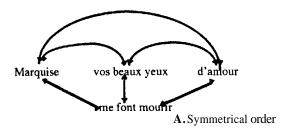# OuLiPo, Architecture, and the Practice of Creative Constraint

A. GRAY READ
University of North Carolina at Charlotte

One of the cardinal demands of modern artists and architects was for total freedom of expression. They, and we, demand liberation not only from state censorship but from all traditional constraints of composition such as systems of proportion, decorum and decorative propriety. Our liberty however, is furrowed with ironies. For modernists, tenets of functionalism and purity were more restrictive than the eclectic styles they rejected, and we agonize that for all our freedom, our work is meaningless. This paper will consider a literary group formed in Paris in the 60s who playfully throw into question the dilemma of freedom and constraint that modernists took so seriously. OuLiPo (Ouvroirs de Littérature Potentielle) is a contemporary group of practicing writers and artists who were trained in a modernist canon, yet turn to look back on their predecessors with a bemused eye. At the core of their work, OuLiPo considers language not as a veil of truth but as words, arranged within a logical and arbitrary structure of formal constraint. From this perspective, both traditional poetic forms and modern free verse can be seen as systems of composition based not in expressive honesty, but in the art of language. Writing poetry is a word game played according to certain rules. These ideas and the spirit behind them can pass analogically between the arts and speak directly to architects.

OuLiPo's theory is a form of practice that addresses the craft of writing not in terms of its goals as meaning, but its process, as an exercise of the imagination. They work toward a literature that is not complete but "potential," as suggested in the name. "Ouvroir" is a pun that means literally workshop from "Ouvrer," to work, as in "Ouvre Complet" but gestures toward "ouvrir," to open and perhaps "ouvreau," a peephole. The group casts themselves as workers in the literary fields, and has reopened a tradition of word games, as imaginative tools, designed to induce poetic invention by lifting language out of its habitual context and by so constraining it that it is pressed into new forms. They embraced traditional word puzzles like the palindrome, a phrase that is the same whether read forward or backward, "Madam, I'm Adam," or my favorite, "Too hot to hoot." Author, Georges Perec, one of the founding OuLiPians wrote a palindrome a paragraph long.

A. Symmetrical order

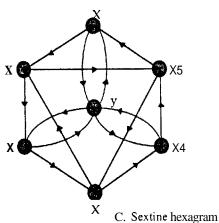| Having received instructions	the son	hesitantly	chooooses revenge	Death is the condition of success
Irrepressibly erotic.	the widowed mother	hastily	remarries	This is a deceptive pleasure
In the clutches of resentment	the uncle	desparately	indulges a posthumous passion	Can we possibly approve'?
Royally willful,	the dead man	obscssively	tries to rewrite history	Someone has to pay
A prey to this incestuous violence	Ophelia	faithfully	abandons her reason and life	A father's death is is also involved

B. Hamlet algorithm

C. Sextine hexagram

Fig. 1. OuLiPo Parcours Poetique.

Constraint by: / Constraint of:	Length	Number	Form	Nature
Lettres or signs	Roll of the dice	Snowball (First verse is one word of one letter, second is two letters, etc.) MonogramPoem	Pangram (sentence containing all the letters of the alphabet) Palindrome	Lipogram (writing without one letter) Palindrome Alphabetic drama (Perec)
Syllables		Classical French Prose (or English Iambic Pentameter)	Words in Echo (Brunet) Abecedaire (Perec) Syllabic Palindrome (Luc Etienne)	Greco-Roman Prose Rhyme Anti rhyme Holorhyme
Words	Snowball (First verse is one word, second two, etc) Monosyllabic text	Each sentence to have same number of words Telegraph style 12 word Alexandrine (Haikuj	Cubic poem (Lescure) Verbal palindrome (Luc Etienne) S+7 (Lescure)	Liponym: writing without given words (Perec) Writing without adjectives or substantives (LeLionnais)
Sentences	Quevalian sonnet Mallarmés redundancy (Queneau) Proverbs (Bénabou)	Quatrain etc.	White alexandrines Borrowed sentences (Queval) Mathematical Poems (Queneau) Palindrome of sentences	Homosyntax: each sentence has the same structure (LeLionnais) Chimeric Images (LeLionnais)
Paragraphs	Quatrain etc.	Sonnet etc. Irrational sonnets (Bénabou)	Tree Structure (LeLionnais)	31 on the cube (Roubaud)

Fig. 2. OuLiPo: Raymond Queneau's table.

