



# TURBULENCE IN ACTION

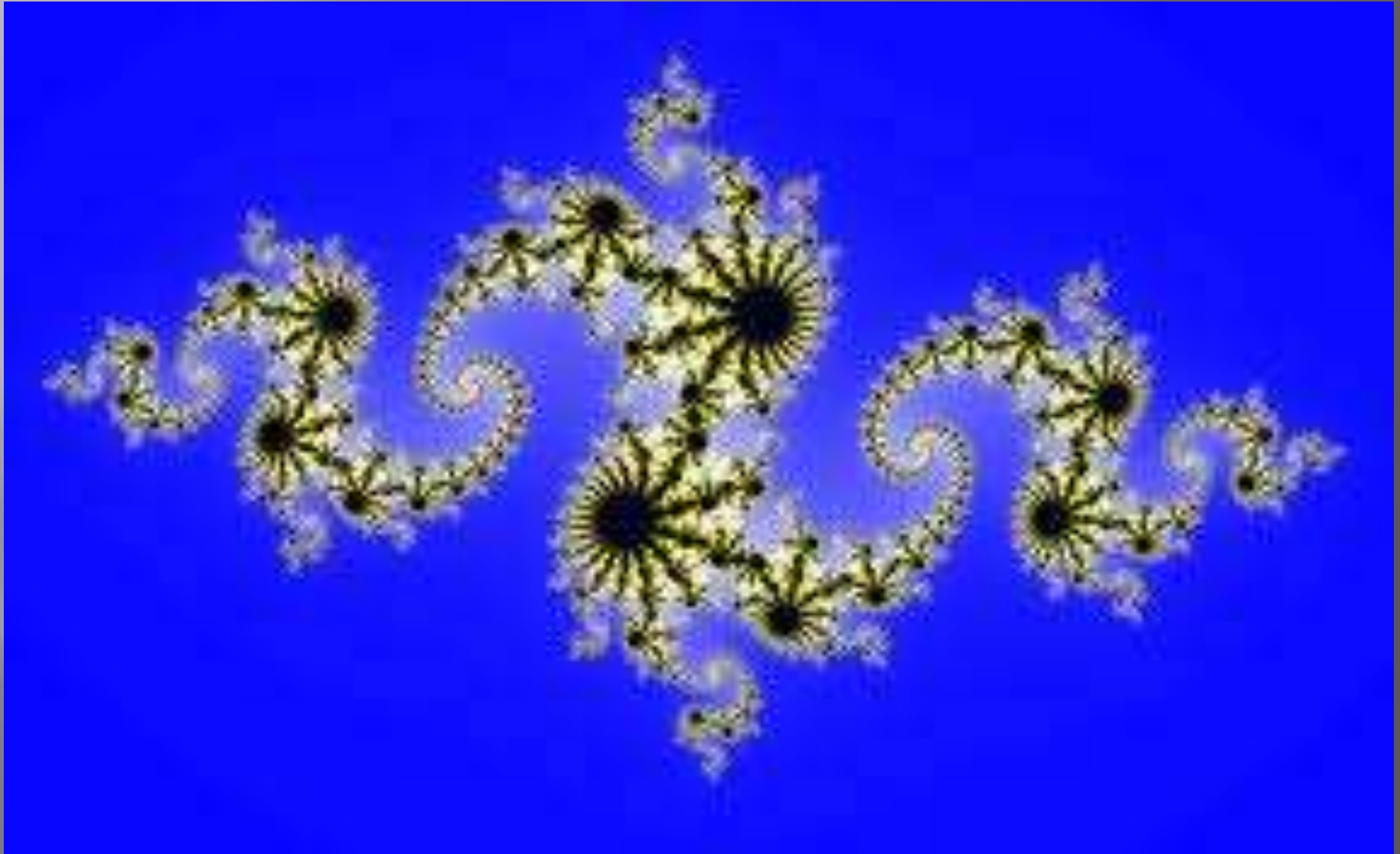
TOWARD A FRACTAL POETRY

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# Julia Set



# Compatibility of Mathematics and Poetry

- ▣ Both complex systems that function according to interactions of their components
- ▣ Both a sort of symbolic language
  - Poetry: image, metaphor, rhyme, etc.
  - Mathematics: values and operations
- ▣ Manipulation of variables, relations between terms create meaning

# Four Central Questions

1. Who has experimented with fractal-based poetry?
2. What have we learned from these attempts?
3. How can I apply fractal theory to my own creative work?
4. What is the result?



