12. [Introduction]
Six Selections by the Oulipo

One Hudred Thousand Billion Poems and
"A Story as You Like It" by Raymond Queneau
"A Brief History of the Oulipo" by Jean Lescure
"For a Potenteial Analysis of Combinatory
    Literature" by Claude Berge
"Computer and Writer: The Centre Pompidou
    Experiment" by Paul Fournel
"Prose and Anticombinatorics" by Italo Calvino

Looming over the development of the literary machine in the last century stand the smiling members of the Oulipo (Ouvroir de Littérature Potentille, Workshop for Potential Literature). The *ouvroir* of the group's name is not a workshop of the Bread Loaf or Bennington sort, but a knitting room, a place where procedural effort produces a tangible textile, or in this case textual, outcome. This knitting circle is not primarily about producing texts, however—it is *potential* literature, not literature, that its members fashion. As François Le Lionnais wrote in the group's first manifesto, an ordinary literary work is the result of rigorous constraints in areas such as vocabulary and syntax, novelistic or dramatic convention, poetic meter and form, and so forth. The idea of *potential literature* is to both analyze and synthesize constraints—drawn from current mathematics as well as from older writing techniques that never entered the literary mainstream. One such technique is the lipogram, in which a certain letter of the alphabet may not be used; another is the palindrome.

Some forms, demonstrated in short Oulipian works, have proven their broader merits. Raymond Queneau's "Un conte à votre façon" ("Story as You Like It") is an application of simple algorithmic techniques to narrative, and is itself the structural model for countless works of hypertext fiction and more than a hundred Choose-Your-Own-Adventure books. Systems of lexical or phonetic constraints have proven productive in novels such as George Perec's *La Disparation* (*A Void*), which does not contain the letter e. More elaborate schemas resulted in two stunning works that sit innocently alongside their non-Oulipian fellows as major novels of the past century: Perec's *La vie un mode d'emploi* (*Life a User's Manual*) and Italo Calvino's *Se una notte d'inverno un viaggiatore* (*If on a winter's night a traveler*).

Perhaps the prototypical example of Oulipian potential, however, remains the group's founding text, Queneau's "Cent mille milliards de poèmes" ("One Hundred Thousand Billion Poems"), included here in French and English. The work is seen at any moment as a sonnet. If the reader cuts along the dotted lines as this book invites her to do, one of 10 interchangeable lines of the poem (which fit with the others in terms of the rhyme scheme as well as syntactically and metrically) can be selected to take its place in each of the poem's 14 positions. As described in "Computer and Writer: The Centre Pompidou Experiment," the Oulipians realized that such a system had the potential to define a new type of computer-mediated textuality, producing custom poems in ways that give the reader an enhanced role in the process of literary creation.

Italo Calvino, in the essay here about the composition of his story "The Burning of the Abominable House," shows that the computer can be used to do more than spin out practically infinite variations

Also see the discussion of Queneau's potential poem by Espen Aarseth (◊52).

from a set of initial materials. Instead, Calvino's computer takes a very large space of possible stories and narrows it to one. This is a potentially powerful story-production method, and yet the conclusion of Calvino's essay argues that the solution of any algorithm, the narrowing of even the most artfully constructed set of combinatory possibilities, cannot create literature. He states that it is the "'clinamen' which, alone, can make the text a true work of art." The clinamen is the deviation, the error in the system. In interactive systems, in new media, the most important clinamen can be that which is introduced from outside of the system, by the reader in the company of the reader's personal and cultural experiences. A similar point was made by Calvino in an important lecture he gave in Turin, "Cybernetics and Ghosts."

The potential that lies within such an understanding of interactive experiences is a reconfiguration of the relationship between reader, author, and text. The playful construction within constraints that the Oulipo defined as the role of the author can become an activity extended to readers, who can take part in the interpretation, configuration, and construction of texts.
    —NM & NWF

To enojy *One Hundred Thousand Billion Poems*. please cut along the lines (using scissors or switch blade as preferred) to allow any of 10 lines to occupy each of the 14 positions in the sonnet. Those too timid to operate on their books may wish to photocopy the pages and cut the photocopies, although generating sonnets is fairly difficult even in a bound volume and is harder with loose sheets.

Further Reading

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One Hundred

Thousand

Billion

Poems

"Only a machine can appreciate a sonnet

written by another machine."

—Turing

Le roi de la pampa retourne sa chemise

Pour la mettre ‡ sÈcher aux cornes des taureaux

Le cornedbÓf en boÓte empeste la remise

150

Et fermentent de mÍme et les cuirs et les peaux

Je me souviens encor de cette heure exequise

Les gauchos dans la plaine agitaient leurs drapeaux

Nous avions aussi froid que nus sur la banquise

Lorsque pour nous distraire y plantions nos trÈteaux

Du pÙle ‡ Rosario fait une belle trotte

Aventures on eut qui s'y pique s'y frotte

Lorsqu'on boit du matÈ l'on devient argentin

L'AmÈrique du Sud sÈduit les Èquivoques

Exaltent l'espagnol les oreilles baroques

Si la cloche se tait et son terlintintin

"Don Pedro from his shirt has washed the fleas"

"The bull's horns ought to dry it like a bone"

"Old corned-beef's rusty armour spreads disease"

"That suede ferments is not at all well known"

"To one sweet hour of bliss my memory clings"

"Signalling gauchos very rarely shave"

"An icicle of frozen marrow pings"

"As sleeping-bags the silent landscape pave"

"Staunch pilgrims longest journeys can't depress"

"What things we did we went the whole darned hog"

"And played their mountain croquet jungle chess"

"Southern baroque's seductive dialogue"

"Suits lisping Spanish tongues for whom say some"

"The bell tolls fee-less fi-less fo-less fum"

Le cheval ParthÈnon s'Ènerve sur sa frise

Depuis que lord Elgin nÈgligea ses naseaux

Le Turc de ce temps-l‡ pataugeait dans sa crise

Il chantait tout de mÍme oui mais il chantait faux

Le cheval ParthÈnon frissonnait sous la bise

Du climat londonien o˘ s'Èbattent les beaux

Il grelottait, le pauvre aux bords de la Tamise

Quand, les grÍlons fin mars mitraillent les bateaux

La GrÎce de Platon ‡ coup s˚r n'est point sotte

On comptait les esprits acÈrÈs , la hotte

Lorsque Socrate mort passait pour un lutin

Sa sculpture est illustre. Et dans le fond des coques

On transporte et le marbre et dÈbris et dÈfroques

Si l'Europe le veut l'Europe ou son destin

"The wild horse champs the Parthenon's top frieze"

"Since Elgin left his nostrils in the stone"

"The Turks said just take anything you please"

"And loudly sang off-key without a tone"

"O Parthenon you hold the charger's strings"

"The North Wind Bites into his architrave"

"Th'outrageous Thames a troubled arrow slings"

"To break a rule Britannia's might might waive"

"Platonic Greece was not so talentless"

"A piercint wit would sprightliest horses flog"

"Socrates watched his hemlock effervesce"

"Their sculptors did our best our hulks they clog"

"With marble souvenirs then fill a slum"

"For Europe's glory whjiole Fate's harpies strum"

Le vieux marin breton de tabac prit sa prise

Pour du fin fond du nez exciter les arceaux

Sur l'antique bahut il choisit sa cerise

Il n'avait droit qu'‡ une et le jour des Rameaux

Souvenez-vous amis de ces Óles de Frise

O˘ venaient par milliers s'Èchouer les harenceaux

Nous regrettions un peu ce tas de marchandise

Lorsqu'on voyait au loin flamber les arbrisseaux

On sËche le poisson dorade ou molve lotte

On sale le requin on fume ‡ l'Èchalote

Lorsqu'on revient au port en essuyant un grain

Enfin on vend le tout homards et salicoques

On s'excuse il n'y a ni baleines ni phoques

Le mammifËre est roi nous sommes son cousin

"At snuff no Cornish sailorman would sneeze"

"His nasal ecstasy beats best Cologne"

"Upon his old oak chest he cuts his cheese"

"With cherry-pips his cottage floor is sown"

"The Frisian Isles my friends are cherished things"

"Whose ocean still-born herrings madly brave"

"Such merchandise a melancholy brings"

"For burning bushes never fish forgave"

"When dried the terrapin can naught express"

"Shallots and sharks' fins face the smould'ring log"

"While homeward thirsts to each quenched glass say yes"

"Lobsters for sale must be our apologue"

"On fish-slab whale nor seal has never swum"

"They're kings we're mammal-cousins hi ho hum"

C'Ètait ‡ cinq o'clock qu'il sortait la marquise

Pour consommer un thÈ puis des petits g,teaux

Le chauffeur indigËne attendait dans la brise

Elle soufflait bien fort par-dessus les cÙteaux

On Ètait bien surpris par cette plaine grise

Quand se carbonisait la fureur des ch,teaux

Un audacieux baron empoche toute accise

Lorsque vient le pompier avec ses grandes eaux

Du Gange au Malabar le lord anglais zozote

Comme ‡ Chandernagor le manant sent la crotte

Le colonel s'Èponge un blason dans la main

Ne fallait pas si loin agiter ses breloques

Les Indes ont assez sans Áa de pendeloques

L'Ècu, de vair ou d'or ne dure qu'un matin

"At five precisely out went La Marquise"

"For tea cucumber sandwiches a scone"

"Her native chauffeur waited in the breeze"

"Which neither time nor tide can long postpone"

"How it surprised us pale grey underlings"

"When flame a form to wrath ancestral gave"

"A darling baron pockets precious Mings"

"Till firemen come with hose-piped tidal wave"

"The fasting fakir doesn't smell the less"

"In Indian summers Englishmen drink grog"

"The colonel's still escutcheoned in undress"

"No need to cart such treasures from the fog"

"The Taj Mahal has trinkets spice and gum"

"And lessors' dates have all too short a sum"

Du jeune avantageux la nymphe Ètait Èprise
Snob un peu sur les bords des bords fondamentaux
Une toge il portait qui n'Ètait pas de mise
Des narcisses on cueille ou bien on est des veaux
Quand on prend des photos de cette tour de Pise
D'o˘ GalilÈe jadis jeta ses petits pots
D'une Ètrusque inscription la pierre Ètait incise
Les Grecs et les Romains en vain cherchent leurs mots
L'esprit souffle et resouffle au-dessus de la botte
Le touriste ‡ Florence ignoble charibotte
L'autocar Ècrabouille un peu d'esprit latin
Les rapports transalpins sont-ils biunivoques ?
Les banquiers d'Avignon changent-ils les baÔoques ?
Le Beaune et le Chianti sont-ils le mÍme vin ?