And they invented new games. For example Perec wrote his most recent novel, La Disparu, without the letter e, which in French eliminates several articles, many plurals and most of the verb "to be." Such severe limits rule out clichés and work the imagination to invent new means of expression thus exploiting new potential in language. Literature is neither expression nor ideology but a construction of words.

Architecture often exploits analogies to literature. Yet architecture is construction that seems sufficiently constrained without inventing new obstacles, and designer's habitually lament limits imposed by the program, budget, or site. I would like to speculate however, that perhaps our constraints are too few, and that Oulipo's games might suggest structures to open up in architectural imagination and recast the constraints that worry us.

Oulipian literary games, particularly those of Raymond Queneau, a quizzical novelist and amateur mathematician, are often governed by numerical or geometric sequences such as this figure describing a rearrangement of lines in a poetic verse (see Fig. 1).[1] Spatial patterns imposed on words create new relationships between them, stretching language from one dimension into two and possibly three. Opened into a new space, combinations of words, phrases or whole images continue to be generated as the reader moves from point to point across the figure. The exact path is a spatial choice so the reader is also a writer who invents within a geometry of poetry.[2]

Traditional poetic forms, the alexandrine and the sonnet, have a similar geometry that tie words together through rhythm, and verses through rhyme, so the reader reconstructs the figure as a dance. Writing within such a geometry severely constrains word choices so a poet's efforts must concentrate directly on the art of language. Each word must fit with every other in meter and rhyme as well as meaning such that each choice affects all others as in a puzzle. In practice, such intricacy is architectural, demanding an interrelationship between sense and construction so the meaning of a poem as a building is likely to change in the process and unforeseen insights emerge. In a good game, played with a fertile imagination, the work seems to be self-generative. Queneau wrote, "one is conscious, one knows what one produces, but not everything that will self-produce."[3] Oulipian games are not Surrealist chance operations nor automatic writing, but mathematically based puzzles that generate new situations that an author must answer creatively. Queneau wrote "Cent mille millards de poèmes," 10 poems each with 10 lines such that each line is open to recombine with the others and reshuffling their order creates a hundred thousand million poems, 10^{11}.

Oulipian writers embraced both traditional poetic forms

and word games, extending them to invent new constraints at several different levels of language: the letter, the syllable, the word, the sentence and the paragraph. Queneau organized these systems of constraint, both traditional and oulipian and found parallels between them. He drew a matrix of 20 possibilities, a grid (Fig. 2) ordered across the x-axis by the type of limit imposed on each element: length, number, form or nature. Each intersection on the chart is a specific location in relationship to others including new locations not yet explored. For example a snowball or *boule* de *neige* is a poem in which the first line is one letter, the second two, the third three and so on (fig. 3).

