

# SM2220 Generative Art and Literature

## Mathematics in the Method of Raymond Queneau

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# Introduction

- Introduction of Oulipo Group
- Introduction of Raymond Queneau
- Passage of Mathematics in the Method of Raymond Queneau
- Conclusion

# OuLiPo

- **Oulipo** stands for "**Ouv**roir de **littérature potentielle**",
  - Ouvroir because it intends to work.
  - Litterature because it is a question of literature
  - Potentielle – the word must be taken to mean various things which will be made clear
- Roughly means "workshop of potential literature"
- French-speaking writers and mathematicians
- Creates works using constrained writing techniques
- One of the Key Players: Raymond Queneau

# Raymond Queneau

- 12. Queneau in the oulipo
- Queneau is an amateur of mathematics
- Creation of Oulipo is explicitly, systematic and collective.
- We will limit ourselves to 3 proportions: 8, 9, 10
- Oulipian work is naive.
- - Oulipian practice is understood as being preformalized, though admitting of a descriptive systematic
- - a formal syntax is foreseen

- Oulipian work is amusing
- fundamentally innovative
- on behalf of existing smoothly functioning machines
- category of “play”



- Oulipian work is craftsmanlike
- mask something
- the claim to craftsmanship reflects an affirmation of amateurism, it is a voluntary archaism,
- essential to use machines.
- Oulipians satisfy the conditions of propositions 8 9 10
- ***One will not be surprised to find, then, that the Oulipians, in their Oulipian work, whether they be mathematicians or not, very generally satisfy the conditions of propositions 8 ,9 ,10***

# What is Mathematics?

- 1. Reading:
- Proposition 1:
- To be a mathematician, first one must be a reader of mathematics.
- -its game , history , anecdotes and madmen
- To stimulate imagination.
- For example:  
 $A^3+B^3=1729$   
 $C^3+D^3=1729$

# How to see Mathematics?

- 3. Amateurism:
- Proposition 2:
- To be a mathematician is to be an amateur of mathematics.
- With a broader attitude, an amateur.
- Exactingness in understanding and discovery.
- This concept may appear, if the practice and the organization are anachronistic and archaic.

# S-Additive series

- the smallest whole number that may be expressed in two ways from the base number , the sum of the 2 distinct who numbers in the base will generate the next whole number .....and form a new base again
- For example:  
1 2 3 4 (base), 5 (4+1, 3+2), 6 (5+1, 4+2),  
~~7 (6+1, 4+3, 5+2)~~

<http://www.research.att.com/~njas/sequences/tak>

- Relationship between LANGUAGE and MATHEMATICS

1. Matrical Analysis

2. Meccano

# The Matrical Analysis of Language

- An article in the Cahiers de Linguistique Quantitative from 1963 presents an embryonic effort toward the algebraization of the construction of sentences through the use of **matrices**
- *the nature of sentences is lacunary, and the combinatorics of their construction are more of the order of intrication than of concatenation, the substitution and permutation of indivisible elements*
- *If language may be manipulated by the mathematician, this is because it may be arithmetized*

# MECCANO

- Immediately putting words into action
- Queneau converted his 1955 Meccano, the *algebraic hypothesis* into *text*

Example:

On the	of the	×	<u>end</u>	summit	edge	side
was the	1		1	1	1	1
of (the)			<u>highway</u>	Annapurna	ocean	fencer
			<u>rising</u>	standing	bathing	standing
			<u>black</u>	Tibetan	mystical	passionate
			<u>sun</u>	Sherpa	masseur	bully
			1	1	1	1
			<u>melancholy</u>	team	Trinidad	Marquise

- The resultant product would give out a semantic translation of text :

*“On the end of the highway was rising the black sun of melancholy”*

# Conjectures from the above example:

- 1. Arithmetic applied to language gives rise to texts.
- 2. Language producing texts gives rise to arithmetic.

# FROM THE SESTINA ( 六節詩 ) TO THE QUENINA

- To apply probability into poems.
- Example of conjecture 1
- For example (Spiral permutation)

1 2 3 4 5 6

6 1 5 2 4 3

3 6 4 1 2 5

5 3 2 6 1 4

4 5 1 3 6 2

2 4 6 5 3 1

1 2 3 4 5 6

- Queneau numbers: the Queneau-Daniel permutation  $\{1, 2, 3, \dots, n\} \rightarrow \{n, 1, n-1, 2, n-2, 3, \dots\}$  is of order  $n$ .

# CONSTRAINTS

- Oulipo's first manifesto
- Every literary work begins with an inspiration as well as a series of constraints and procedures that fit inside each other.
- The search for constraints in ancient or in contemporary, works are called: Anoulipism.
- The putting into play of these or new constraints in Oulipian work is synthoulipism.

# Anoulipism

- Investigate works from the past in order to find possibilities beyond the authors' own anticipation
- E.g. “Centos” – taken from Markov’s chain theory

# Syntholipism

- Develop new possibilities unknown to those who came before us
- E.g. “Cent Mille Millions de poemes” by Raymond Queneau; the Boolean haiku 《百兆首詩》

<http://www.bevrowe.info/Poems/QueneauRandom.htm>



- For example:

The lipogram: a logogrammatic text is a text wherein is lacking: it is naïve, amusing, craftsmanlike; most important, a great Oulipian virtue:

- ***A good Oulipian constraint is a simple constraint***

- La Disparition incorporates several e-lipogrammatic texts – a- and – e lipogrammatic
- *“Ondoyons un poupon, dit Orgon, fils d’Ubu. Bouffons choux, bijoux, poux, ouis du mou, du confit; buvons, non point un grog: un punch ...”*

# Anti-chance

- ***The Oulipo's work is anti-chance.***
- The lively refusal of chance, and even more so to the refusal of the frequent equation of chance and freedom.

