

Nautilus and Fibonacci

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The nautilus is a form that I created, combining existing Fibonacci forms with my idea of a Golden Mean Stanza (cinquain d'or or a quatrain d'or). The nautilus is a three stanza poem that combines mirrored Fibonacci stanzas and a cinquain d'or or a quatrain d'or. A nautilus' line-count (ranging from 14 to 19) depends on whether a cinquain or quatrain is used for the second stanza. Of course, there may be variations on the form, such as the double-nautilus, which may be 28 to 38 lines. The line lengths for a classic 19-line nautilus are, first, an ascending, Fibonacci septet + a cinquain d'or + a second, descending, Fibonacci septet. Note that the cinquain d'or chosen has 13 and 14 syllable lines, matching closely the long lines of the Fibonacci septets. 1-1-2-3-5-8-13 // 14-14-14-13-13 // 13-8-5-3-2-1-1. The fibonacci is a variable length stanza in which the syllable-count of the lines is based on the mathematical Fibonacci sequence. It is named for the Italian mathematician, Leonardo Fibonacci (died ca. 1250). This is a sequence, occurring in nature, which is simply calculated by adding each number in the sequence to its following sum:

Syllables = Subtotals

0 = 0

1 = 1

1 = 2

2 = 4

3 = 7

5 = 12

8 = 20

13 = 33

21 = 54

34 = 88

55 = 143

So, the Fibonacci sequence, for poetic purposes, is 1-1-2-3-5-8-13-21-34-55, etc. In practice, the longest useful line would be 13 syllables. Fibonacci cinquains, sestet, and septets may be used in nautilus. Note that the ratio of the number of syllables tends ever closer to 1:0.618, the Golden Mean. E.g., 55:34 = 1:0.617647. This is the most perfect natural proportion. The chambers of the cephalopod, nautilus, are sized in this proportion, which is the basis for naming the poetic form "nautilus," comprised of two Fibonacci stanzas bracketing a cinquain d'or or a quatrain d'or.

Golden Mean Stanzas The Golden Mean (Phi) ratio = 1:0.618. It is the most perfect natural proportion and was used to design the proportions of classical Greek architecture. The Cinquain d'Or (golden cinquain) has five lines, with the proportion of the first three lines to the last two lines being the Golden Mean. The Quatrain d'Or has four lines with the same proportion

between the first two and last two lines. Stanzas designed on the basis of the Golden Mean proportion, 1:0.618, are used in nautilus, both as cinquains and quatrains. The proportion of the lines, as described below, is the essential requirement for a golden mean stanza; the proportion affects the reader subliminally. Following are some notes on Cinquains d'Or and Quatrains d'Or.

CINQUAIN D'OR

The Cinquain d'Or (golden cinquain) has five lines, with the proportion of the first three lines to the last two lines being the Golden Mean. A more exact proportion than 1:0.615 is very difficult to attain. Proportions ranging from 1:0.6 to 1:0.67 are acceptable. Cinquain d'Or – with Fibonacci septets (1-1-2-3-5-8-13 / 13-8-5-3-2-1-1). Syllable-count per line: 14-14-14-13-13. The two sections have, respectively, 42 and 26 syllables, a ratio of 1:0.615. This is the best form I have found for a 19-line nautilus. Here is an example, from “Unvanquished” – a 19-line nautilus with Fibonacci septets.

At last, the day star sends a shaft of light from bright decline,
 through the shack's encrusted windows, in rainbow-tinted shine.
 The sills are filled with bottle glass, crowded against the panes,
 placed there by the resident—discards from passing trains.
 No rose-windowed cathedral boasts colors half as fine.

Note the rhyme scheme: A A B B A – it joins the two sections.

Another possible syllable-count for a 19-line nautilus is 13-13-13-12-12. The two sections have, respectively, 39 and 24 syllables, a ratio of 1:0.625.

Cinquain d'Or – with Fibonacci sestets (1-1-2-3-5-8 / 8-5-3-2-1-1). Syllable-count per line: 7-7-7-6-7. The two sections have, respectively, 21 and 13 syllables, a ratio of 1:0.615. This is the best form I have found for a 17-line nautilus.

Another possible syllable-count for a 17-line nautilus is 8-8-8-7-8. The two sections have, respectively, 24 and 15 syllables, a ratio of 1:0.6.

Cinquain d'Or – with Fibonacci cinquains (1-1-2-3-5 / 5-3-2-1-1). Syllable-count per line: 5-5-6-5-5. The two sections have, respectively, 16 and 10 syllables, a ratio of 1:0.6. This is the best form I have found for a 15-line nautilus.