In the same oulipian mode, we might ask is there also potential in architecture? Could there be an OuArPo (Ouvroirs de Architecture Potentiale)? In a sense all architecture is potential as is all literature, for every project generates many possible readings, but to seek out its potential or to design for potential is a more self-conscious task. Traditional forms of poetry, the sonnet and sestina, find a parallel in traditional architectural rules of proportion and propriety that specified a system of design with rules governing the interdependence of the parts and the whole. These constraints cast design as a puzzle such that every building as every poem had to be considered individually, in particular, and emerged differently from the design puzzle even if they began with only slight differences in premise. Playing the game insured that each building emerged as an integrated whole. Using a mathematical analogy, constraints act as non-linear equations that push small initial variations in program or site to disproportionately large differences in results that yet remain in the same family of forms.[4] Architectural design is always a puzzle, but proportional systems added another set of interdependencies, requiring that an adjustment of one dimension must change another, then another, and so on throughout the project until the chain returns to modify again the initial dimension. In the process new large scale relationships emerge that were not specifically planned but were generated by the process. This mathematical engine generates alternatives almost endlessly in a system not a random as a roll of the dice and not so direct as problem solving. Proportions were also a constraint demanded by art that lifted the task away from the immediacies of program and budget to place it in the realm of creative design. An architect was then free to work. The process of design was not a choice among options so much as a kind of play, working the mathematics of a proportional system as a game or as an instrument. In leaving that system behind we no longer have an accepted set of formal constraints to generate fields of options nor a mechanism accepted outside of our field for lifting design decisions beyond functionalism or expression. Oulipian logic suggests the value that proportional systems had and give us some hints toward how such systems and others like it might return more playfully.

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                    O
                   to
                   see
                  man's
                  stern
                 poetic
                thought.
               publicly
              espousing
             recklessly
            imaginative
           mathematical
           inventiveness
          openmindedness
         unconditionally
        superfecundating
       nonantagonistical
      Hypersophisticated
     interdenomfnational
   interpenetrabilities.
     HarryBurchellMathews
     JacquesDenisRoubaud
      AlbertMarieSchmidt
       PaulLucienFournel
       JacquesDuchateau
        LucEtiennePerin
         MarcelMBenabou
          MicheleMetail
           ItaloCalvino
            JeanLescure
             NoelArnaud
              PBraffort
               ABlaview
                JQueval
                 CBerge
                  Perec
                  Bens
                  FLL
                  RQ
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                            H.M.
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Fig. 3. Snowball poem.

Constraint by: Constraint of:	Number	Dimension	Form	Nature
Material	Design with given amounts of given materials (e.g. design a shelter with a single **4x8** sheet of plywood) Join two materials	Tiling Patterns: Cut a pattern with no waste that will recombine in various ways Design with repetitive units of a single material	Standardized building components Erector Set Constructions Kit of Parts	Design with one material (eg. wood construction) Constructional Expressionism Handwork practice (Bauhaus Craft Studios)
Detail or Element	Using given elements in composition: Collage/Bricolage Design one detail within a given composition	Redundant elements Repeating Rhythms Overlay of rhythms	Classical Ornament: Codified ornamental palatte Substitution of materials in an element of fixed dimension. (Transformation of textile weaving into masonry patterns - Semper) (Origins of classical details in wood building technique)	Single intention in Detailing (eg. Modern details to make clean lines) Functionalist Design
Composition	Limit to one compositional device (Bauhaus 2-D and 3-D exercises) Adapting a spatial structure (eg. variations on the grid, FLLW)	Classical Proportions Design within dimensional limits (railroad sleeping compartment)	Classical Propriety: Formal rules for building according to social role. Building Typology: Rowhouse, Ranch House, bungalow	Demonstration houses: building as idea Design to address a specific phenomenon (Design a natural light fixture) (James Turrell)
Situation	Locate a given object in a given context. (Using mass produced elements in an old city) Place a brick on the ground (Gregotti)	Minimum intervention to change composition of city Design of Infrastructure. (Put a highway (of given dimensions) into a city	Design from outside in: Building as detail of city. (Gregotti) Urban Design Guidelines	Extension of project into city. Design to address an urban quality (e.g. juxtaposition of scales of movement: highways in the city)

Fig. 4. Table of design games.

Queneau's matrix of constraints on poetic writing offers the possibility of a parallel matrix in architecture in which different levels of language: the letter, word, sentence, and paragraph, translate as levels of design. Material, detail, composition, and situation are my choices, (fig. 4). Constraints on each of those levels parallel the literary model and occur in: number, dimension, form and nature. The exercise of filling in the matrix, imagining what a constraint of number might mean on the level of an architectural detail, is a speculative exercise that suggests a field of architectural games, many of which we already play. Puzzle solver and puzzle maker become indistinguishable.