# An Introduction to Fractals

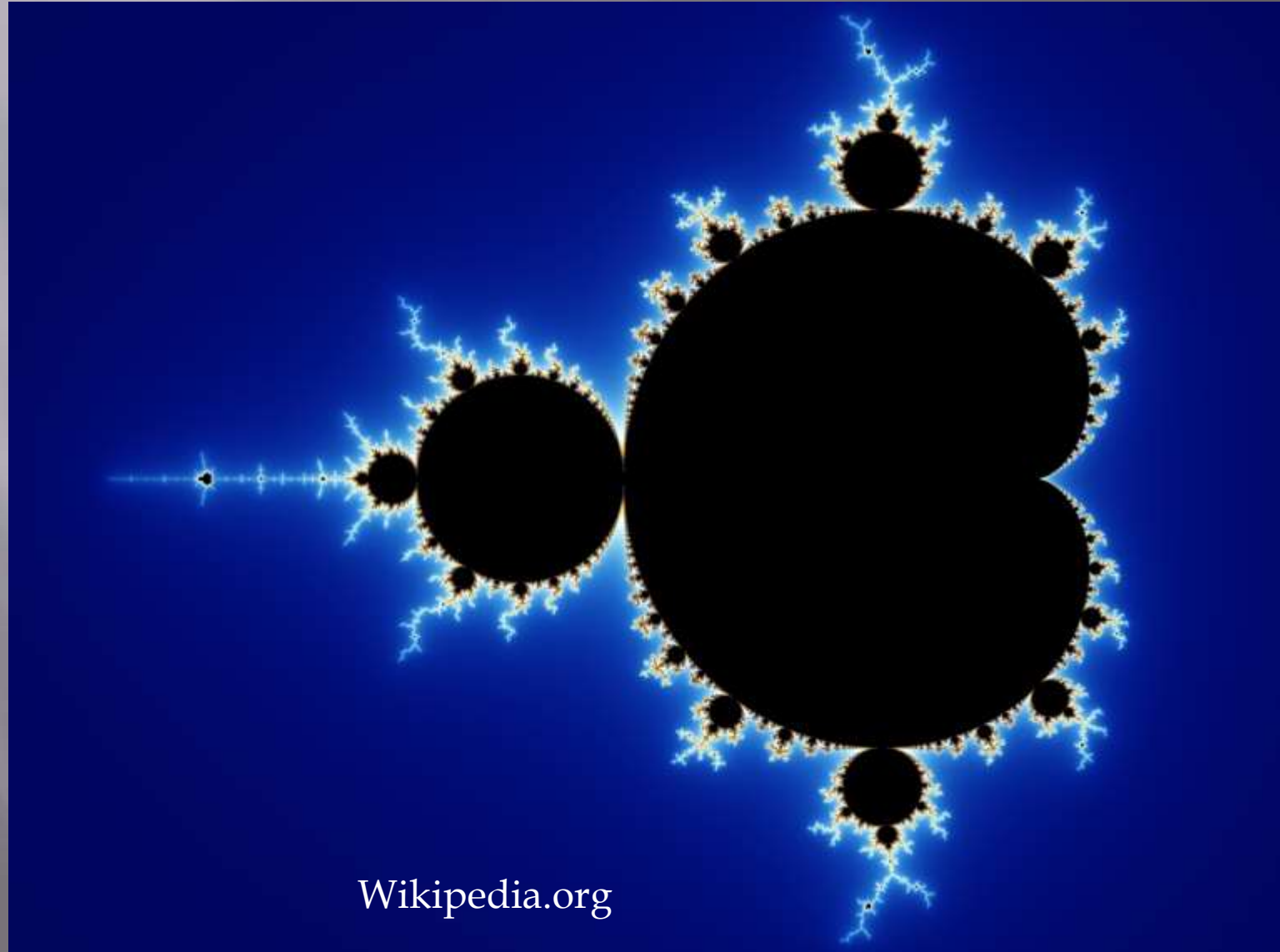
- ▣ Term coined by Benoit Mandelbrot in 1975
- ▣ Originally considered “mathematical pathologies” or “monstrous” (Steen)
- ▣ Non-differentiable mathematical set
- ▣ Exists between dimensions 1 and 2
- ▣ Self-similar across scale
- ▣ Order in chaos
- ▣ Wholeness in fragmentation

