poem called a Fib [11]. The syllable counts for the lines follow the Fibonacci numbers by beginning with 1 and 1 and having the lengths of succeeding lines be the sums of the two prior lengths.

One	1
Small,	1
Precise,	2
Poetic,	3
Spiraling mixture:	5
Math plus poetry yields the Fib.	8

The Fib has become a favorite poetry-form for me to use when I wish to introduce poetry-writing to persons new to the art. The precise and growing syllable counts often work well with hesitant writers, exploring creation of a poem – selecting first one word, then another, gradually developing complexity. Moreover, the care that is required to choose words to meet syllable count restrictions often leads to the lovely surprises that we look for in poems.

Here, next, are a pair of Fibs I have written – and, after you reflect for a moment on the effects of the structure, I invite you to use the space beside them to write your own; write about the weather or an item in today’s news or the theorem you have just proved . . . or . . . Enjoy!

My Fibs:

Your Fibs:

Math  
words  
chosen  
carefully  
are poetical –  
syllables built into poems.

Air,  
trees,  
water,  
fossil fuels—  
we use resources  
carelessly--what of tomorrow?

Another useful syllable-structure is the square stanza. Like the Fib, it offers boundaries for the writer so that she or he is not left to flounder with too many possibilities. Recently, reading some words by pioneering astrophysicist Vera Rubin (1928 -2016) that were quoted on National Public Radio [10] following her death last December, I was moved to shape some of her words into syllable square poems.

World wide, half  
of all brains  
are women's.

There is no problem  
in science that can  
be solved by a man  
that can't also be  
solved by a woman.

About Congress, Rubin noted:

We need senators  
who studied physics,  
representatives  
who can understand  
earth's ecology.

In recent months I have been delighted to have access to the Bridges Archives [1] with papers dating back to 1998. My search of the archive using “poetry” found 44 papers. Several involve “poetry” and “geometry”. The earliest of these articles, from 1998 and 1999 by Solomon Marcus, thoughtfully discusses the deep similarities between mathematics and poetry – reaching back to a pioneering book by Scott Buchanan [3]. Readers who want to browse similarities between poetry and mathematics even further are invited to explore an entertaining *Scientific American* quiz by Evelyn Lamb [8] or my brief article [5] on which the quiz was based. Finally, [6] and [7] offer a host of examples for those new to poetry-math connections.

### References

- [1] The Bridges Archive, available at <http://archive.bridgesmathart.org/> (as of April 18, 2017).
- [2] The 2017 Bridges Poetry Reading Announcement – AND complete Bridges Poetry Reading Archives are available at this link: <http://bridgesmathart.org/bridges-2017/events/poetry-reading/> (as of April 18, 2017).
- [3] Scott Buchanan, *Poetry and Mathematics* (J.B. Lippincott, 1962).
- [4] E. E Cummings, *The Complete Poems, 1913-1962* (Harcourt Brace Jovanovich, 1972).
- [5] JoAnne Growney, “Are Mathematics and Poetry Fundamentally Similar?” *American Mathematical Monthly*, February, 1992. At <http://joannegrowney.com/MPQUOTES-1992Monthly.pdf> (as of April 18, 2017).
- [6] JoAnne Growney, “Intersections: Poetry with Mathematics” at <http://poetrywithmathematics.blogspot.com> (as of April 18, 2017).
- [7] JoAnne Growney, “Mathematics in Poetry,” <http://www.maa.org/press/periodicals/loci/joma/mathematics-in-poetry> (as of April 18, 2017).
- [8] Evelyn Lamb, “Can You Tell Mathematics from Poetry?” <https://blogs.scientificamerican.com/roots-of-unity/mathematics-or-poetry-take-the-quiz/> (as of April 18, 2017).
- [9] Warren Motte, Jr, *OULIPO, A Primer of Potential Literature* (Dalkey Archive Press, 1998).
- [10] National Public Radio, <http://www.npr.org/sections/thetwo-way/2016/12/26/507022497/vera-rubin-who-confirmed-existence-of-dark-matter-dies-at-88> (as of April 18, 2017).
- [11] Gregory Pincus, <http://gottabook.blogspot.com/2006/04/fib.html> (as of April 18, 2017).
- [12] Robert Louis Stevenson (1850-1894), *A Child's Garden of Verses*, opening lines of “From A Railway Carriage,” <http://www.gutenberg.org/ebooks/25609> (as of April 18, 2017).