"From playboy Chance the nymph no longer flees"

"Through snobbish growing round her hemline zone"

"His toga rumpled high above his knees"

"One gathers rosebuds or grows old alone"

"Old Galileo's Pisan offerings"

"Were pots graffiti'd over by a slave"

"The leaning linguist cameramaniac sings"

"Etruscan words which Greece and Rome engrave"

"Emboggled minds may puff and blow and guess"

"With gravity at gravity's great cog"

"On wheels the tourist follows his hostess"

"With breaking voice across the Alps they slog"

"Do bank clerks rule their abacus by thumb?"

"In cognac brandy is Bacardi rum?"

Il se penche il voudrait attraper sa valise
Que convoitait c'est s˚r une horde d'escrocs
Il se penche et alors ‡ sa grande surprise
Il ne trouve aussi sec qu'un sac de vieux fayots
Il dÈplore il dÈplore une telle mainmise
Qui se plaÓt ‡ flouer de pauvres provinciaux
Aller ‡ la grand ville est bien une entreprise
Elle effraie le Berry comme les Morvandiaux
Devant la boue urbaine on retrousse sa cotte
On gifle le marmot qui plonge sa menotte
Lorsqu'il voit la gadoue il cherche le purin
On regrette ‡ la fin les agrestes bicoques
On mettait sans faÁon ses plus infectes loques
Mais on n'aurait pas vu le mÈtropolitain

"He bent right down to pick up his valise"

"That hordes of crooks felt they'd more right to own"

"He bent right down and well what did he seize"

"The thumb- and finger-prints of Al Capone"

"Oh how oh how he hates such pilferings"

"Filching the lolly country thrift helped save"

"He's gone to London how the echo rings"

"Through homestead hillside woodland rock and cave"

"The peasant's skirts on rainy days she'd tress"

"And starve the snivelling baby like a dog"

"Watching manure and compost coalesce"

"One misses cricket hearth and croaking frog"

"Where no one bothered how one warmed one's bum"

"Yet from the City's pie pulled not one plum"

Quand l'un avecque l'autre aussitÙt sympathise

Se faire il pourrait bien que ce soit des jumeaux

La dÈcouverte alors voil‡ qui traumatise

On espËre toujours Ítre de vrais normaux

Et pourtant c'Ètait lui le frËre de feintise

Qui clochard devenant jetait ses oripeaux

Un frËre mÍme bas est la part indÈcise

Que les parents fÈconds offrent aux purs berceaux

Le gÈnÈalogiste observe leur bouillotte

Gratter le parchemin deviendra sa marotte

Il voudra retrouver le germe adultÈrin

FrËre je te comprends si parfois tu dÈbloques

FrËre je t'absoudrai si tu m'emberlucoques

La gÈmellitÈ vraie accuse son destin

"When one with t'other straightaway agrees"

"The answer is they could be twins full-grown"

"Replies like this the dumbstruck brain may tease"

"Normal one aims to be and share the throne"

"And yet 'twas he the beggar Fate just flings"

"Rejecting ermine to become a knave"

"The fertile mmother changeling drops like kings"

"In purest cradles tha's how they behave"

"The genealogist with field and fess"

"With quill white-collared through his life will jog"

"To prove mamma an adult with a tress"

"But I can understand you Brogher Gog"

"And let you off from your opinions glum"

"A wise loaf always knows its humblest crumb"

Lorsqu'un jour exaltÈ l'aËde prosaÔse
Pour dÈplaire au profane aussi bien qu'aux idiots
La critique lucide aperÁoit ce qu'il vise
Il donne ‡ la tribu des cris aux sens nouveaux
L'un et l'autre a raison non la foule insoumise
Le vulgaire s'entÍte ‡ vouloir des vers beaux
L'un et l'autre ont raison non la foule imprÈcise
¿ tous, n'est pas donnÈ d'aimer les chocs verbaux
Le poËte inspirÈ n'est point un polyglotte
Une langue suffit pour emplir sa cagnotte
MÍme s'il prend son sel au celte c'est son bien
Barde que tu me plais toujours tu soliloques
Tu me stupÈfies plus que tous les ventriloques
Le mÈtromane ‡ force incarne le devin

"Prose took the minstrel's verse without a squeeze"

"His exaltation shocked both youth and crone"

"The understanding critic firstly sees"

"'Ere meanings new to ancient tribes are thrown"

"They both are right not untamed mutterings"

"That metred rhyme alone can souls enslave"

"They both are right not unformed smatterings"

"That every verbal shock aims to deprave"

"Poetic licence needs no strain or stress"

"One tongue will do to keep the verse agog"

"From cool Parnassus down to wild Loch Ness"

"Bard I adore your endless monologue"

"Ventriloquists be blowed you strike me dumb"

"Soliloquies predict great things old chum"

Le marbre pour l'acide est une friandise

D'aucuns par-dessus tout prisent les escargots

Sur la place un forain de feu se gargarise

Qui sait si le requin boulotte les turbots ?

Du voisin le Papou suÁote l'apophyse

Que n'a pas dÈvorÈ la horde des mulots ?

Le gourmet en salade avale le cytise

L'enfant pur aux yeux bleus aime les berlingots

Le loup est amateur de coq et de cocotte

Le chat fait un festin de tÍtes de linotte

Chemin vicinal se nourrit de crottin

On a bu du pinard ‡ toutes les Èpoques

Grignoter des bretzels distrait bien des colloques

Mais rien ne vaut grillÈ le morceau de boudin

"The acid tongue with gourmet's experties"

"Licks round carved marble chops on snails full-blown"

"The showman gargles fire and sword with ease"

"While sharks to let's say potted shrimps are prone"

"The roundabout eats profits made on swings"

"Nought can the mouse's timid nibbling stave"

"In salads all chew grubs before they've wings"

"The nicest kids for strickiest toffees crave"

"The wolf devours both sheep and shepherdess"

"A bird-brain banquet melts bold Mistress Mog"

"The country land just thrives on farmyard mess"

"Whiskey will always wake an Irish bog"

"Though bretzels take the dols from board-room drum"

"Fried grilled black pudding's still whe world's best yum"

Lorsque tout est fini lorsque l'on agonise

Lorsque le marbrier astique nos tombeaux

Des Ítres indÈcis vous parlent sans franchise

Et tout vient signifier la fin des haricots

On vous fait devenir une orde marchandise

On prÈpare la route aux pensers sÈpulcraux

De la mort on vous greffe une orde b,tardise

La mite a grignotÈ tissus os et rideaux

Le brave a beau crier ah crÈ nom saperlotte

Le l,che peut arguer de sa mine p,lotte

Les croque-morts sont l‡ pour se mettre au turbin

Cela considÈrant Ù lecteur tu suffoques

Comptant tes abattis, lecteur, tu te disloques

Toute chose pourtant doit avoir une fin

"The marble tomb gapes wide with jangling keys"

"When masons clutch the breath we hold on loan"

"Forms shadowy with indecision wheeze"

"And empty cages show lif'e bird has flown"

"It's one of many horrid happenings"

"With sombre thoughts they grimly line the nave"

"Proud death quite il-le-gi-ti-mate-ly stings"

"Victorious worms grind all into the grave"

"It's no good rich men crying Heaven Bless"

"Or grinning like a pale-faced golliwog"

"Poor Yorick comes to bury not address"

"We'll suffocate before the epilogue"

"Poor reader smile before your lips go numb"

"The best of all things to an end must come"

A Story as You Like It

Raymond Queneau

This text, submitted at the 83rd meeting of the Ouvroir de Littérature Potentielle, was inspired by the presentation of the instructions given to computers, and by programmed teaching. It is a structure analogous to the "tree" literature proposed by François Le Lionnais at the 79th meeting.

Begin with **1** and follow the directions there.

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1 Do you wish to hear the story of the three alert peas?

if yes, go to 4 . . .

if no, go to 2 . . .

2 Would you prefer the story of the three big skinny beanpoles?

if yes, go to 16 . . .

if no, go to 3 . . .

3 Would you prefer the story of the three middling mediocre bushes?

if yes, go to 17 . . .

if no, go to 21 . . .

Brief History of the Oulipo

Jean Lescure

History will never question it: the Oulipo was founded by François Le Lionnais. Queneau said it on the radio. Leaves and writings fade, but words remain. On the same occasion, furthermore, Queneau indicated that he himself was the cofounder. On the cause of this foundation, he expressed himself in the following terms

I had written five or six of the sonnets of the Cent Mille Milliards de poèmes, *and I was hesitant to continue; in short, I didn't have the strength to continue; the more I went along, the more difficult it was to do naturally* [here I note that the Gallimard edition, p. 116 of the *Entretiens* with Georges Charbonnier, doesn't punctuate this part of the sentence, whereas one wonders if, when pronouncing it, Raymond Queneau didn't put a comma between *do* and *naturally*. So that we don't know whether the author's intended meaning is *it was difficult to do naturally,* which brings us to the very heart of Oulipian thought, or *it was difficult to do, naturally*]. *But* [I continue to quote] *when I ran into Le Lionnais, who is a friend of mine, he suggested that we start a sort of research group in experimental literature. That encouraged me to continue working on my sonnets.*

It must be admitted: this encouragement, the necessity of which was not evident to everyone, didn't appear sufficient to anyone. We have the proof of this in the minutes of the first meeting, on 24 November 1960, minutes which we owe to the invigorating eagerness of Jacques Bens, named from that day forward, and definitively so, provisional secretary. We read therein:

It would not seem that the composition of poems arising from a vocabulary composed by intersections, inventories, or any other process may constitute an end in itself.

For the activity of the Oulipo, that goes without saying. As to anyone else's activity, we didn't object that their assigned task be the composition of poems. That day in the basement of the Vrai Gascon, what more necessary task brought together Queval Jean, Queneau Raymond, Lescure Jean, Le Lionnais François, Duchateau Jacques, Berge Claude, and Bens Jacques as is noted in the minutes? (With, moreover, the intention to urge Schmidt Albert-Marie, Arnaud Noël, and Latis to attend the next luncheon.)

We asked ourselves that question. We asked ourselves that question the next day in written form: *Considering that we do not meet merely to amuse ourselves (which is in itself appreciable, surely), what can we expect from our work?*

Obviously, if we were asking ourselves this question, the fact was that we had not yet answered it. Allow me to slip a remark into this vacillation of our early days. This is that of the seven persons meeting on the occasion of the first luncheon, six had attended the ten-day conference organized at Cerisy in September, two months earlier, dedicated to Raymond Queneau, entitled *Une nouvelle défense et illustration de la langue française*. Not all of those six had been friends before the meeting at Cerisy. Some of them had never even met. Those six, plus André Blavier, who would later become a corresponding member of the Oulipo, had already met at Cerisy in the little entry pavilion with the intention of forming a group within the Collège de Pataphysique.[1] During that session, Queval was banned several times, for a total of 297 years, and each time readmitted by popular acclaim. Which of course colored his later career as an Oulipian, condemning him to ban himself unceasingly and equally unceasingly to cede to our objections.