# Cantor Set



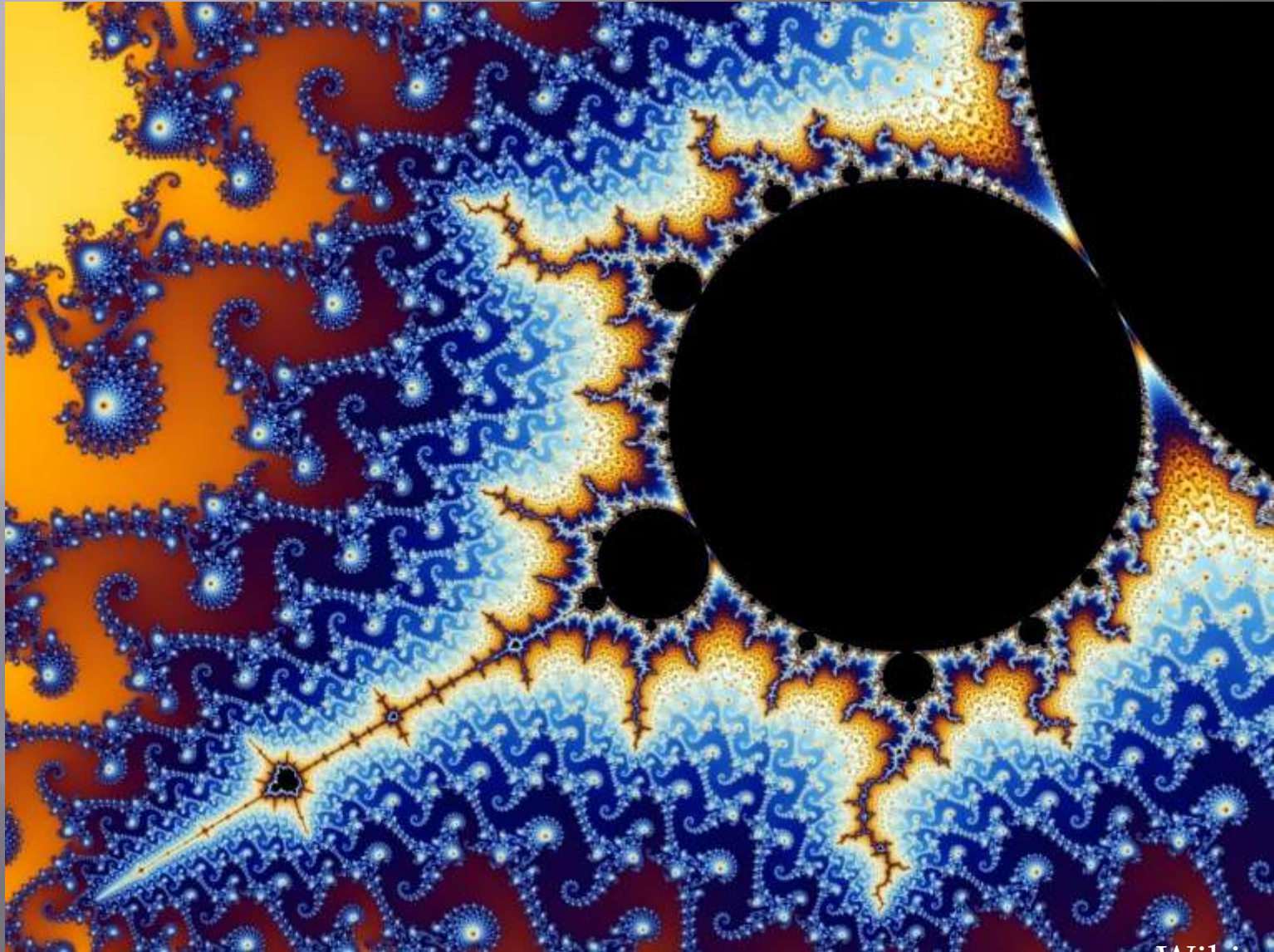
[www.mathforum.org](http://www.mathforum.org)