Another possible syllable-count for a 15-line nautilus is 6-6-6-5-6. The two sections have, respectively, 18 and 11 syllables, a ratio of 1:0.63.

Another possible syllable-count for a 15-line nautilus is 5-5-5-4-5. The two sections have, respectively, 15 and 9 syllables, a ratio of 1:0.666.

QUATRAIN D'OR

The Quatrain d'Or (golden quatrain) has four lines with the proportion between the first two and last two lines being the Golden Mean. A more exact proportion than 1:0.6 is very difficult to attain. Proportions ranging from 1:0.6 to 1:0.67 are acceptable.

Quatrain d'Or – with Fibonacci septets (1-1-2-3-5-8-13 / 13-8-5-3-2-1-1). Syllable-count per line: 13-13-8-8. The two sections have, respectively, 26 and 16 syllables, a ratio of 1:0.625. This results in an 18-line nautilus.

Quatrain d'Or – with Fibonacci sestets (1-1-2-3-5-8 / 8-5-3-2-1-1). Syllable-count per line: 8-8-5-5. The two sections have, respectively, 16 and 10 syllables, a ratio of 1:0.6. This results in an 16-line nautilus.

Quatrain d'Or – with Fibonacci cinquains (1-1-2-3-5 / 5-3-2-1-1). Syllable-count per line: 5-5-3-3. The two sections have, respectively, 10 and 6 syllables, a ratio of 1:0.666. This results in an 14-line nautilus.

Published examples of these forms follow.

- Nautiluses

Nautilus, the first poem written in this form, was first published in *The Writer's Hood* – July 2002 and again in *Gunpowder River Poetry* – Spring & Summer 2002.

Unvanquished was first published in *Nightingale* – April-May 2002 in England and again in *Gunpowder River Poetry* – Spring & Summer 2002.

Necropolis, the first double-nautilus written, was first published in *Wild Poetry Eliot Hyperpoem* – May 2002 and again in *Gunpowder River Poetry* – Spring & Summer 2002.

Unfathomed Flight was first published in *Poetry Scotland* – 2002, in Scotland and again in *Gunpowder River Poetry* – Spring & Summer 2002.

Falling Water was first published in *Poetry Scotland* – 2002, in Scotland and again in *Gunpowder River Poetry* – Spring & Summer 2002.

- Micro-Nautiluses

Sky Piper was published in *Gunpowder River Poetry* – Spring & Summer 2002.

Atoll Nocturne was published in *World Haiku Review* March 2003.

- Fibonacci

Betrayed, a triple mirror rhymed Fibonacci, was published in *Gunpowder River Poetry* – Spring & Summer 2002.

Sunset Concert, a mirror rhymed Fibonacci, was published in *Gunpowder River Poetry* – Spring & Summer 2002.

Shy Muse , a mirror Fibonacci, was published in *Gunpowder River Poetry* – Spring & Summer 2002.

Inhale, a mirror Fibonacci, was published in *World Haiku Review* March 2003.

All of these poems were later published in my first collection, *The Brink at Logan Pond* (Lulu Press, Morrisville, North Carolina, 2005) and most of them again in my second collection, *Sailor in the Rain and Other Poems* (MET Press, Baltimore, Maryland, 2007). Garrison's poem, "Nautilus," the prototype and namesake of the form (which is comprised of a Golden Mean stanza bracketed by ascending and descending Fibonacci sequences), has been included in an academic text, *Discovering Patterns in Mathematics and Poetry*. (Internationale Forschungen Zur Allgemeinen & Vergleichenden Literaturwissenschaft), ISBN 978-9042023703, by Marcia Birken & Anne C. Coon, faculty members at Rochester Institute of Technology in New York.

Nautilus

One
time
in its
pulsing span,
the nautilus must
rise from deep reefs to glimpse the sun
gold-shimmer on the bright silver ceiling of the sea.

It cannot long abide in dancing columns of blue light
but must find its home in the lightless realm of dayless night.
There, in endless reaches of black sea, it preys ceaselessly.
Time does not pass but it floats by imperceptibly
until, finally, the failed molluskan pulse takes flight.

Then, up from the inky fastness of its coral caves,
robed in many-chambered splendor,
glorious in death,
nautilus
ascends
once
more.

Unvanquished

Low
 sun
 finds a
 tar paper
 shack, by the train track,
 slumped one day deeper in debris.
 As day fades, slowly umber shadows swing and taper.