At the time of this first meeting in November of 1960, the Oulipo still called itself the S.L.E., short for *sélitex,* or *séminaire de littérature expérimentale*. It wasn't until a month later, on 19 December 1960, and on the happy initiative of Albert-Marie Schmidt, that this S.L.E. became the Oulipo, or rather the Olipo: *ouvroir de littérature potentielle*. One can therefore legitimately say that during a month there was a

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4 Once upon a time there were three peas dressed in green who were fast asleep in their pod. Their round faces breathed through the holes in their nostrils, and one could hear their soft and harmonious snoring.

if you prefer another description, go to 9 . . .

if this description suits you, go to 5 . . .

5 They were not dreaming. In fact, these little creatures never dream.

if you prefer that they dream, go to 6 . . .

if not, go to 7 . . .

6 They were dreaming. In fact, these little creatures always dream and their nights secrete charming dreams.

if you wish to know these dreams, go to 11 . . .

if you don't care about it, go to 7 . . .

po oulipo. A potentialoulipo. What important difference did the *oulipo* introduce compared to the stillborn *sélitex,* or S.L.E.? The *li* did not change. Of course, certain people claimed that there was a lot to be said about "li." But our work at Cerisy had convinced us that language only solicited our attention as literature. Thus we kept the *li* of literature. *Séminaire* bothered us in that it conjures up stud farms and artificial insemination; *ouvroir,* on the contrary, flattered the modest taste that we shared for beautiful work and good deeds: out of respect for both fine arts and morals, we consented to join the *ou* to the *li.* There remained the *po,* or the *po* of this *ouli.* The inspiration was general. And the word *expérimental* having seemed to us to base the entire operation on acts and experiments as yet only poorly discernible, we judged it advisable to settle ourselves squarely on an objective notion, on a real fact of every literary being: his potential. (This potential remaining in any case sufficient unto itself, even when the experimental energy of the *littérateurs* would find it lacking.)

It was, finally, the thirteenth of February 1961 that the Private General Secretary to the Baron Vice-Curator of the Collège de Pataphysique, M. Latis, concluded the nomination of this enterprise by suggesting, for the sake of symmetry, that we add the *second letter of the word ouvroir* to the O, which definitely rendered the Olipo the Oulipo.

Our first labors immediately indicated the desire to inscribe the Oulipo within a history. The Oulipo didn't claim to innovate at any price. The first papers dealt with ancient works, works that might serve as ancestors if not as models for the work we wanted to begin. This led us to consider according a good deal of our efforts to an H.L.E., or *Histoire des littératures expérimentales.* Here, we saw the notion of experimentation or exercise reappear; at the same time we were beginning to realize that which distinguished us from the past: potentiality.

But in any case the essential object of our quest was still literature, and François Le Lionnais wrote: *Every literary work begins with an inspiration . . . which must accommodate itself as well as possible to a series of constraints and procedures,* etc. What the Oulipo intended to demonstrate was that these constraints are felicitous, generous, and are in fact literature itself. What it proposed was to discover new ones, under the name of *structures.* But at that time, we didn't formulate this as clearly.

The position of the Oulipo in regard to literature is determined in memorandum #4, minutes of the meeting on 13 February 1961, in the following form:

Jean Queval intervened to ask if we are in favor of literary madmen. To this delicate question, F. Le Lionnais replied very subtly:

—We are not against them, but the literary vocation interests us above all else.

And R. Queneau stated precisely:

—The only literature is voluntary literature.

If I may refer to the henceforth famous dictum in *Odile,* we can add to this notion the considerable consequences resulting from the fact that: *The really inspired person is never inspired, but always inspired.* What does this mean? What? This thing so rare, inspiration, this gift of the gods which makes the poet, and which this unhappy man never quite deserves in spite of all his heartaches, this enlightenment coming from who knows where, is it possible that it might cease to be capricious, and that any and everybody might find it faithful and compliant to his desires? The serious revolution, the sudden change this simple sentence introduced into a conception of literature still wholly dominated by romantic effusions and the exaltation of subjectivity, has never been fully analyzed. In fact, this sentence implied the revolutionary conception of the objectivity of literature, and from that time forward opened the latter to all possible modes of manipulation. In short, like mathematics, literature could be *explored.*

We know that for Queneau, at Cerisy, the origin of language might be traced back to a man who had a stomachache and wanted to express that fact.[2] But as Queneau stated to Charbonnier, *Of course he didn't succeed in*

7 Their cute little feet were covered in warm stockings and in bed they wore black velvet gloves.

if you prefer gloves of another color, go to 8 . . .

if this color suits you, go to 10 . . .

8 In bed, they wore blue velvet gloves.

if you prefer gloves of another color, go to 7 . . .

if this color suits you, go to 10 . . .

9 Once upon a time there were three peas rolling along on the great highway. When evening came, they fell fast asleep, tired and worn.

if you wish to know the rest, go to 5 . . .

if not, go to 21 . . .

expressing this; never could succeed; nobody will ever succeed. Since this mysterious origin, the failures of language have little by little led its users to reflect on this strange tool which one could consider, which sometimes commands consideration, without reference to utility.

People noticed that they were language from head to toe. And that when they thought they had a stomachache, it was in fact a language-ache. That all of that was more or less indiscernible. That medicine was fine and dandy, but if we were suffering in our language, medicine wasn't enough, although it itself is a language. We started therefore to explore, or to want to explore, language. We began by relying on its properties. We let it play by itself. Word games became the game of words in Queneau, subject of the excellent Daubercies's doctoral thesis. We directed the games of language, searched, found, and encouraged certain of its capacities. We remained attentive to this nature which it seems to have, or which it constitutes for itself and which, in turn, constitutes us.

This movement became entirely natural. And this is why I underlined Queneau's words a little while ago: *the more difficult it was to do naturally*. It has become so natural that we forget the punctuation and everyone jumps in.

Let me point out that Lévi-Strauss begins the *Pensée sauvage* with a remark on nomination, and the expression of the concrete by the abstract. He quotes two sentences from Chinook, a very useful language for linguists. These two sentences use abstract words to designate properties or qualities of beings or things. Thus, in order to say: *The bad man killed the unfortunate child,* one will say: *The badness of the man killed the misfortune of the child;* and to say: *This woman is using a basket which is too small,* one will say: *She is putting potentilla roots into the smallness of a shell basket.*

It is clear in this case that the notions of abstract and concrete are confused and, as Lévi-Strauss says, that "oak" or "beech" is just as abstract as "tree." But another thing becomes clear to the wise poet who examines this text. This is that *the badness of the man killed the misfortune of the child* is

not precisely the same thing as *the bad man killed the unfortunate child*. In fact, it's not the same thing at all. And this difference reveals a new concreteness which is not only that of the thing referred to by the words but also that of the words themselves. Language is a concrete object.

One can therefore operate on it as on other objects of science. Language (literary language) doesn't manipulate notions, as people still believe; it handles verbal objects and maybe even, in the case of poetry (but can one draw a distinction between poetry and literature?), sonorous objects. Just as in painting the dissimulation of the object of reference by grids of nonfiguration claimed less to annihilate this object, table, landscape, or face, than to divert attention toward the painting-object, a certain number of sentences written today fix the attention of the observer on the singular object that is literary language, whose significations because of this multiply indefinitely. Unusual designations point to the sign rather than to the signified.

A simple example will clarify this: the beginning of *Le Chiendent:*[3] *A man's silhouette was outlined, simultaneously thousands.* A realist novelist would have written: *Jules came along. There was a crowd.* But in writing this, the realist novelist would only have shown that he was confusing the concreteness of things with literary concreteness, and that he was counting on quashing the latter in favor of the former. He would have claimed to have rendered his sentence wholly transparent to that which it designates. That is literature according to Sartre, and transitive language. In literature, the smallest combination of words secretes perfectly intransitive properties. The recourse to the abstract in Queneau means simply the choice of a system of concreteness at once both very ancient and very new: literature itself.

I don't mean to suggest that this is an absolute discovery. Queneau knows better than anyone that literature existed before us. For example, one finds in *Ange Pitou* a description of a fight that conforms precisely to what we've been saying. Ange Pitou fights with the seminarist who had raised him, if memory serves me, and whom he had just

---

10 All three were dreaming the same dream; indeed, they loved each other tenderly and, like proud mirrors, always dreamed similarly.

if you wish to know their dream, go to 11 . . .
if not, go to 12 . . .

11 They dreamed that they were getting their soup at the soup kitchen, and that upon uncovering their bowl they discovered that it was ers soup. Horrified, they woke up.

if you wish to know why they woke up horrified, consult the word "ers" in Webster, and let us hear no more of it.

if you judge it a waste of time to investigate this question further, go to 12 . . .

found again. The seminarist throws a punch which, says A. Dumas, *Ange Pitou warded off with an eye*. Everything here is concrete in its terms, but the organization of these various concretes is absurd. It's not the world that's being referred to, but literature. But of course, literature is always the world.

It's because we had the profound feeling that we were not an absolute beginning, but rather that we belonged to a tradition, that the Oulipo decided to devote a large share of its work to bringing together texts for an anthology of experimental literature. For there were not only these naive and aleatory illuminations of Alexandre Dumas's sort: other writers systematically sought to transform the constraints of literary rules into sources of inspiration. Hugo's famous *Je rime à dait*[4] is an example of the energetic virtues of rhyme, if not of the work of the greatest of French poets.

Experimentation was thus reintroduced into the Oulipo, not only in order to establish our genealogical tree, the history of our origins, but also to give direction to our exploration. For most of the experiments that one can conduct on language reveal that the field of meanings extends far beyond the intentions of any author. It's a commonplace today that an author understands only very few of the meanings offered by his work. And one can no longer find a single writer provincial enough to explain: *I intended to say that. . . .* When questioned today, the writer responds: *I wanted to . . .* and the description of a machine producing at the discretion of consumers follows. In short, every literary text is literary because of an indefinite quantity of potential meanings.

That involves the objects of literature, and one notices that, from this point of view, all literature is potential. For which the Oulipo rejoices. But as the equating of potentiality and literature would perhaps cause the Oulipo to lose itself in the totality of language, we had to seek a specific potentiality which we intended to use for our purposes. It's not that of literature already written but that of literature which remains to be written.

