



**Mathematical Logic in Short Stories**  
**by Jorge Luis Borges**

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# Agenda

- Research questions
- Importance of the study
- Jorge Luis Borges Biography
- Literature review
- Methodology
- Analysis
- Conclusion
- Limitations
- Bibliography





# Research questions

- How does Borges use mathematical logic in his short stories?
- What mathematical logics branches are reflected in the three short stories?



## **Importance of the study**

**To contribute a logical explanation as to why Borges implemented mathematics in the composition of his maze.**

**Through this you can get to know Jorge Luis Borges a little better, and perhaps comprehend the narrative strategy of the author.**

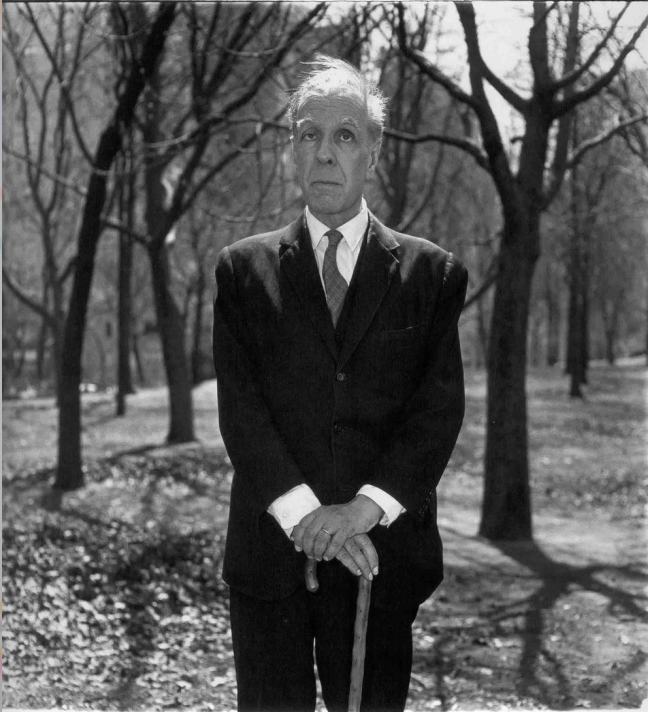


# Historic context

- Timeframe: end of the 19th century and beginning of the 20th century
- Avant-garde, introduces new topics to Argentine writing
- During the 1940s Borges wrote a new literary style, as a form of meditation and curiosity.
- Included ideas from metaphysics, religion, mathematical and philosophical realms.



# Jorge Luis Borges Biography



<https://4chanlit.fandom.com/>

**Born: August 4, 1899, Buenos Aires, Argentina.**

**- First wrote the fable, "The Fatal Visor" (1907), inspired by Don Quijote**

**-1949 writes his most widespread book *The Aleph***

**- Director of the National Library**

**- *Doctor Honoris Causa* by the University of Cuyo**

**- Cervantes Prize in 1979 as compensation for the Nobel Prize in Literature**

**- Jorge Luis Borges dies on June 14, 1986 in Geneva, Switzerland**



# Literature review

revistadebate.net



- Arturo Echeverría (1985, 2011)
  - Borges used geometry by means of harlequin that connect in a circular space. (625)
- Guillermo Martínez (2013)
  - Borges used mathematic to develop his short stories and the hexagon represents and sphere (29)
- Gabriel Riera (2005)
  - Borges's stories do not have a coherence at the end of the story (217)

# Methodology

Mathematics is essential for humanity

Analysis of Mathematical logic

- "The Garden of Forking Paths" (1941)
- "Death and the Compass" (1942)
- "The Library of Babel" (1941)