# The Mandelbrot Set



Wikipedia.org

# Mandelbrot Zoomed





# Fractals and Poetry

- ▣ Alice Fulton: “free verse” is an inadequate term
- ▣ Fractal verse requires turbulence
  - tonal, linguistic, metrical dissonance
- ▣ Fulton ignores structural potential
- ▣ Gary Snyder’s Mountains and Rivers Without End

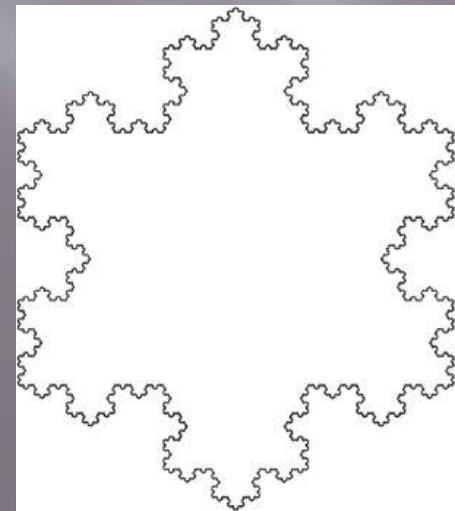
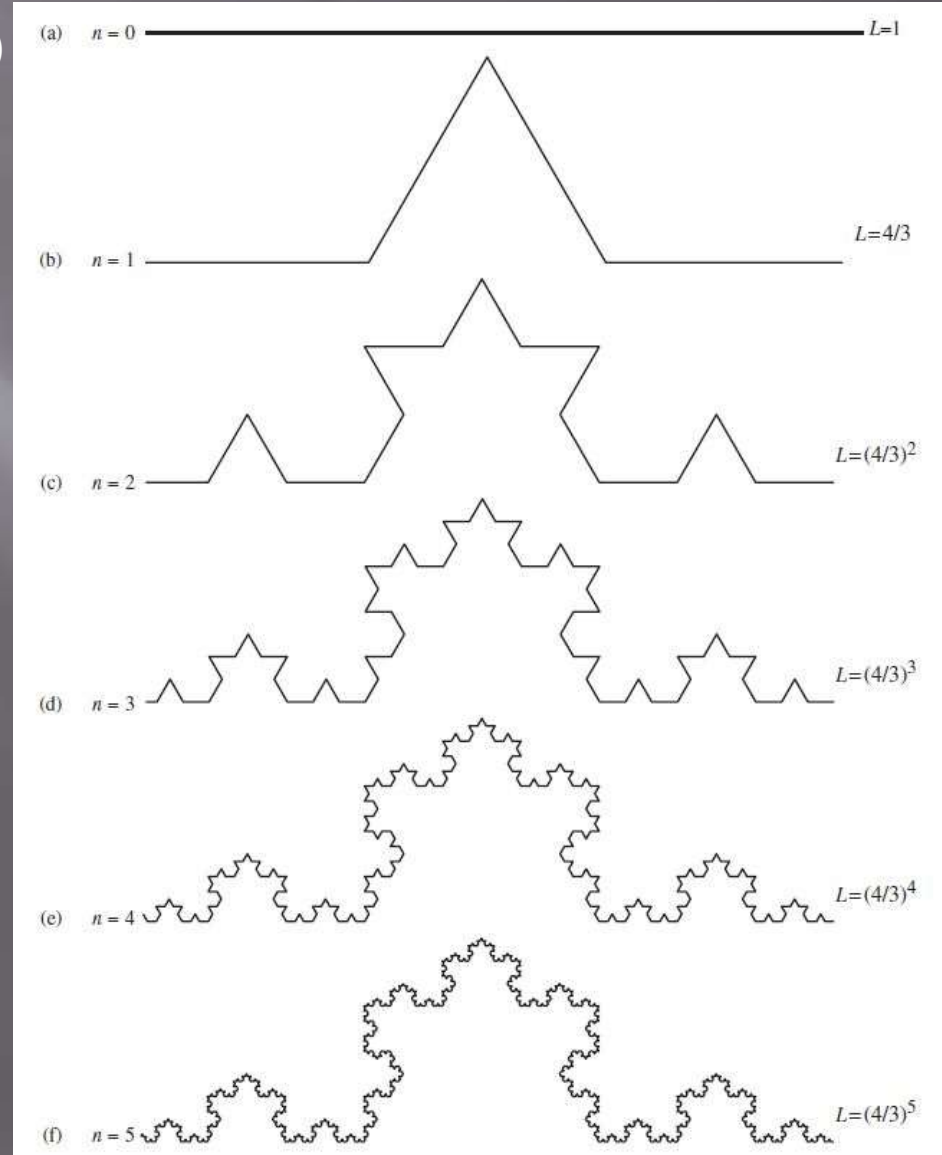
# “The King Is Dead Long Live The King”: Fractal Constraints