It was not an easy thing to accomplish. It was even exceedingly difficult. First, we elaborated the following broad definition. *Oulipo: group which proposes to examine in what manner and by what means, given a scientific theory ultimately concerning language (therefore anthropology), one can introduce aesthetic pleasure (affectivity and fancy) therein.* We will never know exactly who came up with this definition, the definitive secretary having generously attributed it to all in his minutes of the 5 April 1961 meeting.[5]

Things could only get worse. And the same day, the Oulipians "slyly" followed this definition with another: *Oulipians: rats who must build the labyrinth from which they propose to escape.*

The storm broke on the twentieth of April.[6] The word "affectivity" unleashed the tempest that Jacques Bens had been brooding for a month. Appealing to a *method,* and a scientific one, the provisional secretary claimed that we could only work from real things, from existing texts. To Albert-Marie Schmidt, who worried that the treatments to which these texts were subjected in order to actualize their potentialities in fact destroyed the latter as such, transforming them into realities, Arnaud answered that we must begin with the concrete, with the material. Oulipian activity applies systematic and predictable treatments to these materials. That's the experimental method. To which Queneau replied: *Our method could be applied to nonexistent acts.* And Lescure Jean going so far as to suggest that the greatest potentiality is that of nonexistence, Bens cried in an aggressive voice: *That's poetic method, not scientific.* Queneau: *Historically, we may consider that the day when the Carolingians began to count on their fingers 6, 8, and 12 to make verse, they accomplished an Oulipian task. Potential literature is that which doesn't yet exist.* With the worst insincerity in the world, Jacques Bens then affirmed that that was precisely what he had been saying: *To get to the potential (in the future), one must begin with that which exists (in the present).* Granted that it's he himself who writes the minutes, he didn't interrupt himself, and he gave himself the last word.

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12 Opopoï! they cried when they opened their eyes. Opopoï! what a dream we dreamed! A bad omen, said the first. Yessir, said the second, that's a fact, and now I'm sad. Don't worry like that, said the third, who was the sharpest of the three. We must comprehend rather than despair; in short, I will analyze it for you.

if you wish to know the interpretation of this dream right away, go to 15 . . .

if you wish on the contrary to know the reactions of the other two, go to 13 . . .

13 You bore us to tears, said the first. Since when do you know how to analyze dreams? Yes, since when? added the second.

if you too wish to know since when, go to 14 . . .

if not, go to 14 anyway, because in any case you won't learn a thing.

It was during the night of 28 August 1961, in the gardens of François Le Lionnais and in the presence of Lady Godiva,[7] that the Oulipians began to understand what they had been trying to do for so long. Le Lionnais expressed himself in these terms: *It is possible to compose texts that have poetic, surrealist, fantastic, or other qualities without having qualities of potential. Now it is these last qualities that are essential for us. They are the only ones that must guide our choice. . . . The goal of potential literature is to furnish future writers with new techniques which can dismiss inspiration from their affectivity. Ergo, the necessity of a certain liberty. Nine or ten centuries ago, when a potential writer proposed the sonnet form, he left, through certain mechanical processes, the possibility of a choice.*

Thus, continues Le Lionnais, *there are two Lipos: an analytic and a synthetic. Analytic lipo seeks possibilities existing in the work of certain authors unbeknownst to them. Synthetic lipo constitutes the principal mission of the Oulipo; it's a question of opening new possibilities previously unknown to authors.*

Finally elaborated, this definition remains the Oulipo's rule. In his conversations with Charbonnier, Queneau returns to it nearly word for word: *The word "potential" concerns the very nature of literature; that is, fundamentally it's less a question of literature strictly speaking than of supplying forms for the good use one can make of literature. We call potential literature the search for new forms and structures that may be used by writers in any way they see fit.*

Finally, and more recently, Le Lionnais: *The Oulipo's goal is to discover new structures and to furnish for each structure a small number of examples.*

As we can see, the rules of the sonnet, which are the Oulipo's bread and butter, remain the perfect example of our aims. But in all of this there is a relatively new way of considering literature, and it is not by chance (and without bad feelings toward the old world) that Queneau writes that we propose to elaborate *a whole arsenal in which the poet may pick and choose, whenever he wishes to escape from that which is called inspiration* (*Entretiens*, p. 154).

History will testify that the Oulipo saved men from the infantile diseases of writers and gave true freedom to the latter, which consists, exercising "their passionate taste for the obstacle,"[8] in finding the springboard of their action in the world itself.

Having understood its mission, the Oulipo happily embarked upon the centuries that awaited it.[9] Barely into the fifth of these, it had astutely mixed the sap which Oulipians were unknowingly making from lipo with the diverse characters of its members. Exercises sometimes illustrated these characters. There were snowballs, isosyntactic, isovocalic, or isoconsonatic poems, anterhymes, lipograms, etc. . . . and numerous proposals for permutations for a combinatory literature.

Bereavements darkened our history. The very dear, very lettered, and very fraternal Albert-Marie Schmidt first, through whose death we lost much of our scholarship, depriving us as well of the most amusing works. Marcel Duchamp, from one of the Americas, became interested in the Oulipo. The Ouvroir flattered itself to count him among its corresponding members. He died an Oulipian.

New ones were born:[10] Georges Perec, Jacques Roubaud, Luc Etienne, Marcel Bénabou, Paul Fournel. And we saw works appear bearing obvious traces of our reflections. By Perec, precisely, *La Disparition.* By Roubaud, whose ∈ invents constraints that will continue to provoke comment. *Zinga 8* by Jacques Duchateau surprised and even astonished me. Raymond Queneau's *Un Conte à votre façon,* a "programmed" story. *Le Petit Meccano poétique n° 00,* modest exercises for beginners.

Although the goal of the Oulipo is not to give birth to literary works, one ought to mention that the work of the best can draw new force from it—and we are delighted to note from *Le Vol d'Icare* that Raymond Queneau is making very good progress.

Each of our centuries having been celebrated by a conference, it's rather satisfying to realize that we have now youthfully passed our first millennium.

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14 Since when? cried the third. How should I know? The fact is that I practice analysis. You'll see.

if you too wish to see, go to 15 . . .

if not, go to 15 also, for you will see nothing.

15 Well then, let's see! cried his brothers. Your irony doesn't please me a bit, replied the other, and you'll not learn a thing. Moreover, during this rather sharp conversation, hasn't your sense of horror been blurred, or even erased? What use then to stir up the mire of your papilionaceous unconscious? Let's rather go wash ourselves in the fountain and greet this gay morning in hygiene and saintly euphoria! No sooner said than done: they slip out of their pod, let themselves roll gently to the ground, and trot joyously to the theater of their ablutions.

if you wish to know what happens at the theater of their ablutions, go to 16 . . .

if you do not wish to know, go to 21 . . .

For a Potential Analysis of Combinatory Literature

Claude Berge

When, at twenty years of age, Leibniz published his *Dissertatio de Arte Combinatoria,*[1] he claimed to have discovered a new branch of mathematics with ramifications in logic, history, ethics, and metaphysics. He treated all sorts of combinations therein: syllogisms, juridical forms, colors, sounds; and he announced two-by-two, three-by-three, etc., combinations, which he wrote: com2natio, com3natio, etc. . . .

In the field of plastic arts, the idea was not entirely new, since Breughel the Elder several years before had numbered the colors of his characters in order to determine their distribution by a roll of the dice; in the field of music, people were beginning to glimpse new possibilities, which were to inspire Mozart in his "Musical Game," a sort of card index that allows anyone to achieve the aleatory composition of waltzes, rondos, and minuets. But what about literature?

One has to wait until 1961 for the expression *combinatory literature* to be used, undoubtedly for the first time, by François Le Lionnais, in the postface to Raymond Queneau's *Cent Mille Milliards de poèmes.* Literature is a known quantity, but combinatorics? Makers of dictionaries and encyclopedias manifest an extreme degree of cowardice when it comes to giving a definition of the latter; one can hardly blame their insipid imprecision, since traditional mathematicians who "feel" that problems are of combinatory nature very seldom are inclined to engage in systematic and independent study of the methods of resolving them.
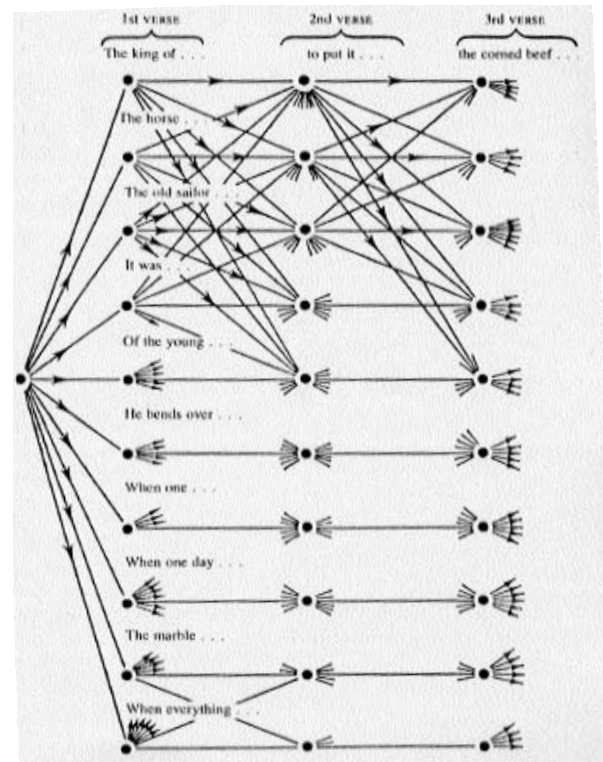

Figure 12.1. Principle of the graph of the Cent Mille Milliards de poèmes (not all of the arcs and vertices have been drawn).

In an attempt to furnish a more precise definition, we shall rely on the concept of *configuration;* one looks for a configuration each time one disposes a finite number of objects, and one wishes to dispose them according to certain constraints postulated in advance; Latin squares and finite geometries are configurations, but so is the arrangement of packages of different sizes in a drawer that is too small, or the disposition of words or sentences given in advance (on the condition that the given constraints be sufficiently "crafty" for the problem to be real).[2] Just as arithmetic studies whole numbers (along with the traditional operations), as algebra studies operations in general, as

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16 Three big beanpoles were watching them.

if the three big beanpoles displease you, go to 21 . . .

if they suit you, go to 18 . . .

17 Three middling mediocre bushes were watching them.

if the three middling mediocre bushes displease you, go to 21 . . .

if they suit you, go to 18 . . .