Like OuLiPo literary puzzles, many are studio exercises designed to tickle the imagination, yet such exercises as speculations underlie all design practice. The cycle of puzzle maker and puzzle solver turns around until the problem is defined only in it's solution. Queneau's matrix and the architect's analogue open specific places for invention at a "meta" level abstracted from the task at hand and even from compositional methods or styles. They do not specify techniques but open places for an imagination of technique.

For example, I ran a studio in which I constrained the design process by specifying that two specific elements must appear. Second year undergraduate students were asked to design a room that contained a French rococo couch and looked out onto a view shown in a painting by Richard Diebenkorn. It was not a game of collage but of designing between given elements. Queneau suggested a similar literary game in which a poet might select a poem, such as a Mallarmé sonnet, then write new lines to fit in between each of Mallarmé's. The new poem, thus created, could be broken apart again and another set of lines interleaved, and so on. Carlo Scarpa worked in a similar manner in his design of the Castel Vecchio in Verona, designing in-between an existing building and a collection of antiquities. Such constraint, in studio, poetry and Castel Vecchio fits in our matrix as one of detail or element limited by number, in other words by the identity of a single (or many) pieces.

Traditional systems of proportion and classical propriety find places' in the grid as games of composition at a level of dimension and of form, respectively. An explicit expression of structure or construction in design can be cast as a constraint of material such that only one aspect of its nature is revealed, i.e. its role as part of a building system. Functionalism also can be seen as a game in which details or elements of a composition are constrained to one aspect of their nature, i.e. their utilitarian value. And all locations in the matrix are open to further speculation. The grid, an infinite figure of a uniform geometry, specifies places for inventive speculation in relation to one another, but makes value judgments impossible. One game is as good as another and the final merit of a work of poetry or of architecture lies outside of the design game.

Oulipian games do not produce good poetry or good architecture any more than poetic formalism or proportional systems did, but that they are teases for an already inventive mind and they offer a structure to challenge and thereby sharpen an already clear intention. They are senseless things, puzzles, exercises, a workshop to open up potential in design that perhaps, in the right hands, might lead to something truly stunning. And they are understandable as games beyond the field of Architecture, like traditional systems within a classical view of the world that were accepted as almost self-justifying. Ludwig Wittgenstein described all language as a game with a certain grammatical structure that we play within the context of specific situations, bending and inventing it to suit our purposes.' Meaning exists only within the game, through the game and for the game. The game itself is self-justifying. Freedom is then lodged at another, more systematic level where design moves, as language moves, are embedded in a formal intricacy that extends beyond the bounds of the project to comment on the process of making. Constraint is not limit, but is exactly the structure that makes architecture form meaningful. Modernist insistence on total freedom is then an insistence on meaninglessness, a tautology that has plagued post-modern thinking as well. If, in contrast, rather than seeking a lack of constraint we recognize our design games as such and look to puzzle making as well as puzzle solving, we can get back to work. By extension, perhaps situational constraints such as site, program and budget can be recast, and lifted back into the creative realm of design by reformulating them in more systematic terms. These challenges might be the games of OuArPo, developing architectural potential which already exists within everything we do.

NOTES

[1] Jacques Bens, "Queneau Oulipien" in *Oulipo Atlas de littérature potentielle* (Gallimard, 1981), p. 22.
[2] Harry Mathews, "L'algorithme de Mathews" *Oulipo Atlas,* p. 97.
[3] Jacques Bens, *Oulipo* Atlas, p. 25.
[4] In Chaos theory this is called the "butterfly effect."
[5] Ludwig Wittgenstein *Philosophical Investigations* trans G.E.M. Anscombe (NY: Macmillan, 1953), p. 149 paragraph 558.