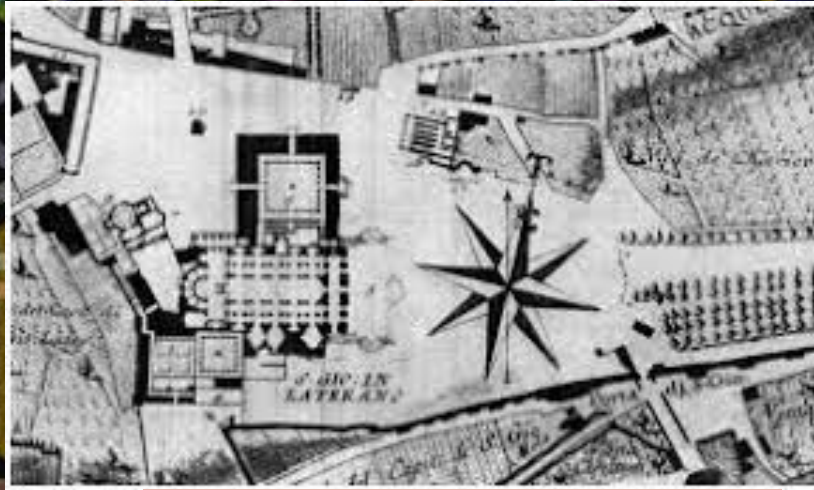
[eternacadencia.com](http://eternacadencia.com)



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# Synopsis "Death and the Compass" (1942)



[http://www.bartleby.com.ar/la-muerte-y-la-brujula.](http://www.bartleby.com.ar/la-muerte-y-la-brujula)

This story takes place in different scenarios of a city. Erik Lonrot, the insightful detective, finds himself in a maze of murders.

There were three exposed crime clues that coincided with the Hebrew religion, the Kabala, and the Tetragrammaton. The resolution of the labyrinth leads to death.

# Analysis: "Death and the Compass"

## The number 3

- Definition of 3
- A sign of a bad omen

"Borges attacks the fundamental concepts on which the security of one's life is based: the universe, personality and time. In addition, it makes us constantly feel the presence of the infinite that diminishes and overwhelms and dissolved matter in reflections, dreams or simulacra, in line with idealistic philosophy or religious ideas" (Cruz 65).

3 de diciembre

- Muerte del Rabino

3 de enero

- Muerte de Azevedo

3 de febrero

- Desaparición de Gryphius-Ginzberg

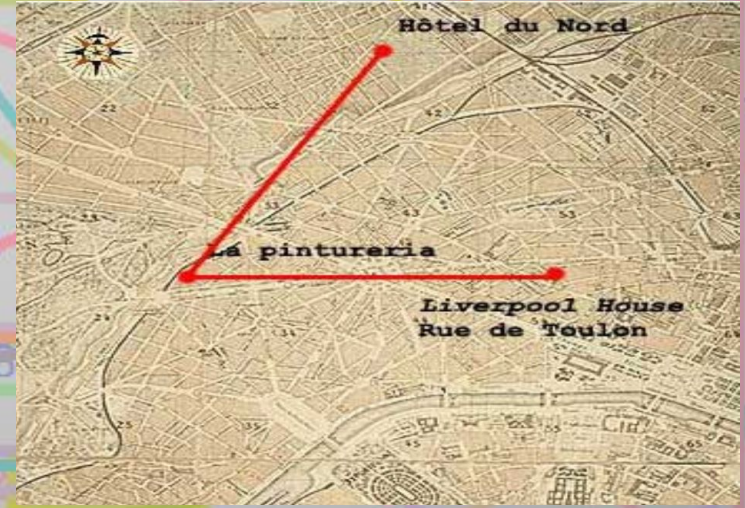
[www.aesthethink.org](http://www.aesthethink.org)



# Analysis: "Death and the Compass"

## The triangle

- The Holy Trinity reflected in the triangle
  - The divine number, the Father, the Son and Holy Spirit
- Symmetry reflects the triangle as a rhombus, and thus reveals the location of the murder



<http://jose.navarro.eresmas.net/muertebujula.html>

# Synopsis "The Garden of Forking Paths" (1941)

- Yu Tsun is a German spy
- Yu Tsun goes to the house of Dr. Albert Stephen
- "The Garden of Forking Paths" is the story of Ts'ui Pên, the grandfather of Yu Tsun
- Ts'ui Pên created a Labyrinth.
- Yu Tsun murders Doctor Albert





# Analysis: "The Garden of Forking Paths"

The quadrangular spiral is a labyrinth

- "Yes, take the road towards the left and at every crossroad within, turn left" (68)
- Moves from the starting point to the central point