18 Seeing themselves voyeurized in this fashion, the three alert peas, who were very modest, fled.

if you wish to know what they did after that, go to 19 . . .
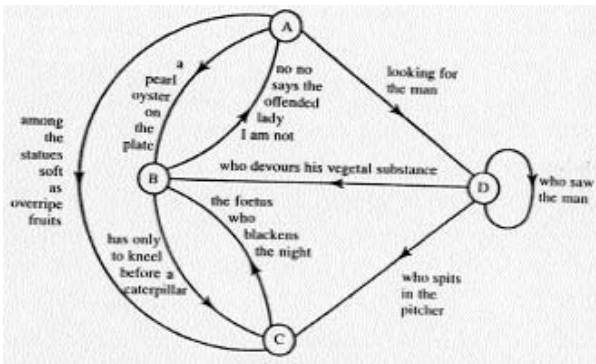
if you do not wish to know, go to 21 . . .

Figure 12.2. The verses corresponding to the arcs arriving at the same point (or leaving from the same point) were chosen in function of a very precise constraint; for example, those that end up at point D contain the word "man"; those leaving from point D have the same grammatical structure, etc. . . . Using this figure, the reader may choose a priori the point of departure and the point of arrival, and look for "the shortest path." He can also construct "Hamiltonian Poems," which correspond to an itinerary in which each point is encountered once and only once. Thus, the Hamiltonian Path BADC gives:

"No no says the offended lady I am not looking for the man who spits in the pitcher."

One can even construct quasi-Eulerian poems, traveling through the figure without passing twice by the same arc, and in maximizing the number of arcs used; fundamental, purely mathematical concepts from the Theory of Graphs furnish thus so many constraints . . . and the number of texts that may be constructed using the same figure is infinite!

Figure 12.3. Bifurcating graph representing the structure of Raymond Queneau's "A Story as You Like It," Lettres Nouvelles, July–September 1967. (We owe this sagittal representation to Queneau.)

that the pruritus of combinatorics has wrought its worst on the Oulipian breast.

Although the first complete literary work of frankly combinatory nature is the *Cent Mille Milliards de poèmes*, and although Raymond Queneau and François Le Lionnais are the cofounders of the Oulipo, created simultaneously, it should not

analysis studies functions, as geometry studies forms that are rigid and topology those that are not, so combinatorics, for its part, studies configurations. It attempts to demonstrate the existence of configurations of a certain type. And if this existence is no longer open to doubt, it undertakes to count them (equalities or inequalities of counting), or to list them ("listing"), or to extract an "optimal" example from them (the problem of optimization).

It is thus not surprising to learn that a systematic study of these problems revealed a large number of new mathematical concepts, easily transposable into the realm of language, and
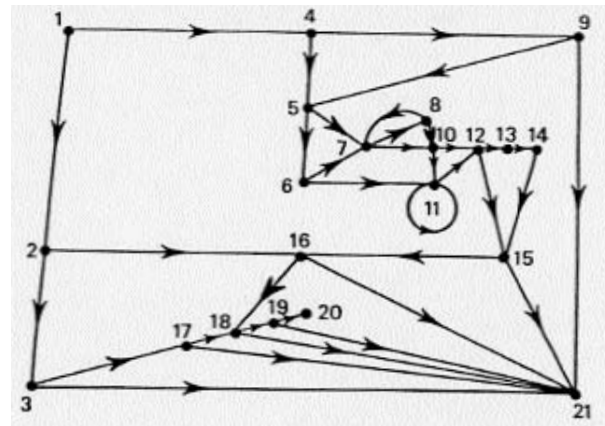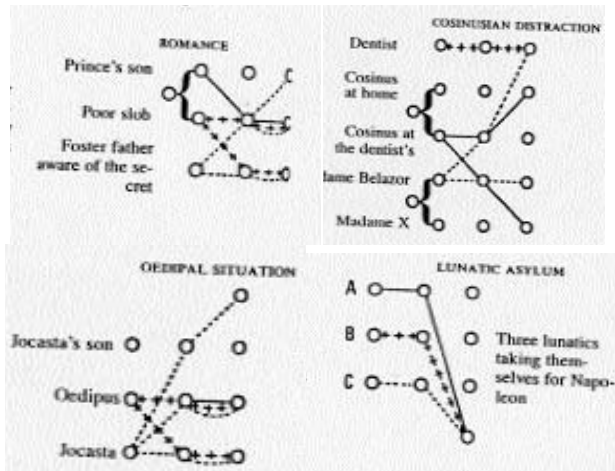

Figure 12.4.

19 They ran very hard back to their pod and, closing the latter after them, went back to sleep.

if you wish to know the rest, go to 20 . . .

if you do not wish to know, go to 21 . . .

20 There is no rest and the story is finished.

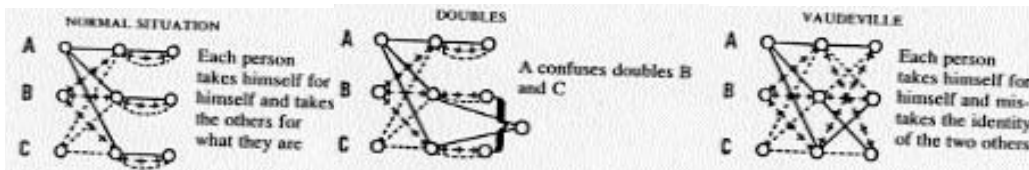**21** In this case, the story is likewise finished.

Figure 12.4. Continued

be deduced that combinatory literature *is* the Oulipo.

If one dissects Oulipian tendencies with a sharp enough scalpel, three currents become apparent: the first Oulipian vocation is undoubtedly "the search for new structures, which may be used by writers in any way they see fit," which means that we wish to replace traditional *constraints* like the "sonnet" with other linguistic constraints: alphabetical (Georges Perec's poems without e), phonetic (Noël Arnaud's heterosexual rhymes), syntactic (J. Queval's isosyntactic novels), numerical (J. Bens's irrational sonnets), even semantic.

The second Oulipian vocation, apparently unrelated to the first, is research into *methods of automatic transformation* of texts: for example, J. Lescure's S + 7 method.

Finally, the third vocation, the one that perhaps interests us most, is the *transposition* of concepts existing in different branches of mathematics into the realm of words: geometry (Le Lionnais's poems which are tangential among themselves), Boolian algebra (intersection of two novels by J. Duchateau), matrical algebra (R. Queneau's multiplication of texts), etc. . . .

It is within this last current that combinatory literature is situated. Let us sharpen our scalpel a little bit more and cut up a few specimens.

The roughest form, the Stone Age of combinatory literature, it must be noted, is factorial poetry, in which certain elements of the text may be permuted in all possible ways as the reader (or chance) sees fit; the meaning changes, but syntactic correctness is preserved.

As early as the seventeenth century, Harsdörffer published in his *Récréations* factorial couplets like:

Ehr, Kunst, Geld, Guth, Lob, Weib und *Kind*

Man hat, *sucht, fehlt,* hofft und verschwind[3]

The ten words in *italics* may be permuted in all possible ways by the speaker without altering the rhythm (for they are all monosyllabic); whence 3,628,800 poems, different and grammatically correct (if one changes *sucht* to *Sucht, fehlt* to

Fehl, man to *Mann*). With *n* words to permute, the number of possibilities would be "*n* factorial," that is, the number:

$$n! = 1 \times 2 \times \ldots \times n$$

This form of poetry seems moreover to have been common during the period when it was called "Protean Poetry"(*Poetices Proteos*), following Julius Caesar Scaliger, who supposedly invented it. Leibniz, in his *Dissertatio,* cites numerous examples in monosyllabic Latin, from Bernhardus Bauhusius, Thomas Lansius, Johan Philippus Ebelius, Johan Baptistus Ricciolus, etc. . . .

And, as nothing is invented, we must wait until 1965 for Saporta to write and publish a "factorial" novel, whose pages,
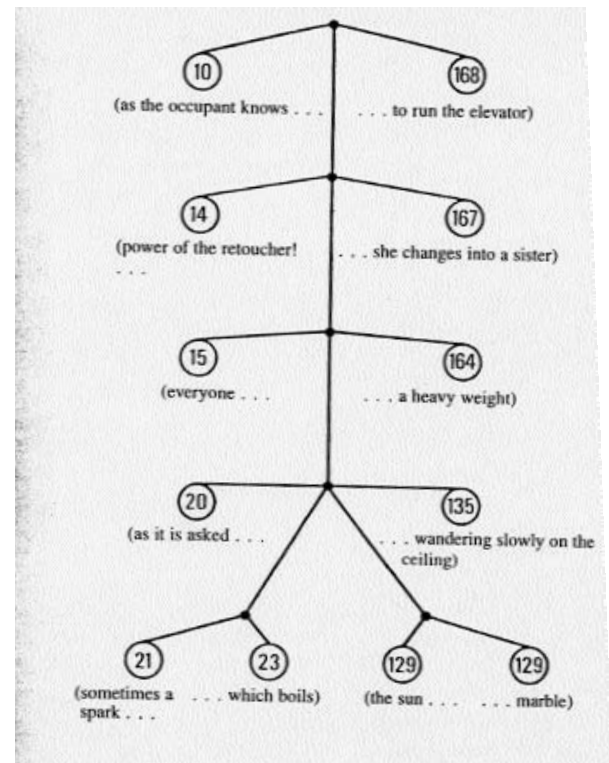

Figure 12.5. Tree representing the embedding of the parentheses in Raymond Roussel, *Nouvelles Impressions d'Afrique,* canto I (the encircled numbers represent the number of the verse wherein the parentheses are opened or closed).

unbound, may be read in any order, according to the whim of the reader.[4]

Finally, in 1967, the Oulipo stated that it no longer expected any good to come from pure, unbridled chance, and Jacques Roubaud published his collection of poems, ∈ (Gallimard, 1967), wherein the author proposes the reading of the 361 texts that compose it in four different but well-determined orders.

Another more elaborate form of combinatory poetry: Fibonaccian poems. We call thus a text which has been split into elements (sentences, verses, words), and which one recites using only elements that were not juxtaposed in the original text.

This type of poetry is called Fibonaccian because, with n elements, the number of poems one can engender is none other than "Fibonacci's Number":

$$F_n = 1 + \frac{n!}{1!(n-1)} + \frac{(n-1)!}{2!(n-2)!} + \frac{(n-2)!}{3!(n-5)!} + \frac{(n-3)!}{4!(n-7)!} + \dots$$

Here is an example, whose origin is easily recognizable:

Feu filant,

déjà sommeillant,

bénissez votre

os

je prendrai

une vieille accroupie

vivez les roses de la vie![5]

Unfortunately, it is difficult to invent texts that lend themselves to such manipulations or rules for intervals that permit the conservation of literary quality.

