**Prologue**

The haiku is basically a three-line poem that originated in Japan. It invites the reader to complete the meaning of the poem through its seemingly disjointed images.

Euclidean geometry explores the relations, properties, and measurements of points, lines, planes, and solids. The haiku poem not only compares with the Euclidean world of three dimensions but also transcends them, and veers into the realm of vectors and the fourth dimension.

In bringing together art and science, we leap across disciplines. The boundaries between haiku and geometry become blurred, revealing new knowledge, which is ever-changing:

- a gust of wind
- the kingfisher’s cry
- warps over the river

An exploration into haiku geometry is like a *cabinet of curiosity* in which one collects objects/ideas according to the paradigm of the collector. Any number of associations becomes possible.
BEGINNINGS OF A GREEN CABINET
EUCLIDEAN GEOMETERS

Euclid  Heron  Eratosthenes  Pythagoras
Archimedes  Apastamba  Hipparchus
Pappus  Thales  Plato  Hypatia  Zeno

THE POINT
The geometric point has no dimension.
The point is no-thing-ness yet it encompasses all things.

*It is the zero full of infinite possibilities.*
  ▶ D.T. Suzuki

The point indicates a location in space. It is motionless and directionless.
The poet waits for inspiration, not knowing which way to turn:

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*All form begins with the point that sets itself in motion.*
The point moves and the line comes into being—*the first dimension.*
  ▶ Paul Klee

THE LINE
A line has one dimension—length.
Lines are the armatures for letters of the alphabet. The longest alphabet in the world is that of the Khmer language of Cambodia with 74 letters. The Rotokas language of the Solomon Islands has the shortest, with 11 letters. The nonalphabetic and nonlinear language of Japan is a mixture of Chinese characters (*kanji*) and phonetic symbols (*kana*). The *kanji* writing method contains more information than the alphabetical languages; it relies more
on our visual rather than our auditory system. A literate Japanese masters about six thousand *kanji*. The average Japanese knows about two thousand of them. The poet’s degree of expression not only lies in the *langue de mère*, but also in the mastery of language.

Words sit on a line as do songbirds on a wire.

A line extends in both directions to infinity:

![Line Diagram]

The reach exceeds the poet’s grasp—the essence of creativity.

A line segment has finite length and lies between two points:

![Line Segment Diagram]

at the end of a line
the next breath waits
then the urge for air and

*A frog jumps in,*—

the sound stays with us
like breath

When straight lines meet at a point, *angles* are formed of various degrees. With each increasing angle, or scope of vision, the poet grows in refinement. S/he re-patterns words, re-re-tailors nouns and verbs, threads awareness through the haiku. At 360 degrees of possibilities, the poet cannot resist the urge to revolve:

![Angle Diagram]
Vectors in non-Euclidean geometry are line segments with \textit{force} and \textit{direction} indicated by arrows:

\begin{center}
\begin{tikzpicture}
  \draw [->] (0,0) -- (1,1);
  \draw [->] (0,0) -- (-1,1);
  \draw [->] (0,0) -- (1,-1);
  \draw [->] (0,0) -- (-1,-1);
\end{tikzpicture}
\end{center}

The driving \textit{force} of a haiku is its power to encapsulate a singular moment into the brevity of its form:

\begin{quote}
the desert
in the still wings
of a dragonfly
\end{quote}

The \textit{direction} of a haiku \textit{is} its meaning:

\begin{quote}
dawn
the sound of a gong
going out of existence
\end{quote}

\textit{If the line shifts to form a plane, we obtain a two-dimensional element.}  
\hspace{1cm} Paul Klee

\textbf{The Plane}

The plane has two dimensions — length and width. Planes are of various shapes. Their edges consist of lines and arcs:
A rectangular plane represents the poet’s paper where words are teased apart in the best possible order.

A sheet of paper encroaches on our three-dimensional world as it possesses the minutest of depth. Dr. Inagaki of Japan boasts of the thinnest paper in the world, weighing five grams per square meter.

Likewise, the inscriptions of the poet are represented two-dimensionally on the page, yet the reader may interpret the words of the poem in many ways, stretching the meaning into higher dimensions.

_In the movement from plane to spaces, the clash of planes gives rise to body— (three-dimensional)._  
► Paul Klee

**THE SOLID PLANE**

The solid plane has three dimensions—length, width, and depth:

The third dimension _is_ the material world: the poet’s teeth for chewing ideas, glands for dissolving ideas, stomach for digesting and assimilating ideas, bones for strengthening ideas, muscles for mobilizing ideas, (heart skips a beat when struck by a great idea), liver for storing ideas, kidneys for eliminating superfluous ideas, lungs for exhaling inflated ideas.

_The fourth dimension appears to spring from the three known dimensions: it represents the immensity of space eternalizing itself in all directions at any given moment._  
_It is space itself, the dimension of the infinite._  
► Guillaume Apollinaire
FOURTH DIMENSION

The fourth dimension, or the space-time continuum, is identified with time and movement and has physical implications on three-dimensional objects:

The object changes as it moves through space, because at the very least, at any moment, it is in a different place and time:

The old pond:
A frog jumps in, —
The sound of water.

▸ Basho, trans. R.H. Blyth

The reader’s consciousness also changes with each evaluative reading, and s/he is also in a different place and time. Further,

What we observe is not nature itself, but nature exposed to our method of questioning.

▸ Werner Heisenberg

The reader cannot observe the poem without changing that which s/he is observing. In other words, the poem cannot be observed as it is because it is exposed to the reader’s method of enquiry and understanding. The poem requires the reader to be part of the poem. Subject and object are inextricable.

Mystical knowledge can never be obtained just by observation, but only by full participation with one’s whole being.

▸ Fritjof Capra
BEGINNINGS OF A WHITE CABINET
SPACE-TIME CONTINUUM

A frog transforms into a lily pad
Kireiji—creation is motion from
invisibility to visibility

Whichever way you turn,
there is the face of God—Koran
There is no one point of perspective

EPILOGUE

Haiku overlap with geometric forms, and geometry permeates our world:

cymbals clash
the silence opening
between them

The mind never fully realizes anything in isolation:

There are more worlds than we can imagine.
The fifth, sixth, seventh dimensions …

NOTE

Of the author’s haiku, “a gust of wind” and “dawn” were originally published in British Haiku Society Haibun Anthology, 2005, and “a desert” and “cymbals clash” appeared in Roadrunner Haiku Journal, 1:1 (February 2006).