# Examples

- Fashion design
  - equivalence which is established between inspiration, exploration of the subconscious and liberation; also between chance, automatism, and freedom.
  - Inspiration is about the reality of life
- Classical playwright
  - writes tragedy observing a certain number of familiar cases (rules)
  - poet also follow rules of which he is ignorant.

- 2 oulipian examples proves that there are existence of constrains :

The Sonnets irrationnels by Jacques Ben,  
and Mexura

✂ → non regularity is not accidental

✂ → results from decision to use it, so it is predetermined, so it is constrained

# The Sonnets irrationnels

- An **Irrational Sonnet** is a **fixed form** poem, with fourteen lines, in which the structure is based on the number pi (hence the adjective “irrational”). It is divided into five stanzas successively and respectively composed of 3-1-4-1-5 lines, the first five integers of pi.
  - 01. A +
  - 02. A +
  - 03. B –
  - 04. C +
  - 05. B –
  - 06. A +
  - 07. A +
  - 08. B –
  - 09. C + (identical to 04)
  - 10. C +
  - 11. D –
  - 12. C +
  - 13. C +
  - 14. D –
- 
- [http://www.drunkenboat.com/db8/oulipo/feature-oulipo/oulipo/texts/bens/presbyt\\_def.html](http://www.drunkenboat.com/db8/oulipo/feature-oulipo/oulipo/texts/bens/presbyt_def.html)

# The Axiomatic Method

- the Oulipo's constraint method leads one inexorably to think of another, particularly in favor during the 1940s to the 1960s → the axiomatic method
- One might say that the Oulipian method imitates the axiomatic method; the former is a transposition of the latter.
- ***A constraint = an axiom of a text.***
- ***Writing under Oulipian constraint is the literary = of the drafting of a mathematical text, which may be formalized according to the axiomatic method.***

# Indirect testimonies to this preoccupation

- sonnets → certain manipulations and transformations → most sonnetlike of all sonnets
- the form and the practice of the sonnet in many languages make it appear as a poetic model of deduction.
- It is true because of the articulation of the discourse of what a sonnet says.
- Also because the formal, rhythmic organization itself

# The Foundations of literature.

- “Les fondements de la littérature d’après David Hilbert” in march 1976
- ✂ → to use in Oulipian fashion the Oulipian method in order to compose a system of axioms for literature

- axiomatic method.
- Hilbert described properties of a “geometry” beginning with an explicit system of axioms.
- points, lines, and planes, → tables, chairs, and drinking glasses
  
- the principle adopted by Queneau
- **axiom** :, replacing in Hilbert’s propositions the words “points”, “line” and “planes” with, respectively, “words”, “sentences” and “paragraphs”.
  
- **Theorem 7:** every sentence includes an infinity of words; one perceives only a very few of them, the others being in the infinite or being imaginary.

# The Ruin of Rules

- The solution is not unique.
- ***There are no rules after the moment when they outlive their value.??***
- The exhaustion of tradition, represented by rules, is the starting point in the search for a second foundation, that of mathematics.
- ***Mathematics repairs the ruin of rules***
- The problem of “value” is to be put in parentheses.

# *Structures*

- In its Quenellian and Oulipian sense, has only a minimal relation to “Structuralism”.
- **Bourbakian structure:**
- the object in the mathematical case is a (or several) set(s) with something “on it”
- Algebraic laws
- Proximities in topology
- **Oulipo**
- the object is linguistic and its structure is a mode of organization
- Structure = axiom + constraint.
- Eg. A text will have a lipogrammatic structure if it obeys the constraint of the same name.
- the Oulipian notion of structure is not entirely distinct from that of constraint, many structures (traditionally) remaining implicit
- Conventionality of props( texts, poems, stories..) is an obstacle in the development of the Oulipian notion of structure.

- the most efficient method seems to be that of “structure transport”
- a set, with a given structure, is “interpreted” in a text.
- elements of the set become the data of the text
- the structures existing in the set are converted into procedures for composing the text, with constraints.
- There is an experiment written from a Latin bi-square

# An Examination

- the book's (Cent Mille Milliards de poemes) place in the passage from mathematics to its literalization
- **The principle:**
- Ten sonnets are written, using the same rhymes.
- The grammatical structure is such that every verse of every "base" sonnet may be interchanged with any other situated in the same position within the sonnet.
- Thus, each verse of a new sonnet has ten possible independent choices.
- There are 14 verses;
- 10 to the power 14 or one hundred thousand billion sonnets.

- Proceed by analogy
  - Take 10 letters
  - and put them one after the other
  - ✂ → the result is called “word”.
  - “procedure” works freely and furnishes
  - ✂ → according to the no. of letters which one accepts in a “word”
- 
- “free monoid”
  - “free object” of monoid structure.
  - To consider “hundred thousand billion” as “ free object” of sonnet structure
  - Against the constraints of semantic verismilitude
  - Confrontataion of structural “freedom” with the constraints of the milieu (linguistic or other) in which it inscribes itself.

- **potentiality**
- the Oulipo is potential literature
- givens of a structure are those of all the virtualities of free objects.
- If they exist, all the virtualities of the texts that realize it, necessarily multiple

# Conclusion

OuLiPo methods:

- Constrains, inspiration and procedures contains mathematics.
- Constrains
  - Mathematics
- Inspirations
  - Mathematics
- Procedures
  - To apply mathematics principles to literature

- OuLipo methods: constraints: 2 Principal Tendencies
  - Analysis (Anoulipism)
  - Synthesis (Synthoulipism)

- OuLiPo: inspirations: Mathematics

# Procedures

Fixed-form poetry:

Recurrent:

1. Repetitive literature
2. Iterative literature
3. Recursive

Combinatory Literature

# Group members

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