In the *Cent Mille Milliards de poèmes,* Raymond Queneau introduces ten sonnets, of fourteen verses each, in such a way that the reader may replace as he wishes each verse by one of the nine others that correspond to it. The reader himself may
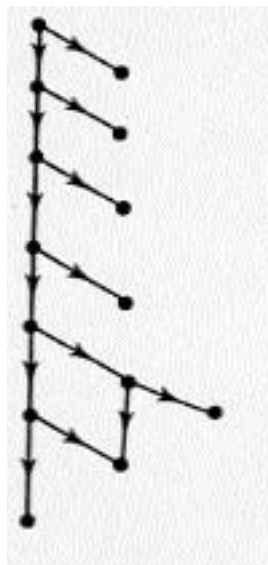

Figure 12.6. Representation by means of a bifurcating arborescence of the preceding system of parentheses.
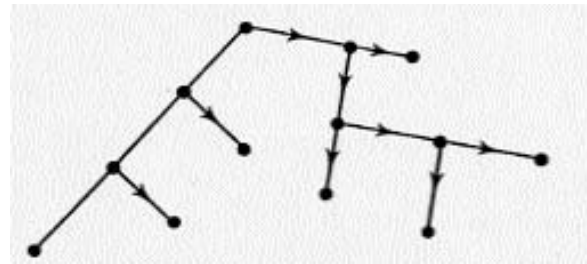

Figure 12.7. Representation by means of a bifurcating arborescence of another system of parentheses: [(   )] {[(   )]}.

thus compose 10^{14} = 100,000,000,000,000 different poems, all of which respect all the immutable rules of the sonnet. This type of poetry could be called "exponential," for the number of poems of n verses one can obtain with Queneau's method is given by the exponential function, 10^n. However, each of the hundred thousand billion poems may also be considered as a line drawn in a graph of the sort indicated in figure 12.1. According to this point of view, it should be noted that the reader advances in a graph *without circuits;* that is, he can never encounter the same verse twice in a reading respecting the direction of the arrows.

For this reason, in 1966 we proposed the dual form, the antipode: that is, poems on graphs *without cocircuits.* Without wishing to define a cocircuit here, let us say that these graphs are characterized by the property that, beginning from a given point, one can always end up at a point determined in advance.

Let us consider the simplified example of figure 12.2.

Other pathway procedures were proposed by Paul Braffort and François Le Lionnais at the 79th meeting of the Oulipo. This principle is also behind Raymond Queneau's "A Story as You Like It." This text, submitted at the Oulipo's 83rd working meeting, draws its inspiration from the instructions given to computers, the reader at each moment disposing of two continuations, according to whether the adventures of the "three alert peas" suit him or not. Presented in the form of a bifurcating graph (figure 12.3), imbrication of circuits becomes apparent, as do converging paths, etc. . . . whose properties might be analyzed in terms of the Theory of Graphs. [See figure 12.4 for additional Queneau graphs.]

Finally, it should be noted that in his *Drailles* (Gallimard, 1968), Jean Lescure travels pleasantly through a graph of order 4:

Feuille de rose porte d'ombre

Ombre de feuille porte rose

Feuille, porte l'ombre d'une rose

Feuille rose à l'ombre d'une porte

Toute rose ombre une porte de feuille

. . ..

Another form of literature, which may lend itself to schemas rich in combinatory properties, is what has come to be called the *episodic story*. Since Potocki's famous novel, *Un Manuscrit trouvé à Saragosse,* especially since the episodic novels of Eugène Sue, certain authors have imagined characters who relate adventures in which figure other garrulous heroes who in turn relate other adventures, which leads to a whole series of stories embedded one in the other. In his poems, Raymond Roussel[6] went so far as to embed progressively six sets of parentheses [see figure 12.5].

In order to describe or count the agglomerations of parentheses in a monoid, the Polish logician Lukasiewicz established the bases of a mathematical theory; it is to this theory that we refer in figure 12.6, where we represent the structure of the first canto of Raymond Roussel's *Nouvelles Impressions d'Afrique* by a bifurcating arborescence. It may be remarked that this arborescence is much less complex than that of figure 12.7, for instance . . . which seems to open the door to a new field of research for the Oulipo.

We could not conclude this little inventory without mentioning bi-Latin literature and the work begun within the Oulipo by the author with Jacques Roubaud and *Georges Perec*. Since Euler, combinatorics has been interested in Latin bi-squares; a *Latin bi-square of order n* is a table of $n \times n$ squares, filled with n different letters and n different numbers, each square containing a letter and a number, each letter figuring only once in each line and each column, each number figuring only once in each line and each column.

A Latin bi-square of order 10 is reproduced in figure 12.8; it is, moreover, an extremely rare specimen, and at the present time only two are known to exist. We thus proposed to write 10 stories (represented by the 10 lines of the table) wherein appear 10 characters (represented by the 10 columns of the table). Each character's attribute is determined by the letter of the corresponding square; his action is likewise determined by the number of the corresponding square.

These 10 stories contain thus all the possible combinations in the most economical fashion possible. Moreover, they are the result of a century of arduous mathematical research, for Euler conjectured that a Latin bi-square of order 10 could not exist, and we had to wait until 1960 for Bose, Parker, and Shrikhande to prove him wrong. . . .[7]

It is clear that the contribution of combinatorics to the domains of words, rhymes, and metaphors is more complex than it seems, and that it is far from the anagrams of the Rhétoriqueurs or the stammerings of the Protean poets.

Figure 12.8. Specimen of the Latin bi-square of order 10; the letters represent a characteristic attribute: A = violent lover, B = stupid as an ox, C = rascal; etc. . . . The numbers represent the dominant action of the character: 0 = does nothing, 1 = steals and assassinates, 2 = behaves in a strange and inexplicable way; etc. . . .

Computer and Writer

The Centre Pompidou Experiment

Paul Fournel

When the literary project of the A.R.T.A. was launched, rapid efforts had to be made to establish a basis for a possible agreement between computer science and literary creation.[1] Christian Cavadia entrusted the whole of the project to Paul Braffort (logician, computer scientist, and writer), whose first goal was to educate the public and the writers themselves about this new undertaking.

Aided Reading

At first, work was brought to bear on preexisting literary material. There are, in fact, a few combinatory or algorithmic works that may be read far more easily with the help of a computer. Here, the machine performs a simple task of selecting and editing.

Combinatory Literature

The *Cent Mille Milliards de poèmes*[2] by Raymond Queneau furnishes material particularly favorable to this type of experiment. It consists of ten sonnets composed such that each verse of each of them may be combined with any of the other verses in the ten texts, which gives a total of 10^{14} sonnets. The printed collection is very prettily conceived, but the manipulation of the strips on which each verse is printed is sometimes tedious.

The computer, though, makes a selection in the corpus in function of the length of the "reader's" name and the time which he takes to type it into the terminal, then prints the sonnet, which bears the double signature of Queneau and his reader.[3]

The author himself may profit from this process: when the combinations are this numerous, he may take soundings of his work. The computer in this case serves as an assistant in the definitive fine-tuning of the text.

Algorithmic Literature

Same application in the domain of algorithmic literature: Dominique Bourguet has programmed Raymond Queneau's "A Story as You Like It"[4] so as to facilitate its reading. In this brief text, the reader is repeatedly invited to choose what follows in the tale through a system of double questions. The elements of narration being very short, the game dominates the reading of the text itself. This is unfortunate, since all of these possible texts have real charm. The computer first of all "speaks" with the reader, proposing the different choices to him, then prints the chosen text "cleanly" and without the questions. The pleasure of play and the pleasure of reading are thus combined.

In the same spirit and according to the same principles, a medieval tale was programmed by Jean-Pierre Enard and Paul Fournel,[5] and the 720 fairy tales of a work group directed by J. P. Balpe will be programmed.

Aided Creation

After all of this, the relation work→computer→reader must be replaced by other sorts of relations in which the author plays a role (without necessarily stripping the reader of *his* role). Among the different projects submitted by authors to Paul Braffort, one may already find examples of very different types of relations.

Type 1:
Author→Computer→Work

In this type, only creation is aided. The computer is an integral part of the drafting process and its work serves to elaborate the definitive text. Italo Calvino proposes lists of characters, constraints, and events to the machine, asking it to determine through progressive refinement who may indeed have done what. The author thus chooses to work on material that the machine allows him to dominate.[6]

Type 2:
Author→Computer→Work→Computer→Reader

The computer intervenes on two levels this time. For one of the chapters in the *Princesse Hoppy*, Jacques Roubaud elaborates, with the help of a machine, a chapter which the reader must read with this same machine.[7] He will be called upon to solve a series of enigmas, and the machine will furnish him with clues (inspired by the game of cork-penny) as to his groping progression in the text.

Type 3:
Author→Computer→Reader→Computer→Work

With this third type we enter into the domain of projects that are more distant and more technically complex. In Marcel Bénabou's "artificial aphorisms," the author furnishes a stock of empty forms and a stock of words destined to fill them; the reader then comes along to formulate a request, and, following this request, the machine combines words and forms to produce aphorisms.[8]

The reader's participation is limited, but it nonetheless necessitates a few elementary flexions in the resultant text. In spite of everything, one may affirm that the author dominates his material in these aphorisms; this is not so in the case of the S.S.A.Y.L.I. (Short Story As You Like It) project.

The goal of this enterprise is to produce diversified short stories in very large quantities according to the precise and various wishes formulated by the reader (he may choose the length, the theme, the decor, the characters, and the style).

Beginning with a few homosyntactic short stories, Paul Braffort and Georges Kermidjian attempt to establish an extremely supple general ossature and a stock of "agms," minimal unities of action or description. Their exact description is in permanent evolution, but one may say, roughly, that they are the intermediary unities between the word and the sentence, which in theory ought to permit one to avoid both the pitfalls of grammar and the feeling of suffocation provoked by sentence types that recur incessantly (as in the work of Sheldon Kline). Each of these agms receives specific attributes which will come into play according to the reader's wishes.

The interest of this project is triple: first, it allows one to produce short stories, and this is nice when one likes producing short stories; second, it enables one to elaborate a particular grammar prudently, step by step; third, it allows one to constitute a stock of agms that may be used on other occasions. But it is a long-term project that is only beginning. It will take patience, work, and time (= money).[9]

Prose and Anticombinatorics

Italo Calvino

The preceding examples concerned the use of the computer as an aid to literary creation in the following situations:

The structures chosen by the author are relatively few in number, but the possible realizations are combinatorily exponential.

Only the computer may realize a number (more or less large) of these potentialities.

On the contrary, the assistance of the computer takes on an *anticombinatory* character when, among a large number of possibilities, the computer selects those few realizations compatible with certain constraints.

Order in Crime

I have been working for some time on a short story (perhaps a novel?) which might begin thus:

The fire in the cursed house

In a few hours Skiller, the insurance agent, will come to ask for the computer's results, and I have still not introduced the information into the electronic circuits that will pulverize into innumerable impulses the secrets of the Widow Roessler and her shady pension. Where the house used to stand, one of those dunes in vacant lots between the shunting yards and the scrapyards that the periphery of our city leaves behind itself like so many little piles of trash forgotten by the broom, nothing now remains but scattered debris. It might have been a cute little villa beforehand, or just as well nothing other than a ghostly hovel: the reports of the insurance company do not say; now, it has burned from the cellar to the attic, and nothing was found on the charred cadavers of its four inhabitants that might enable one to reconstitute the antecedents of this solitary massacre.