At last, the day star sends a shaft of light from bright decline,
 through the shack's encrusted windows, in rainbow-tinted shine.
 The sills are filled with bottle glass, crowded against the panes,
 placed there by the resident—discards from passing trains.
 No rose-windowed cathedral boasts colors half as fine.

Passengers, in passing, pity his decrepit home.
 They can't see the place's glory,
 nor his vital spark,
 nor how he
 beats back
 the
 dark.

Necropolis

Do
 you
 doubt me,
 my dear friend,
 when I say there is
 to be found a darkling hamlet
 underground behind the cataract at river's end?

Come with me. *Let us go, through certain half-deserted streets*
 and alleyways, down the cobbled maze to where road's-end meets
 the river's edge in grey mist and the paving ends in sedge.
 There, where combers boom beyond the spray-damp rocky ledge,
 the mighty river, its journey to the sea, completes.

Under our sunlit city on the broad river's shores,
 another lurks in darkness. It
 lies hidden where the
 torrent roars
 into
 the
 sea.

As
 we
 clamber
 down cliffside
 in dusk's low amber
 light, the shadow of the western
 headland falls full upon the entrance—our faithful guide.

Behind the curtain of the waterfall, the path's well-worn.
 The cavern, vast and dim, is full of people, so forlorn,
 their eyes are dimmer still. Too poor even for city slums,
 they live in grimy grottos; sustain themselves on crumbs.
 Hidden from the fortunate, no one can hear them mourn.

We are free, my friend, to go back to our well-lit homes,
 to walk in sunlight, warm and fed.
 These who stay where the
 river foams?
 Are they
 not
 dead?

*[This poem was written as a part of the Wild Poetry Eliot Hyperpoem
 and the line in italics is T. S. Eliot's.]*

Unfathomed Flight

You
can
just hear
the bridge's
rumbling discontent.

Daily traversed by common hordes,
this web-winged colossus quivers on its massive pier.

Built to freely soar, not to merely bear grim groundling freight,
the bridge's braided sinews still, with bridled flight, vibrate.
Its fine tracery of steel, grounded now eight fathoms deep,
is poised to spread and lift in one epiphanic leap
and sweep loose its earthen fetters and their killing weight.

But still it stays. Across the channel's flow, the grumbling
span carries the trudging traffic
on its trembling way
endlessly,
by night,
by
day.

Falling Water

The
rain
ripples
down the wall—
wall that is my world.
My weather is this constant rain.
Intermittent moonlight shines behind the broken clouds.

Although it's straight right here, the wall curves slowly as it goes
away to distant places, maybe dry lands; no one knows.
On my home masonry, I watch the moonlight gently play
across the rippling brickwork and me, that is to say,
my cool smooth skin, cool across my webbed fingers and toes.

Rain caresses my neck, the whorls of my fingerprints.
I press against the wall, and I
watch the water fall.
Rain ripples
down the
wall . . .
rain . . .

Sky Piper

The
blown
sky glows
turquoise and
arches high in flight.

All around me, wind
sings as it passes,
flapping flags,
tossing trees.

I'm drawn to follow
anywhere
away
from
here.

Atoll Nocturne

Fruit
 bats
 swarm the
 melon moon
 above crashing waves.

The cold sea moans and
 flying fish glitter
 in moonlight
 past the reef.

In salty shore-breeze,
 banyan trees
 still croon
 their
 hymn.

Sunset Concert

Long
 chill
 shadows
 climb the wall
 as the sun sinks to
 rise in foreign lands far beyond
 the jungle's edge, beyond the eagle's ken, past caring.
 From an overhanging palm frond,
 its tones ringing true,
 comes the call:
 gecko's
 shrill
 song.

Betrayed

A
slow
descent,
close along
ancient camel tracks.
Silent throng,
all bent
low,
may
stray
no
more. Sent
by the long
route through these mountains,
they suffer on the rocky roads.
These broken people bear looted treasure on their backs,
bowed beneath cruel crushing loads.
They weep salt fountains.
The still strong
lament.
Oh,
prey!
They
know
who went
badly wrong—
whose appetites wax—
who belong.
Dissent?
No
way.

Shy Muse

Words
 chase
 across
 the blank page.
 Pinning them down with
 my pen doesn't work. Somehow they
 manage to change when they are pinned. They just won't be penned.
 So, I scribble pensively—scrawl
 lines that fail to fly—
 while I wait
 for the
 shy
 muse.

Inhale

Sere
 and
 breathless,
 the meadow—
 then a blackbird shrills.
 A soft susurrus arises
 and my reverie pulses with the cicada's song.
 Still, within, without, I rest in
 sunlight and listen
 to the field
 catching
 its
 breath.

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