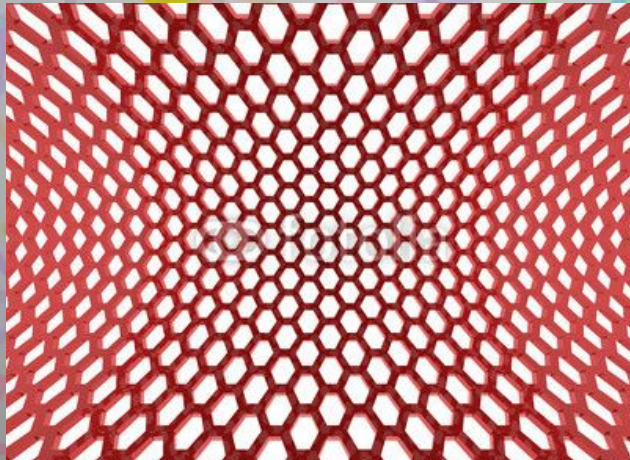


<http://deeblog.squarespace.co>

# Analysis: "The Garden of Forking Paths"

Combination of geometry and symmetry

- "A growing network and vertigo of divergent, convergent and parallel lines" (73)
- Infinite network by means of hexagons.



- The hexagons represent the multitude of time spanning space to infinity.



# Synopsis: "The Library of Babel " (1941)

- Infinite hexagonal galleries
- Description of what is in the library
- Books with multiple signs in a perfect combination
- Unique / special library
- Narrator is a librarian
- Interested in finding all the answers



# "The Library of Babel " -Analysis

## Geometry

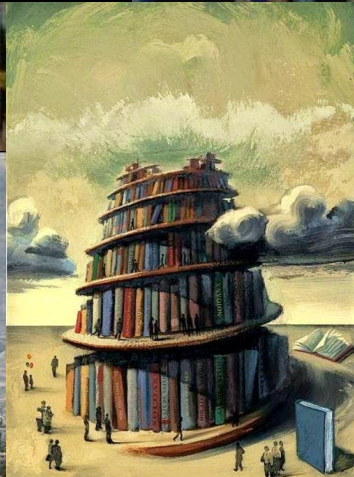
- Describes the hexagon, a six sided figure
- “The universe(... the library) is made up of hexagonal galleries... throughout each and every hexagon, one can see the anterior and superior infinite floors” (57)
- The hexagon is really a universal hexagonal where everything exists
- A circular Universe



# "The Library of Babel" -Analysis continued

## The Tower of Babel vs. Babel's Library

- The chaos ensued because of God's anger towards humans seeking knowledge
- Knowledge is equivalent to God
- The use of the letters "MVC" (59)
  - Concord discordia



# Conclusion/ Results

- Symmetry

- Description of places

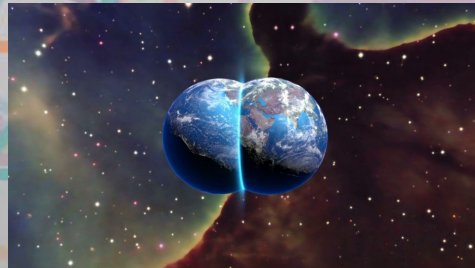
- Parallel world

- Park

- House

- library

- Reflection



[lamenteesmaravillosa.com](http://lamenteesmaravillosa.com)

- Geometry

- The Hexagon

- Its Immeasurable limits

- The Triangle

- Symmetry of time and space

- The Circle

- Time

- The start (beginning)

- The end

- Order amidst chaos



The background of the slide is a dense, intricate geometric pattern. It consists of numerous overlapping lines in various colors (blue, green, yellow, red, purple, grey) that form a complex, maze-like structure. Scattered throughout this pattern are small numbers (0-9) and lowercase letters (a-z). The overall effect is one of complexity and interconnectedness.

## Conclusion / Results

- The use of 2
  - Parallel worlds, reflection and possibility
- The use of 3
  - Death, divine number and chaos
- The use of 6
  - The infinite, space and time.

# Limitations

The study was based upon the mathematical logistics of only three of Jorge Luis Borges's stories

Future Studies would address reviewing other short stories, including:

- “The Aleph”(1945)
  - Explores the sphere and times symmetry
- “The Circular Ruins”(1940)
  - Explores circles and the number 3
- “The South”(1953)
  - Explores the number 2, and ‘Symmetry’





Gratitudes...

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