A notebook tells more than these bodies, a notebook found in the ruins, entirely burned except for the cover, which was protected by a sheet of plastic. On the front is written: *Accounts of horrible acts perpetrated in this house,* and on the back there is an index divided into twelve headings, in alphabetical order: To Bind and Gag, To Blackmail, To Drug, To Prostitute, To Push to Suicide, To Rape, To Seduce, To

Slander, To Spy Upon, To Stab, To Strangle, To Threaten with a Revolver.

It is not known which of the inhabitants of the house wrote this sinister report, nor what was its intent: denunciation, confession, self-satisfaction, fascinated contemplation of evil? All that remains to us is this index, which gives the names neither of the people who were guilty nor those of the victims of the twelve actions—felonious or simply naughty—and it doesn't even give the order in which they were committed, which would help in reconstituting a story: the headings in alphabetical order refer to page numbers obscured by a black stroke. To complete the list, one would have to add still one more verb: To Set Ablaze, undoubtedly the final act of this dark affair—accomplished by whom? In order to hide or destroy what?

Even assuming that each of these twelve actions had been accomplished by only one person to the prejudice of only one person, reconstituting the events is a difficult task: if the characters in question are four in number, they may represent, taken two by two, twelve different relations for each of the twelve sorts of relations listed. The possible solutions, in consequence, are twelve to the twelfth power; that is, one must choose among solutions whose number is in the neighborhood of eight thousand eight hundred seventy-four billion two hundred ninety-six million six hundred sixty-two thousand two hundred fifty-six. It is not surprising that our overworked police preferred to shelve the dossier, their excellent reasoning being that however numerous were the crimes committed, the guilty died in any case with the victims.

Only the insurance company needs to know the truth, principally because of a fire insurance policy taken out by the owner of the house. The fact that the young Inigo died in the flames only renders the question that much thornier: his powerful family, who undoubtedly had disinherited and excluded this degenerate son, is notoriously disinclined to renounce anything to which it may have a claim. The worst conclusions (included or not in that abominable index) may be drawn about a young man who, hereditary member of the House of Lords, dragged an illustrious title over the park benches that serve a nomadic and contemplative youth as beds, and who washed his long hair in public fountains. The little house rented to the old landlady was the only heritage that remained to him, and he had been admitted into it as sublessee by his tenant, against a reduction of the already

modest rent. If he, Inigo, had been both guilty incendiary and victim of a criminal plot carried out with the imprecision and insouciance that apparently characterized his behavior, proof of fraud would relieve the company from payment of damages.

But that was not the only policy that the company was called upon to honor after the catastrophe: the Widow Roessler herself each year renewed a life insurance policy whose beneficiary was her adopted daughter, a fashion model familiar to anyone who leafs through the magazines devoted to *haute couture*. Now Ogiva too is dead, burned along with the collection of wigs that transformed her glacially charming face—how else to define a beautiful and delicate young woman with a totally bald head?—into hundreds of different and delightfully asymmetric characters. But it so happened that Ogiva had a three-year-old child, entrusted to relatives in South Africa, who would soon claim the insurance money, unless it were proved that it was she who had killed (*To Stab? To Strangle?*) the Widow Roessler. And since Ogiva had even thought to insure her wig collection, the child's guardians may also claim this indemnization, except if she were responsible for its destruction.

Of the fourth person who died in the fire, the giant Uzbek wrestler Belindo Kid, it is known that he had found not only a diligent landlady in the Widow Roessler (he was the only paying tenant in the *pension*) but also an astute impresario. In the last few months, the old woman had in fact decided to finance the seasonal tour of the ex–middleweight champion, hedging her bets with an insurance policy against the risk of contract default through illness, incapacity, or accident. Now a consortium of promoters of wrestling matches is claiming the damages covered by the insurance; but if the old lady *pushed him to suicide,* perhaps through *slandering* him, *blackmailing* him, or *drugging* him (the giant was known in international wrestling circles for his impressionable character), the company could easily silence them.

My hero intends to *solve the enigma,* and from this point of view the story belongs thus to the *detective mystery* genre.

But the situation is also characterized by an eminently combinatory aspect, which may be schematized as follows:

4 characters: A, B, C, D.

12 transitive, nonreflexive actions (see list below).

All the possibilities are open: one of the 4 characters may (for example) rape the 3 others or be raped by the 3 others.

One then begins to eliminate the impossible sequences. In order to do this, the 12 actions are divided into 4 classes, to wit:

	to incite
appropriation of will	to blackmail
	to drug
	to spy upon
appropriation of a secret	to brutally extort a confession from
	to abuse the confidence of
	to seduce
sexual appropriation	to buy sexual favors from
	to rape
	to strangle
murder	to stab in the back
	to induce to commit suicide

Objective Constraints
Compatibility between Relations

For the actions of murder: If A strangles B, he no longer needs to stab him or to induce him to commit suicide.

It is also improbable that A and B kill each other.

One may then postulate that for the murderous actions the relation of two characters will be possible only once in each permutation, and it will not be reversible.

For sexual actions: If A succeeds in winning the sexual favors of B through seduction, he need not resort to money or to rape for the same object.

One may also exclude, or neglect, the reversibility of the sexual rapport (the same or another) between two characters.

One may then postulate that for the sexual acts, the relation of two characters will be possible only once in each permutation, and it will not be reversible.

For the appropriation of a secret: If A secures B's secret, this secret may be defined in another relation that follows in the sequence, between B and C, or C and B (or even C and D, or D and C), a sexual relation, or a relation of murder, or of the appropriation of will, or of the appropriation of another secret. After that, A no longer needs to obtain the same secret from B by another means (but he may obtain a different secret by a different means from B or from other characters). Reversibility of the acts of appropriation of a secret is possible, if there are on both sides two different secrets.

For the appropriation of will: If A imposes his will on B, this imposition may provoke a relation between A (or another) and B, or even between B and C (or A), a relation that may be sexual, murderous, the appropriation of a secret, the appropriation of another will. After that, A no longer needs to impose the same will on B by another means (but he may, etc.).

Reversibility is possible, obviously, between two different wills.

Order of Sequences

In each permutation, after an action of murder has taken place, the victim may no longer commit or submit to any other action.

Consequently, it is impossible for the three acts of murder to occur in the beginning of a permutation, because no characters would then be left to accomplish the other actions. Even two murders in the beginning would render the development of the sequence impossible. One murder in the beginning dictates permutations of 11 actions for 3 characters.

The optimal case is that in which the three acts of murder occur at the end.

The sequences given by the computer must be able to reveal chains of events held together by possible logical links. We have seen that the acts of will and of secret can imply others. In each permutation will be found privileged circuits, to wit:

appropriation of a secret	of a sexual appropriation	determines an appropriation of will that determines	a murder
	of a muder		a sexual appropriation

or:

appropriation of a will	leads to	a murder
		a sexual appropriation that determines, etc.
		an appropriation of a secret

Each new relation in the chain excludes others.

Subjective Constraints

Incompatibility of each character with certain actions committed or submitted to. The 12 actions may also be divided according to a second sort of system, classifying them in 4 *subjective categories*.

acts of physical strength	*acts of persuasion*	*disloyal acts*	*acts that exploit another's weakness*
		to abuse the confidence	
	to incite		
to extort			to buy good graces
	to seduce		
to rape		to stab in the back	
	to induce		to blackmail
to strangle	to commit suicide	to spy upon	to drug

—Of A it is known that he is a man of enormous physical strength, but that he is also an almost inarticulate brute.

A cannot submit to acts of physical strength.

A cannot commit acts of persuasion.

—Of B it is known that she is a woman in complete control of herself, with a strong will; she is sexually frigid; she hates drugs and drug addicts; she is rich enough to be interested only in herself.

B cannot submit to acts of persuasion.

B is not interested in acts that exploit another's weakness (she is not interested in buying sexual favors, she does not touch drugs, she has no motive for blackmail).

—Of C it is known that he is a very innocent Boy Scout, that he has a great sense of honor; if he takes drugs, he vomits immediately; his innocence protects him from all blackmail.

C cannot submit to acts that exploit another's weakness.

C cannot commit disloyal acts.

—Of D it is known that she is a terribly mistrustful woman and physically very weak.

D cannot submit to disloyal acts.

D cannot commit acts of strength.

An ulterior complication could be introduced!!!!

Each character could *change* in the course of the story (after certain actions committed or submitted to): each might lose certain incompatibilities and acquire others!!!!!!!

For the moment, we forgo the exploration of this domain.

Esthetic Constraints
(or Subjective on the Part of the Programmer)

The programmer likes order and symmetry. Faced with the huge number of possibilities and with the chaos of human passions and worries, he tends to favor those solutions that are the most harmonious and economical.

He proposes a model, such that:

—each action be perpetrated by one and only one character and have one and only one character as a victim;

—the 12 actions be equally distributed among the 4 characters; that is, each of them perpetrates 3 actions (one on each of the others) and is the victim of 3 actions (each perpetrated by one of the others);

—each of the 3 actions perpetrated by a character belongs to a different (objective) class of actions;

—the same as above for each of the three actions submitted to by any given character;

—between two characters there be no commutativity within the same class of actions (if A kills B, B cannot kill A; likewise, the three sexual relations will occur between differently assorted couples).

Is it possible at the same time to take account of the subjective constraints and of the so-called esthetic constraints?

This is where the computer comes in; this is where the notion of "computer-aided literature" in exemplified.

Let us consider, for instance, 4 characters whom we shall call:

ARNO, CLEM, DANI, BABY

A very simple program permits us to engender selections of 12 misdeeds. Each of these selections might be, in theory, the scenario our hero is trying to reconstitute.

A few examples of such scenarios are given on the next page under the headings SELEC1.

The absurdity of these scenarios is obvious. In fact, the program used is completely *stupid:* it permits a character to commit a misdeed against himself.

The program can be improved in imposing:

—that autocrimes be excluded;

—that each character figure only 3 times as criminal and 3 times as victim.

One then obtains scenarios as shown under the headings SELEC2 on the next page.

This new program comprises obvious inefficiencies.