1. Self-similarity across scale
2. Complexity
3. Fragmentation moving toward wholeness
4. Turbulence
5. Sense of infinity

# Structure of “The King Is Dead”

(Debnath)

- ▣ The Koch Curve
- ▣ Helge von Koch, 1904
- ▣ “Middle Third”
- ▣ Infinite length, finite area



1 <sup>st</sup> Iteration	2 <sup>nd</sup> Iteration	3 <sup>rd</sup> Iteration	4 <sup>th</sup> Iteration
1	1	1	1
2	2	2	2
3	3	a b c	a b i ii iii
4	4	3	c
5	a b c	4	3
6	c	a b i ii iii	4
7	5	c	a b i ii iii
8	a b c	5	x y z
9	a b c	a b i ii iii	z iii
	6	c	c
	a b c	6	5
	7	a b i ii iii	a b i ii iii
	8	c	x y z
	9	7	iii
		8	c
		a b c	6
		9	a b i ii iii
			x y z
			iii
			c
			7
			8
			a b i ii iii
			c
			9



# 1<sup>st</sup> Iteration

A tale was told of one Sir Lancelot  
a finer specimen was never seen  
he came down from the hills to Camelot

and in that silver city met the queen,  
the lovely Guinevere with tresses gold  
But passion lurked behind this tranquil scene.

and Arthur raged against our hero bold  
they wrought the bloody doom of Camelot  
such is the way of things in ages old

# 3rd Iteration

A tale was told of one Sir Lancelot  
a finer specimen was never seen  
a tiny golden crucifix hung from his left ear  
he wore his hair slicked down to a petrol sheen  
and topped his haughty glance with mirrored shades  
he came down from the hills to Camelot

and in that silver city met the queen,  
among the alabaster spires of Camelot,  
a sheet of silk spilled on a field of green —

**it's said that Merlin raised the splendid city  
from a glimmering pool of mercury  
before he succumbed to mad lust**

the rumored city still sought by a faithful few,  
the lovely Guinevere with tresses gold  
the likes of which is spun by lonely girls  
held captive in redbrick towers on the wold

**poor maidens expert in the art of sew and sigh  
who lean their elbows on their windowsills  
or idly prod the windowbox's flowers**  
idle hours transfigured by the loom.

But passion lurked behind this tranquil scene.  
After a banquet Lancelot stumbled drunk  
and glimpsed her naked shadow behind a screen  
**having put by her moon-hued silken shift  
to bathe her long figure in the night air  
before she made her way to Arthur's bed**  
as she stood at the casement, entranced by a nightingale



and Arthur raged against our hero bold  
they wrought the bloody doom of Camelot  
**with dire din of steel on the plain**  
**when steadfast Arthur met wily Lancelot**  
**and the firmament fell down in greyish shards**  
such is the way of things in ages old

# Results

- ▣ Fracturing of linear narrative
- ▣ Endless modification, character development
- ▣ Finite bounds the infinite
- ▣ Anticipation of certain lines

# Conclusion

- ▣ Fractal-based poetry is absolutely viable
- ▣ Computer-generated poetry?
- ▣ Endless formal possibilities