SELEC1

ARNO	BUYS	CLEM
CLEM	EXTORTS A CONFESSION FROM	ARNO
ARNO	CONSTRAINS	ARNO
ARNO	EXTORTS A CONFESSION FROM	BABY
CLEM	RAPES	DANI
ARNO	CUTS THE THROAT OF	DANI
DANI	CONSTRAINS	BABY
BABY	EXTORTS A CONFESSION FROM	ARNO
CLEM	POISONS	ARNO
DANI	EXTORTS A CONFESSION FROM	CLEM
ARNO	ABUSES	ARNO
CLEM	EXTORTS A CONFESSION FROM	CLEM

SELEC1

ARNO	POISONS	ARNO
DANI	SEDUCES	DANI
BABY	SPIES UPON	CLEM
BABY	RAPES	CLEM
BABY	EXTORTS A CONFESSION FROM	DANI
CLEM	SPIES UPON	ARNO
CLEM	THREATENS	CLEM
DANI	CONSTRAINS	BABY
DANI	EXTORTS A CONFESSION FROM	BABY
DANI	EXTORTS A CONFESSION FROM	ARNO
CLEM	ABUSES	BABY
BABY	BLACKMAILS	ARNO

SELEC1

DANI	SEDUCES	ARNO
BABY	CONSTRAINS	ARNO
ARNO	SPIES UPON	DANI
BABY	ABUSES	ARNO
CLEM	RAPES	CLEM
BABY	CUTS THE THROAT OF	DANI
ARNO	STRANGLES	ARNO
DANI	BUYS	ARNO
ARNO	ABUSES	ARNO
DANI	CUTS THE THROAT OF	CLEM
DANI	SEDUCES	CLEM
ARNO	CONSTRAINS	BABY

SELEC2

DANI	POISONS	ARNO
BABY	THREATENS	CLEM
BABY	SPIES UPON	ARNO
CLEM	BLACKMAILS	ARNO
CLEM	EXTORTS A CONFESSION FROM	BABY
DANI	SEDUCES	BABY
DANI	STRANGLES	CLEM
ARNO	RAPES	BABY
BABY	CUTS THE THROAT OF	DANI
ARNO	CONSTRAINS	CLEM
ARNO	ABUSES	DANI
CLEM	BUYS	DANI

SELEC2

ARNO	CONSTRAINS	CLEM
CLEM	BLACKMAILS	ARNO
DANI	BUYS	ARNO
ARNO	CUTS THE THROAT OF	BABY
ARNO	EXTORTS A CONFESSION FROM	DANI
BABY	RAPES	CLEM
CLEM	SEDUCES	BABY
DANI	THREATENS	CLEM
CLEM	ABUSES	DANI
BABY	STRANGLES	DANI
BABY	POSIONS	ARNO
DANI	SPIES UPON	BABY

SELEC2

BABY	SPIES UPON	CLEM
ARNO	CUTS THE THROAT OF	DANI
DANI	STRANGLES	CLEM
DANI	THREATENS	ARNO
BABY	BLACKMAILS	ARNO
DANI	BUYS	BABY
CLEM	EXTORTS A CONFESSION FROM	BABY
BABY	RAPES	DANI
CLEM	CONSTRAINS	DANI
ARNO	ABUSES	BABY
ARNO	SEDUCES	CLEM
CLEM	POISONS	ARNO

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Thus, in the first scenario it is not possible for Clem to blackmail Arno who has already been poisoned by Dani. In the second scenario, Baby cannot rape Clem because Arno has already cut the latter's throat, etc. Paul Braffort, who ensures the development in computer science necessary to the progress of our work, has also written a series of programs for selections that progressively account for the *constraints* our story must respect in order to remain "logically" and "psychologically" acceptable.

This clearly demonstrates, we believe, that the aid of a computer, far from *replacing* the creative act of the artist, permits the latter rather to liberate himself from the slavery of a combinatory search, allowing him also the best chance of concentrating on this "clinamen" which, alone, can make of the text a true work of art.

Brief History of the Oulipo — Notes

1. The Collège de Pataphysique takes its name from "pataphysics," the discipline proposed by Alfred Jarry, which he defined in his *Gestes et opinions du Docteur Faustroll* (II, viii) as "the science of imaginary solutions." Jarry himself spelled the word with an initial apostrophe, perhaps to suggest *épataphysique,* or "shocking physics." The Collège itself was founded on 11 May 1948, the fiftieth anniversary of *Faustroll;* its principal (if by no means exclusive) function is to promote work on Jarry. Publications of the group include the *Cahiers du Collège de Pataphysique* and the *Dossiers du Collège de Pataphysique*. See Linda Klieger Stillman, *Alfred Jarry* (Boston: Twayne, 1983), 41–42. Several of the founding members of the Oulipo held titles within the Collège de Pataphysique: Queneau, for example, was a Transcendent Satrap; Latis was the Private General Secretary to the Baron Vice-Curator; Noël Arnaud is the Regent of General Pataphysics and the Clinic of Rhetoriconosis, as well as Major Conferant of the Order of the Grande Gidouille. (WM)

2. See Noël Arnaud, "Et naquit l'Ouvroir de Littérature Potentielle," in Jacques Bens, *Oulipo 1960–1963,* 8. (WM)

3. Raymond Queneau's first novel, published by Gallimard in 1933. (WM)

4. In the penultimate quatrain of his "Booz endormi," Victor Hugo rhymes *Jérimadeth* with *se demandait*. As the former place name figures in no known atlas, it has been conjectured that *Jérimadeth* may be read as *je rime à dait,* or "I rhyme with *dait*." (WM)

5. According to Bens's minutes, this meeting took place not on April 5 but on April 17. See *Oulipo 1960–1963,* 42–43. (WM)

6. Again, according to Bens, the date of the meeting was not April 20 but April 28. See *Oulipo 1960–1963,* 45–52. (WM)

7. Lady Godiva was a female tortoise who lived in François Le Lionnais's garden. See *Oulipo 1960–1963,* 71. (WM)

8. Baudelaire, of course.

9. Years become centuries in Oulipospeak. (WM)

10. Let us recall the names of the old ones: Noël Arnaud, Jacques Bens, Claude Berge, Paul Braffort, Jacques Duchateau, François Le Lionnais, Jean Lescure, Raymond Queneau, Jean Queval. Foreign correspondents: André Blavier, Ross Chambers, Stanley Chapman.

For a Potential Analysis of Combinatory Literature — Notes

1. *Dissertatio de Arte Combinatoria,* J.-E. Erdmann (1666). It is surprising to note that this very rare work, written in Latin, has never to our knowledge been translated. We owe certain of the references we used in the inventory of combinatory literature to Y. Belaval. Let us also cite another famous mathematician, Leonhard Euler, who suggested principles for a Combinatory Art in his *Lettres à une princesse d'Allemagne sur divers sujets de physique et de philosophie,* Steidel (1770–74), 27.

2. One could mathematize the concept of configuration in defining it as an *application of a set of objects within an abstract finite set provided with a known structure;* for example, a permutation of n objects is a "bijective application of the set of objects within the set ordered 1, 2, . . . , n." Nevertheless, we are interested only in those applications that satisfy certain constraints, and the nature of these constraints is too varied to allow us to use this definition as the basis for a general theory.

3. "Honor, Art, Money, Property, Praise, Woman, and Child/One has, seeks, misses, hopes for, and disappears." G. P. Harsdörffer (1607–58), a founder of the "Pegnitz Shepherds," a Nuremberg society, wrote a *Poetischer Trichter* (*Poetic Funnel*) (1647–53) with which one could "pour" the art of poetry into anybody in six hours. See J. G. Robertson, *Outlines of the History of German Literature* (Edinburgh: Blackwood, 1950), 83. (WM)

4. Marc Saporta's *Composition No. 1* (Paris: Seuil, 1962) was published in 1962, not 1965. (WM)

5. The poem Berge has transformed is Ronsard's "Quand vous serez bien vieille":

Quand vous serez bien vieille, au soir, à la chandelle,
Assise auprès du feu, devidant et filant,
Direz, chantant mes vers, en vous esmerveillant:
Ronsard me celebroit du temps que j'estois belle.

Lors vous n'aurez servante oyant telle nouvelle,
Desja sous le labeur à demy sommeillant,
Qui, au bruit de Ronsard, ne s'aille réveillant,
Benissant vostre nom de louange immortelle.

Je seray sous la terre, et, fantosme sans os,
Par les ombres myrteux je prendray mon repos;
Vous serez au fouyer une vieille accroupie,

Regrettant mon amour et vostre fier desdain.
Vivez, si m'en croyez, n'attendez à demain;
Cueillez dés aujourd'hui les roses de la vie.

Humbert Wolfe, in Pierre de Ronsard, *Sonnets for Helen* (London: George Allen and Unwin, 1934), translates the poem as follows:

When you are old, at evening candle-lit
beside the fire bending to your wool,
read out my verse and murmur, "Ronsard writ
this praise for me when I was beautiful."

And not a maid but, at the sound of it,
though nodding at the stitch on broidered stool,
will start awake, and bless love's benefit
whose long fidelities bring Time to school.

I shall be thin and ghost beneath the earth
by myrtle shade in quiet after pain,
but you, a crone, will crouch beside the hearth

Mourning my love and all your proud disdain.
And since what comes tomorrow who can say?
Live, pluck the roses of the world to-day. (WM)

6. See the study Jean Ferry devoted to him in the journal *Bizarre* 34–35 (1964).

7. Work on the literary applications of the Latin bi-square was pursued by Georges Perec; in 1978 it resulted in his *La Vie mode d'emploi*. (WM)

Computer and Writer: The Centre Pompidou Experiment — Notes

1. A.R.T.A.: "Atelier de Recherches et Techniques Avancées," or "Workshop of Advanced Studies and Techniques," a group working at the Centre Pompidou. For a time, the Oulipo used A.R.T.A. equipment in their work on computer-aided literature. Personal letter from Paul Fournel to the editor, 5 December 1983. (WM)

2. Gallimard.

3. In the same spirit and using a very similar technique, Michel Bottin programmed the 10^{67} poems contained in the XLIst kiss of love of Quirinus Kuhlman.

4. This story is published in Oulipo, *La Littérature potentielle,* Gallimard's "Idées" collection, 277. [It also appears in the present volume (WM).]

5. A prototype of this text may be found in Oulipo, *La Littérature potentielle,* Gallimard's "Idées" collection, 281. [Appearing here as "The Theater Tree: A Combinatory Play." (WM)]

6. See Calvino's "Prose and Anticombinatorics." (WM)

7. See Roubaud's *La Princesse Hoppy ou le conte du Labrador:* Bibliothèque Oulipienne 2 (ch. 1); Bibliothèque Oulipienne 7 (ch. 2); *Change* 38 (1980), 11–29 (chs. 3, 4). (WM)

8. See Bénabou, *Un Aphorisme peut en cacher un autre.* (WM)

9. This paper was presented at the "Writer-Computer" meetings of June 1977.

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